A Guide to Teaching Trumpet and Horn

(2023 edition)

Jim Buckner

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Acknowledgements

This information has been gathered from many sources, including pedagogy classes, master classes, clinics, and private lesson teachers. I have used these concepts with myself and my students and have confidence that this knowledge will be helpful to teachers and performers.

The single most important source of information has been the world-renown brass pedagogue and principal tuba with the Chicago Symphony, Arnold Jacobs. A clinic he gave in 1977 transformed by life as a trumpet player, opening an entirely different approach to my study of the instrument. His influence increased through pedagogy classes taught by Keith Johnson (professor of trumpet, North Texas University) and Vincent Cichowicz (second trumpet in the Chicago Symphony for 23 years and professor of trumpet at Northwestern University), two weeks of masterclasses taught by Mr. Jacobs, private lessons with his former students: Mr. Vincent Cichowicz and Mr. Luther Didrickson (first call trumpet with the Chicago Symphony and adjunct trumpet professor at Northwestern), and finally, six lessons with the master himself.

I have attended masterclasses by many of the finest brass players on the planet, including a week of horn with Dale Clevenger (principal horn with the Chicago Symphony), Denis Wick (principal trombone with the London Symphony), John Fletcher, principal tuba with the London Symphony; Bernie Adelstein (principal trumpet of the Cleveland Orchestra) Ray Crisara (certainly one of the finest trumpet players and teachers of all time). The list goes on and on...

My lessons with Mr. Cichowicz and Mr. Didrickson put Mr. Jacob's principals into action and no doubt included their own concepts as well. Susan Slaughter (principal trumpeter with the St. Louis Symphony Orchestra) was incredibly helpful, as were my lessons with Joseph Christensen who fanned the fire of my love for the trumpet and sent me to study with his teacher, Clifford Lillya at the University of Michigan. Mr. Lillya transformed his students as no other teacher I've known.

Perhaps most of important to me was Arthur Swift, my undergraduate teacher for three years. Dr. Swift enabled me to recover from a difficult embouchure change, freely giving enormous amounts of his time to put me back on the path of progress. It is a debt that I have tried to pay forward.

I must also thank my teaching colleagues through the years, particularly Dr. Wes Branstine, retired Professor of Low Brass Henderson State University, who came up with the crazy idea that we should go to Chicago and take lessons with Arnold Jacobs and helped make it happen.

And, finally, my students, particularly those who did everything I asked to the utmost of their ability. There is no doubt that I learned at least as much from them as they did from me. My students in High Brass Methods, aka, Brass Class, have been extremely important in helping me clarify explanations how to use this material and even questioning why they should.

I am indebted to Henderson State for the opportunity to teach High Brass Methods for almost 30 years and for providing a sabbatical to transform my classroom notes into this text.

Part I

Prelude

Chapter 1
Introduction

This text is about brass pedagogy – how brass players function and how to teach them. Although primarily geared toward future band directors, we also need to talk about self-improvement. If you can't teach yourself, how can you teach someone else? If you can't figure out how to do something on an instrument, can you help someone else? My hope is that this information will be equally valuable to band directors, applied teachers, private lesson instructors, and those seeking to teach themselves.

Why did I write this book? Because this information needs to be freely available and because I've watched too many methods class students stare at me with glazed-over eyes, failing to grasp the knowledge I've gained over five decades of playing and teaching.

Before we begin, seven things:

A. It's the "horn," not the "French horn." The better the player the more likely they are to be offended by "French horn." A word to the wise!

B. You also need to know that there are "single" horns and "double" horns. Single horns are typically in the key of F and are 12 feet long, which is the same length as the F tuba. Because of this, much of the time is spent high in the overtone series, which I call the "splatter zone" because it is so easy to miss notes.

   Double horns are essentially two horns in one, a 9-foot B-flat horn and a 12-foot F horn. A thumb valve switches between the two. By using the B-flat side of the horn, the player is somewhat lower in the overtone series, increasing accuracy. (See Chapter 5 Harmonic Series.)

C. Many aspects of brass playing are inter-related. To minimize repetition, I will make references, such as in the preceding paragraph.

D. Yes, this is a big book; in fact, it's twice as large as I expected. It is not written for the beginning teacher – after all, you're only a beginning teacher for a year or two. Instead, this book is written for the career teacher and hopefully will be of use to you as long as you teach.

E. I have thought about pedagogy a LOT over the last fifty years as a teacher and as a student and learned a great deal from teaching at least 15,000 lessons to hundreds of students. Although most of them were trumpeters, I have taught all the brass instruments over the years.

F. I endeavor when possible to credit the source of my information – it's the least I can do. If you pass something along to others, please give these original sources the credit, not me!

G. Ten disclaimers:

1. I really want you to do well as a band director, but my greatest concern is your future students. I have observed band directors almost my entire life, and I include pointed comments about shortcomings I've seen to help you avoid their mistakes. If I offend you, I'm sorry, but my goal is to help you become the best possible teacher!

2. I like stories; they're much more interesting than "facts." They take more time than simply telling you "Say this" or "Do this," but I don't think that type of instruction internalizes well and is quickly forgotten.

   I also want to convince you that what I'm telling you works and you should use it in your teaching. Stories are often the most effective way for me to "sell" you on my point of view.

3. It amazes me how broad this topic is and how much information there is to share. Some students in class want only a minimum of knowledge; I can't provide that – who knows what you'll need to know during a thirty- or forty-year teaching career? What gem of knowledge should I omit that might help you or your future students?

   A huge amount of material is available in print and online – how do you know what to believe? I have used this information throughout my 45-year teaching career. After studying this book, you will have the ability to evaluate information presented to you by others, finding gold nuggets and discarding what is incorrect.

   You need many ways to explain the same concept – not everyone understands things in the same way. Even worse, a person's understanding can change from one day to the next – the successful approach from Monday may be a dismal failure on Tuesday. The larger your repertoire of explanations, the better.

   Considering how little credit you receive for this class it may seem like too much work. On the other hand, the less credit you receive, the less tuition you pay, so it's a bargain! The number of credit hours is not the important thing, you need this knowledge to be successful!

4. The ability to accurately discern proper tone quality, attacks, etc. is quite sophisticated. The general public cannot hear the difference between okay playing and great playing. Most of your students cannot hear the difference, either, which is one of the reasons they don't play well. YOU must be able to hear these differences and it is critically important that you listen to GREAT performers of each of the instruments you teach.

   On the other hand, the public can see how your band LOOKS, so you need straight lines in marching band and good posture in concerts. Most people assume that if the band looks good, it sounds good.

Along this same line, you will be evaluated more on the size of your band, how entertaining it is, and how good its contest/assessment ratings are than on musical aspects. The hope for change rests with you – teach your students the difference and someday they will be on the school board or even be your superintendent or principal. At that point, you will get the support you and your band deserve.

5. Your students will rise to the level of your expectations and no higher. If you expect excellence, you will achieve it; if you settle for less, you will get less. The greater your knowledge and experience of great music and performance, the higher your standards and the better your band will become. The same is true for your students – they will play only as well as their individual standards; it is up to YOU to raise them!

   Time for our first story – I first heard this in the fall of 1970; fifty years later, I still remember it. Sometime in the 1960s researchers decided to study the relationship between IQ scores and grades, so they shared the students IQ numbers with their teachers. At the end of the semester, the results were hardly surprising – students with high IQ's did better than students with low scores.

   Except that the researchers did not give the teachers the students' IQ scores – they were their locker numbers! Teachers expected more from students with high IQ's (locker numbers, that is), and those students achieved well. Since teachers didn't expect much from those with low IQ's (locker numbers), those students didn't do well.

   Teacher expectations are important!!! Too many band directors stop growing musically when they get out of college; their students suffer for it, and so do the directors. Keep listening and going to concerts!!

6. Methods classes are different than applied lessons. During lessons, you learn what YOU need; in methods classes, you learn what EVERYONE needs, regardless of their background or ability. So, if you're reading something you already know, it confirms that you're correct. How can that be boring??

7. Brass instruments are a family and work by the same basic principles; much of the material in this book will work well with the low brass. (There are important differences, however, which is why we have Low Brass Methods!)

   I am not a horn player – that makes a difference in two ways. First, I cannot comprehend the intricacies involved in dancing on a tightrope or playing horn professionally, not that there's much difference.

   Second, horn players tend to be afraid of "high" notes and lip trills. As a trumpet player playing horn, I have not found either one to be difficult. There isn't much difference physically, but they are very different psychologically. The horn is such a long tube that practically everything is high in the harmonic series, making notes sound "high," scaring

horn players as much as if they were standing on the edge of a high building. Secondly, lip trills aren't taught until the student is quite proficient, which has the implication that they are HARD!

8. This knowledge can help your own playing, or it can hurt it. The great brass pedagogue Arnold Jacobs stated that he wore three hats: teacher, performer, researcher, but he never wore more than one at a time.

   With this is mind, it seems like ignorance is bliss – the less knowledge you have of the mechanics of playing, the more of your mind is free to focus on the music results you desire. And that's true, while you're playing – you want to be incredibly knowledgeable about tone quality, interpretation, and musical style, and you need to be as dumb as a post about what your body is doing.

   When you're teaching, however, it is sometimes important to know what the student should be doing physically. You may need to share this information with the student, but as soon as possible, the student needs to forget about the process and focus on artistry.

   If you're not sure what I mean, when was the last time you thought about how to walk? At some point in your life, that process was critical, but no longer. We must be careful that our teaching does not negatively impact our playing by thinking mechanically.

9. In the course of studying the trumpet and brass playing for fifty-nine years, I have reached the conclusion that there is no single "right" way to play or teach the trumpet or the horn or any other instrument.

   We are all individuals with different physical, mental, emotional, and musical strengths. When you add the challenge of describing physical sensations so that others understand precisely what you mean, it's not surprising that arguments arise. There are times when approaches to playing seem in complete opposition to each other, and indeed, they may well be. Not everything works the same for everyone.

10. On a percentage basis, certain principals apply for most people in most situations, so I advocate these positions. Give them a try – if they don't work, try something different.

    But remember, the odds are that they will work!

Chapter 2
Importance of High Brass Methods

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Too often teachers take it for granted that their students understand the importance of the class they're taking. I do not wish to make this mistake, so here are number of reasons this knowledge is important to future band directors.

1. Your success depends on the success of your students. You must have great brass players, and the better they play, the better you will succeed. (Of course, the same is true of your woodwind players and percussionists.)

2. Your students need you! They need your help learning to play, performing in public, becoming good enough to get a college scholarship, and, hopefully, falling in love with music for the rest of their lives

3. Your longevity in this career is directly tied to the musical results of your ensembles. The average career expectancy for an Arkansas band director in the early 1990s was three years. When you consider that many directors teach thirty or forty years, there must be a LOT of directors who change careers after only one or two years. Why do they quit? Because being a band director is a LOT of work and the same effort in another field, such as business or sales, would result in a MUCH higher salary and shorter hours.

   So, why do some directors teach for decades? Because they love music, they love kids, they change students' lives by helping them becoming successful adults and citizens, and, most

importantly, they share a musical experience with their students. This is so important that no other career or amount of money can bring the same joy and sense of accomplishment. If your high school band sounded like the best college band in the country, would you EVER feel like missing a rehearsal? I sincerely doubt it.

4. The better a student plays, the more they enjoy what they're doing. Those who develop a lifelong love of music are likely to continue with their instrument in college and as adults. Directors are often evaluated by how big their band is, by their contest ratings, and by how many trophies they bring home. Perhaps a better measure would be how many of their students continue to play after high school and how many become band directors themselves.

5. Your students deserve the best you can offer from the first day of your career, so you need to enter the teaching field with great knowledge. It isn't fair to your students to learn on the job what you should have learned in college.

6. The future of music in America depends on YOU! Think of throwing a stone in a pond – the waves ripple far beyond the splash. Your teaching has impact that goes on and on, especially through your students who become band directors. Their influence on their students directly reflects your influence on them.

   You will easily teach 1,000 brass students in your career; each of your students who becomes a band director will teach at least 1,000 brass players, which could be 30,000 students (one music major per year for 30 years). YOU make a difference!!

   And, remember this – YOU are proof of a successful band director who instilled the love of music in you to the point that you wish to make it your lifelong career!

Next, we need to consider what band directors do daily.

1. Conduct – most people think this is what band directors do all the time; sadly, is a small percentage of the job. The higher the educational level you teach, the less conducting is done; it may be as little as 10% of the job at the college level.

2. Teach Instruments/people – it is important to remember you teach people, not instruments. This requires flexibility in your presentation and adjusting to differing personalities.

   When I was in school in the 1960s, band directors taught a lot of small group lessons during the week. Thanks to economic pressures, this is rarely the case; most teaching must be done during rehearsals. You need to be efficient and know what you're doing!

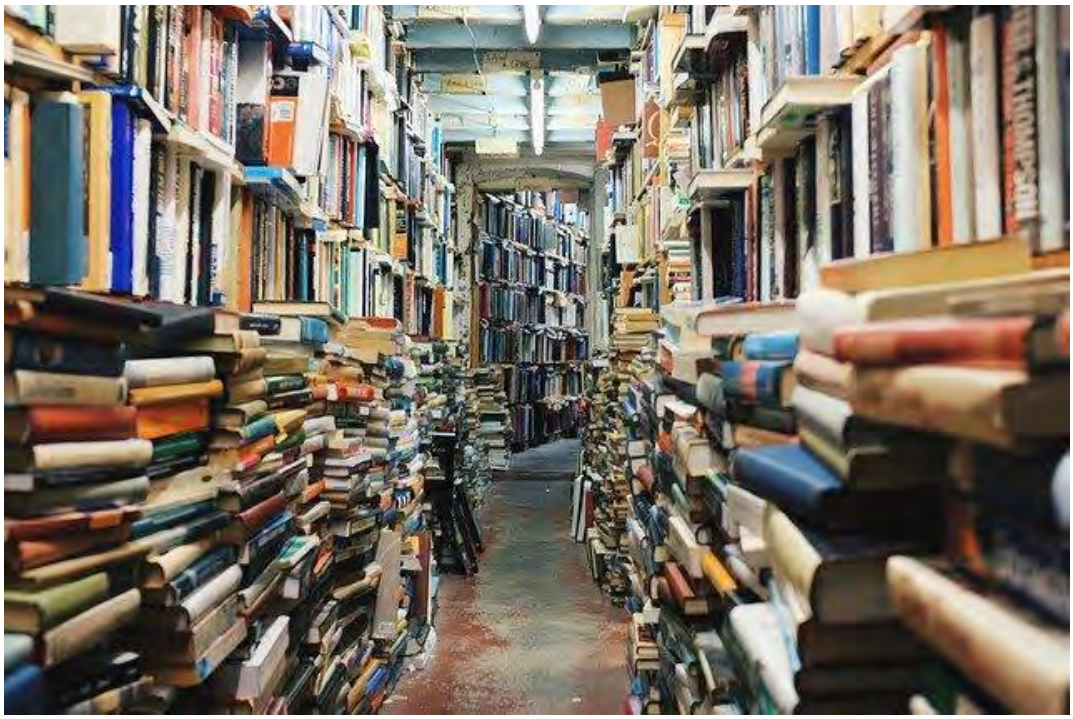
3. Administrative Tasks - paperwork ad nauseum. Probably the less we talk about this, the better, but it is a fact of life, especially for head directors.

4. Public Relations – social skills are critical. You need to like people and let them know it! This includes students, parents, and especially administrators who can make your job easier or

harder with the stroke of a pen.

5. Directors need to attend concerts and playing in excellent ensembles, improving their musicianship. Unfortunately, this is rarely the case; too many directors end their musical growth the day they graduate. The availability of online resources makes this situation particularly tragic – there is no excuse.

Chapter 3
Course of Study



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Hopefully, the last chapter convinced you of the importance of this class. Let's take a few minutes to outline the course of study which follows. We'll begin by discussing the harmonic series and then "meet" Arnold Jacobs – so much of this text comes from him.

In "Two Contrasting Approaches" you will learn the difference between the scientific and conceptual teaching approaches and why you should adopt the conceptual approach.

Next, we'll talk about matching students to instruments to increase their chance of success, and then we'll get into pedagogy – how to teach the trumpet and horn – beginning with a solid understanding of the fundamentals involved.

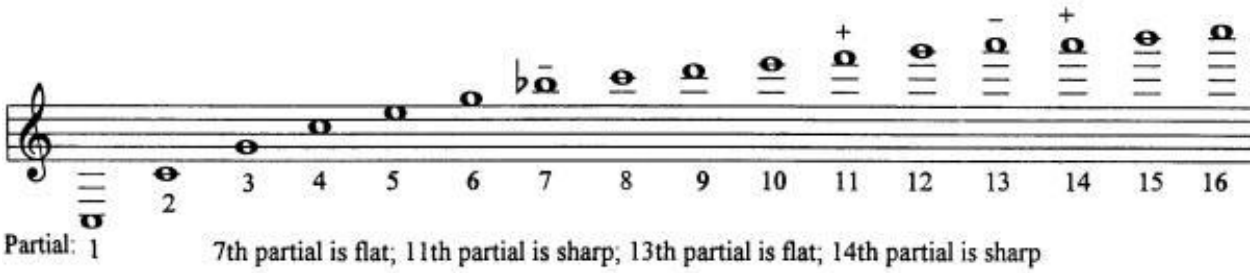
Our study of pedagogy will take some time. By the end, you will know not only "what" to teach but "how" to teach and "how" brass players function. This knowledge will enable you to adapt to the needs of individual students, solving playing problems you may encounter.

The next section gets into specifics for the trumpet and the horn and is followed by a discussion of equipment. The final section covers transposition, and lip and teeth problems.

The Appendix includes fingering charts and musical examples referenced in this book followed by a list of method and reference books as sources of additional information. Finally, I have included a list of teachers and musicians referenced in this book.

Chapter 4
Harmonic Series

All brass instruments follow this harmonic series pattern:



The sooner you memorize this pattern, the better. Everything brass players do is based on it !

The notation above must be adjusted to match the length of each brass instrument as follows:

Trumpet – as written

Horn – the notation needs to be lowered an octave (the 8th partial is now 3rd space C)

Trombone/Euphonium – the notation needs to be lowered an octave and a whole step (the 8th partial is now the B-flat an octave above the bass clef)

Tuba – the notation needs to be lowered two octaves and a whole step (the 8th partial is now the B-flat at the top of the bass clef)

If you need to know specific concert pitches, the key of the series must be adapted to the instrument being played and further adjusted for the valve combination in use. For example:

Trumpet in B-flat, no valves pressed – transpose the series down a major second

Trumpet in D, 12 valve combination – transpose the series up a major second to get to D and then down a minor third to accommodate the 12 combination – net result: transpose down a minor second

Horn in F, no valves pressed – transpose down an octave and a perfect fifth (the 8th partial sounds first space F in the treble clef)

The terms “partial” and “overtone” are not synonymous. As you can see, numbering of partials begins with the lowest note, or fundamental.

The first overtone is the pitch above the fundamental, which is the reason for the name “over-tone.” Therefore, the numbering of partials is off from the numbering of overtones by one number. In other words, this chart shows the fundamental and overtones number 1 to 15.

Chapter 5
Arnold Jacobs

unknown

Arnold Jacobs was born in 1915 and began his musical career as a trumpeter, switching to tuba around 1930 and entering the Curtis Institute of Music in Philadelphia that same year. He desired to become an opera singer but was forced to abandon his dream because he developed nodes on his larynx; there is no cure for this inoperable condition.

His vocal studies impacted his tuba playing and his approach to brass playing. Mr. Jacobs related that while he was practicing, many of the greatest musicians in the world would be in the hallways at Curtis, forcing him to play extremely well to avoid embarrassment.

After six years at Curtis, Mr. Jacobs embarked on his career as a tuba player in the Indianapolis Symphony, the Pittsburgh Symphony, and 44 years in the Chicago Symphony Orchestra (CSO). Even

though he was still a superb musician, he was forced to retire after developing severe glaucoma and was no longer able to read music, no matter how much it was enlarged.

In addition to his own experience, two other things strongly influenced his teaching. First, he decided to take up a hobby, so he chose the study of medicine. (Arnold was NOT your normal person!) He realized that he had a unique opportunity to make use of his colleagues in the CSO brass section (some of the best brass players in the world) and the research facilities of the University of Chicago School of Medicine. Medical doctors study what is wrong with a patient, but Mr. Jacobs decided to learn how breathing works in healthy individuals and what happened physically when his CSO colleagues played their instruments. (Mr. Jacobs reported in a master class that doctors often sent him patients with breathing issues who were not musicians. Since he knew how breathing functioned in healthy people, Mr. Jacobs was able to help them overcome their breathing issues.)

Second, Mr. Jacobs was able to study Mr. Adolph Herseth, principal trumpet in the CSO for 53 years. Widely considered the greatest orchestral trumpeter of all time, Mr. Herseth had an incredibly natural approach to the instrument – he did things the RIGHT way! Mr. Jacobs watched Mr. Herseth play and determined what must be going on mentally to get those amazing results.

What marks Mr. Jacob's true genius was his ability to not only understand what was happening physically, but to discern the mental controls used to produce those results. He likened them to the control on an automobile – this pedal makes the car go and this pedal makes it stop. You do not need to understand auto mechanics or the laws of physics; all you need to know is how the controls work. This was the essence of his teaching philosophy.

Mr. Jacobs began teaching when he was 18 and soon realized he had great aptitude in this area. I took six lessons with him in the late 1990s; at this point, he was 82 and had been teaching for 64 years! His students traveled to Chicago from all over the world. Before his vision deteriorated, he frequently went to Washington, D.C. to give clinics to the top United States military bands.

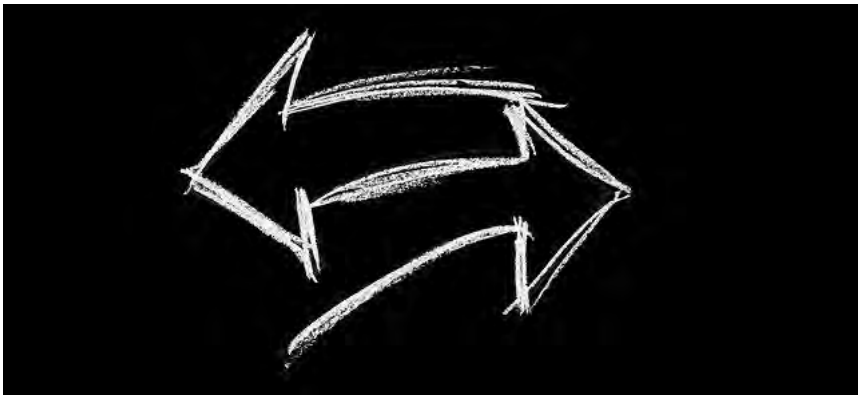
Impressive credentials! Maybe that would have been enough to convince me to believe Mr. Jacobs, but I have even better reasons to completely trust his teachings. The six lessons with him transformed my playing in so many ways, but what really sold me were the two weeks of Arnold Jacobs master classes that I attended in the summer of 1981 and 1982. I watched him work miracles with tuba players and help trumpet players improve greatly in a short time. Perhaps the most surprising thing was when he helped an accomplished piccolo flute player. She sounded great when they started, but I have NEVER heard a sound like the one she produced 20 minutes later. It was beautiful!! And from a piccolo!!

Mr. Jacobs was a phenomenal teacher; we need to pay attention to what he said.

Note: Dates and some career information is from wikipedia.org.

Chapter 6
Two Contrasting Approaches

We'll soon get into what could be some highly mechanical aspects of playing. We will lightly touch on them, but the primary focus will be on what the player should think rather than what they're doing physically.



Gerd Altmann –Pixabay

Two radically different approaches exist for teaching and playing brass instruments:

Scientific/Analytical

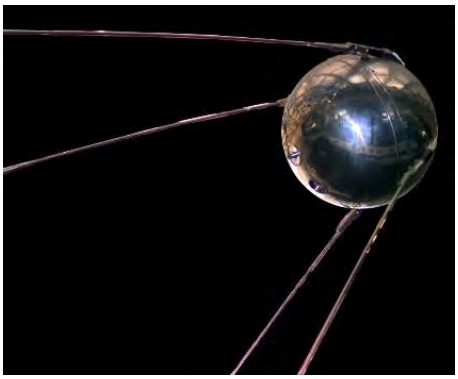
The first approach is based on the work of the great horn teacher, performer, and instrument designer Phillip Farkas. At one point during his career with the Chicago Symphony Orchestra, Mr. Farkas ran into playing issues and was granted a year's leaf of absence to work through them. He was successful and published his work as *The Art of Brass Playing*. The overall approach is a scientific, analytical approach to playing. The philosophy is that you must understand physiology and control muscle function to play well.

This is text is a marvelous reference source for anyone who has a sound foundation in pedagogy and can evaluate how much to share with a student. However, a danger exists in diagnosing problems that don't exist – experience and wisdom are required to know the difference between real and imagined issues.

This approach can lead to "paralysis by analysis" – the mind becomes so involved in controlling muscles that it "hangs," just like a computer with insufficient memory multi-tasking too many programs, leaving little room to mentally hearing the sound and the artistic/emotional effect the body is to produce.

The conscious mind tries to communicate with the body using words, even when we're thinking and not speaking. When we think words, the muscles involved in speaking microscopically twitch which means we can't think faster than we can talk. Most people speak 110-130 words per minute, roughly two words per second. (How Fast Does the Average Person Speak?)

Uncompressed wav files tend to run 10 Mb per minute, so that's how much data we are processing aurally. One Mb equals about 500 pages (How many pages of text will one megabyte hold?), so we're processing the equivalent of 5,000 pages per minute, which is 83 pages per second. (Wouldn't it be great to handle reading assignments this fast! You could read this entire text in less than 5 seconds!) With an average of 500 words per page, that's over 41,500 words per second, which is over 19,000 times faster than we can think. Words simply cannot handle the information rate required for music. (And that's assuming that the muscles know what to do with those words…)


Replica of Sputnik 1 - Public Domain

You may wonder why there was a shift toward a more scientific approach. I believe it was due to the 1957 launch of Sputnik, the first satellite in space. (I remember standing outside at night and watching it pass by – it looked like a moving star.) Our country was panicked – the Russians had beat us into space! We had to do something!!

As a result, there was a great emphasis on science throughout society. It was only a small step to analyzing how brass musicians play.

Conceptual/Natural

Your body does not know how to translate words into muscle movements; however, when you hear sounds in your mind, you communicate with your body at full speed. I believe that instructions to the muscles are embedded in the sound, including pitch, attacks, vibrato, dynamics, etc. No fine-tuning of the muscles is possible without intently listening to great musicians so you know precisely how you should sound.

Having tried both, I strongly recommend this second approach which is based on the teaching of Arnold Jacobs. Your mind needs to focus on what you want to sound like, allowing your subconscious mind to move muscles to produce those sounds without interference from your consciousness. (This is very much like *The Inner Game of Tennis* and *The Inner Game of Music*. More in Chapter 33 Psychology.) You do not need to understand anatomy or physics to play well -- just run the mental controls and let the body take care of itself. Think of it like this:

You're driving home after classes, and an animal leaps in front of your car. Do you:

A. Slam on the brakes, or

B. Move the brake pads onto the disks by increasing the pressure in the brake line (FYI, you just ran over the animal) which is accomplished by increasing pressure in the master brake cylinder through the process of mechanical linkage connected to the brake pedal located at your feet. (FYI, the dead animal is now three blocks behind you.)

I'm pretty sure you'll choose A. You operate the controls and let them deal with the machine.

The conceptual approach is a very natural way of learning based on trial and error; it is how we learned to walk, talk, and ride a bicycle. No, it's not a "collegiate" way of doing things, but it is how the mind and body are designed to interface.

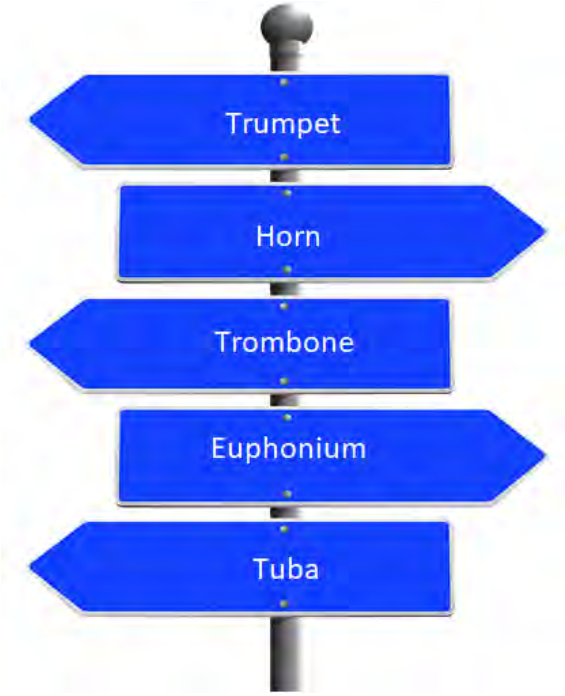
I don't think anyone can remember learning to walk or talk, and it's a good thing – if we could remember the process, we would have to think through the process in order to move. If there was a fire, we'd have to remember how to move each muscle in our legs and how to alternate them back and forth. We'd probably fall over and die in the fire. Instead, we just run!

The goal is to be a "natural," someone who is incredibly literate musically and physically ignorant, who knows what they want to sound like and has virtually no idea how they do it. You need to be a cyborg – a total integration of person and instrument (which just an extension of the mind). I imagine most of you achieved this with a bicycle – once you learned how to ride, you never thought about it again; just hop on and go!

The Teacher

As a teacher, you should strive to use the conceptual approach whenever possible. There will be times when it is necessary to be more analytical for a short period. As soon as the student begins to make progress, they need to forget the "how" and focus on the "what" – "what do I want to sound like," not "where do I put my tongue" or similar questions.

Chapter 7
Matching Students to the Proper Brass Instrument



Gerd Altmann – Pixabay

Certain physical characteristics tend to be more successful on brass instruments, but that should not be the sole basis for the decision. Musical ability and hard work frequently override potential limiting factors.

Rule: Let a student try before you make a judgment – many students overcome seemingly extreme physical disadvantages if they have the talent and the desire.

Note: I am impressed with the way the Arkadelphia, Arkansas public school system starts its beginners. Each student is given the opportunity to try woodwind, brass, and percussion. This reveals to both the teacher AND the student where they are most likely to succeed.

Let's begin with the reasons students choose to play brass. The thrill of the sound is certainly a factor as is the heroic, dramatic music typically assigned to brass instruments. Brass players tend to be outgoing; the prominence of brass parts in music undoubtedly suits their need to be noticed.

There are other, mundane reasons; perhaps a parent or relative played brass or there is an old instrument sitting in the attic that eliminates the need to purchase one. Schools frequently provide horns, euphoniums, and tubas, providing a strong incentive for students from poorer families to choose these instruments.

Television personalities, like Doc Severinsen, were a huge inspiration to generations of students. Sadly, that is no longer the case.

And some students choose brass simply because they're shiny or seem to be easier to learn than the woodwinds with all those keys!

All brass players need good ears, but it is CRITICAL that horn players have GREAT ears. Without this ability, students will miss more notes than they play correctly.

Physical size is a factor for beginners. Tuba players need to be large and strong to handle the instrument and a large lung capacity is a definite asset. Trombone players need long arms to reach 6th and 7th positions. Longer arms are a benefit to trumpeters as well, although the cornet is a superb alternative – more on that in Chapter 40 Instrument Selection.

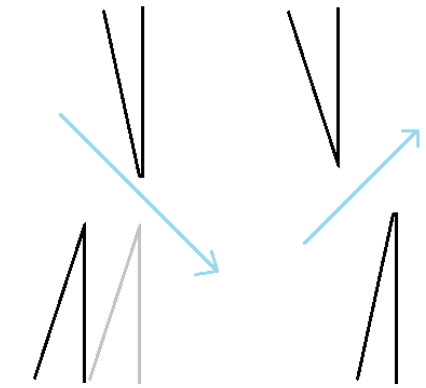
Facial factors include tooth structures, lip size, and muscle fiber. You may wonder if certain facial characteristics tend to be more successful on brass instruments. The answer is no – if nothing is bad, that's as good as it gets.

Teeth

Four strong and even front teeth are desirable, the more square and flat the better. Braces can correct this, if needed. More on braces at the end of this chapter.

An overbite is where the top teeth are in front of the lower teeth when the mouth is closed. An underbite is the opposite – the lower teeth are in front of the upper teeth.

A small overbite (¼" or less) or a small underbite (¼" or less) do not impact playing. Moving the jaw forward compensates for an overbite (as shown in gray). People with overbites are often called "downstream" players because air leaving the mouth tends to angle downwards. The angle of the leadpipe (the tubing where the mouthpieces is inserted) tends to angle downward as well.



Underbite players are often said to play "upstream" because the air coming out of the mouth tends to angle upwards and because the angle of the leadpipe is at upward angle.

Villanueva – CC0 1.0 Universal Public Domain Dedication

seelymusic.com

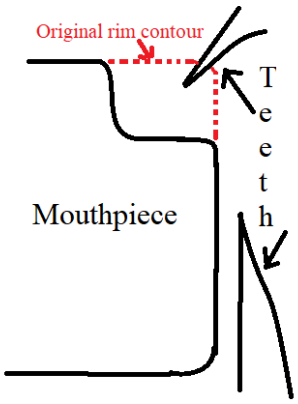
In this photo of Bud Brisbois, one of the all-time great high range trumpeters, you can see his trumpet angles up relative to his face.

Upstream players often have easier range and a somewhat coarser tone quality. As a result, you will find a higher percentage of upstream players playing jazz.

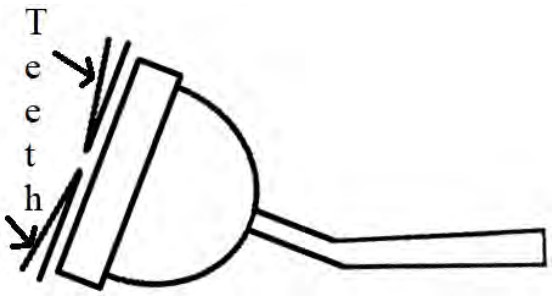
Teeth that are somewhat crooked do not cause issues, either. A dislocated incisor (one of the front center teeth) may force a player to play off center, but this is not a problem.

Other dental issues:

- The edge of any tooth protruding tends to cut the lip. A dentist may be able to help by lightly grinding off the sharp edge. [I had this done when I was in college. It took just a second and stopped my tooth from cutting my lip.]

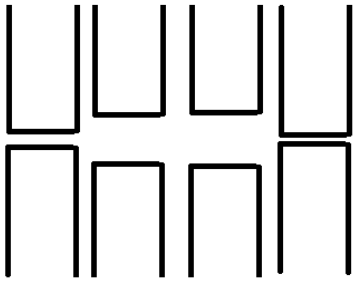


- A single front tooth sticking out may cut the lip because more pressure is placed on this small area. A mouthpiece altered by removing part of the rim can alleviate this concern. (Please forgive my artwork!)
- An overbite too large to be compensated by moving the jaw forward is not a good foundation for the mouthpiece.
- An extremely protruding jaw requires more practice; only a more dedicated student is likely to overcome this issue.

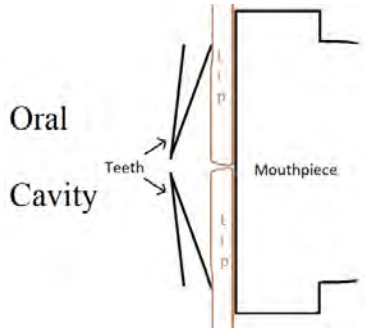


A bent mouthpiece may allow a student to keep their bell up despite teeth that are at the wrong angle.

- Very crooked teeth can cut and bruise the lips and even disturb the air flow.
- Extreme spacing of front teeth.
- Open bite – this is a bigger issue for high brass players (trumpet and horn). (You can see the gap in the center of the teeth.)



- Inward slanted teeth do not provide a good foundation for the mouthpiece.



Many dental problems can be solved by braces IF the parents can afford it. In addition to the previously described mouthpiece alterations, a wider "cushion" rim mouthpiece may help by distributing pressure over a larger area of the lips.

Facial Characteristics

Facial structure is more critical on high brass than on low brass (trombone, euphonium, tuba) because of the smaller mouthpiece and greater tension and faster lip vibrations required by the higher register. People with thin lips tend to be more successful on high brass, but it is NOT a requirement.

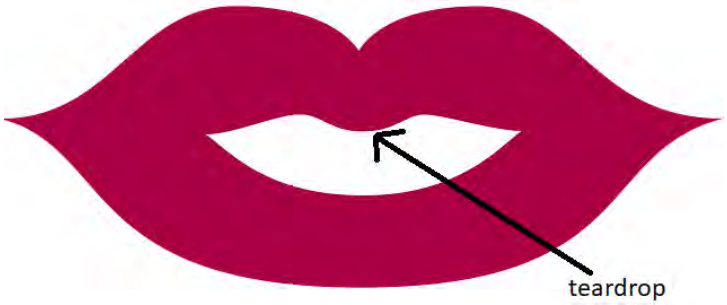
If it is hard to visually diagnose potential teeth issues, it is impossible to identify problems with the lips until the student plays the instrument. Here are issues you may encounter:

- Heavier, thicker lips, which tend to be better on low brass, but there are amazing trumpet players who also have these lips.

- A short upper lip -- you can see the gums when the student smiles. A short upper lip must stretch to cover upper teeth, often beyond a position of strength.

edited from an image by Johntex - Creative Commons Attribution 3.0 Unported

- A fleshy part of upper lip which hangs down excessively, often called a teardrop lip, can interfere with shaping the embouchure. [I have this, and it did not hurt my trumpet playing, but it made it impossible for me to play flute.]



Amanda Elizabeth – Pixabay

- Although rare, there may be a hidden flap on the upper lip that rolls into the lip aperture when the student plays. The harder they blow, the more the lip rolls and blocks the air. There is a photo of this in Fay Hanson's *Brass Playing, Mechanisms and Technic*.

- Very stiff lips cannot be determined by size – it is a quality of the muscle texture. Range is difficult, the tone is very impure, and response is slow. Quite often, air will be heard before the tone starts and it is difficult to get the note to start.

- The muscle texture of some students will require three times as much effort on high brass as their classmates.

Students with these less than ideal facial features are often more successful on low brass.

Braces

August Hattinger – Pixabay

Braces provide enormous long-term improvements in brass playing, but there are many setbacks which must be endured while they are on:

1. Cut lips – as you can see, braces have small raised points that dig into the lips. This is often painful, especially when the student first gets braces.

   FYI, the orthodontist will periodically adjust the wires on the braces, causing additional pain. Fortunately, this only lasts a day or two.

2. Immobilize lips – since braces dig into the lips, the lips have difficulty moving, reducing flexibility.

3. Reduce range – braces intensify the effects of pressure.

4. Reduce endurance – braces intensify the effects of pressure.

5. Reduce tone – braces tend to limit lip vibrations.

The initial impact of braces is huge – in addition to pain, nothing is the same about the embouchure; the student is instantly transformed into a beginner and must relearn to play. When braces come off, these issues quickly disappear, but once again it is a new embouchure and the student starts completely over. Fortunately, the recovery happens more quickly than when the braces were put on.

IMPORTANT: It never fails, students are most likely to get braces the day before contest or a big concert. DISASTER! Your first chair player can't even blow their nose! If you have a student who looks like they could use braces, talk to parents about braces so they can schedule them over Christmas break or during the summer.

Let's talk about how to go through these embouchure changes. Your student's mind is not that a beginner, but it's like they suddenly have a new set of lips that are stretched out over braces that hurt and reduce the lips' motion. Their air, tongue, and fingers are the same, but the embouchure doesn't exist.

The point about the mind is important – your student will want to play like they always have, and it won't work. This provides a wonderful opportunity for bad habits to take root. Bad News! Here's how you prevent those habits and ease into the new embouchure: review of the basics. (If some of these areas don't make sense, they soon will – we'll cover them all in the next section: Pedagogy.

1. Attitude – No problem here except the student may be demoralized while things settle in.

2. Posture – Braces have no impact.

3. Air – Obviously, getting braces doesn't affect breathing…except that it does. When the horn is on the face, everything feels weird and the tendency is to focus on the weirdness and let all good habits go. Make sure the student is breathing properly.

4. Embouchure – Be sure the student focuses on air and corners using Leak and Seal.

5. Buzzing the mouthpiece – Start with a single sustained pitch somewhere in the middle range. No sirens yet – get a good vibration going along with great air. Remember – air helps EVERYTHING!

6. When the student can produce a good sustained pitch, they can work on sirens. And not one second before that! Start with very small sirens, maybe a half step in each direction. The sirens must be smooth with constant volume. When that is mastered, increase the sirens to a whole step up and down. When that is mastered, expand to a minor 3rd, etc., etc. The final goal will be

buzzing a siren just as well as before the braces where put on.

7. When sirens are working well, it's time for a quick review of air and leak and seal to remind the student these things must be correct when playing the instrument.

8. Now it's time for the instrument – the student should immediately play the hardest thing they've ever played…

   WRONG!!!! That is a recipe for disaster and a LONG time getting used to braces. Instead…

   Have the student buzz a pitch on the mouthpiece, figure out what note that is, and have them play a long tone on the same pitch. Be sure the air is correct and that the corners are in the right place. The tone may not be great, so blame the air, not the lips. Lots of freely flowing air.

8. When the student can sustain a pitch with a decent tone, it's time for the beginner book. Pick melodies that are in the middle register and treat them as flow studies – only tongue the first note after each breath. If notes are repeated, pretend they're tied. Air, Air, AIR!

9. Now it's time for Tone, Tone, TONE! Keep that the central focus. Since this is easy music, it's a good time to ask, "If I was [insert your favorite musician's name], what would it sound like?"

10. Little by little, add the tongue back in but keep the focus on continuous air.

11. Gradually, expand the difficulty of the music until the student is back.

    Except that they won't be…the negative impact of the braces may delay some aspects of playing. It takes the time that it takes.

Reading this, you're probably wondering how many months this will take. Of course, it depends greatly on the student, but I would be surprised if it takes longer than 2-3 days for most students to be playing well, although with reduced range and endurance. When you follow this process, everything falls into place. When you take shortcuts by skipping steps, everything falls apart. It's not worth it!

Note: If the student gets braces during the school year, don't let them play in rehearsals until they have shown you that they are playing well. That is a difficult pill to swallow for students…they don't want to let the band down and they want to pull their own weight. Just remind them that this is about the long haul, not the next few days. When the braces come off, they will be a much greater asset to the band than they were before.

When the braces come off, follow the same process. It will be much faster but give it whatever time it takes.

One of my students had the bottom braces removed one week and the upper braces the following week. Before the braces came off, we discussed this process of relearning to play. Whether it was because he was unique or because only half the braces came off each week or because of following

this approach, he had virtually no problem making the transition. Taking half the braces off at a time might be something to consider.

In case you're wondering why I know all this, I had braces for four years and did everything the WRONG way, especially when they came off. I figured this out by using common sense and from helping many students deal with braces.

Note: Braces can be placed on the inside of the teeth instead of on the front. Although the primary reason for this is cosmetic, I believe it would minimize the impact on brass playing, although it might affect tonguing. I have never taught a student with braces on the inside; I'm pretty sure it's more time-intensive for the orthodontist with a correspondingly higher price tag.

How do we deal with the pain of braces? A LOT of products have been tried over the years:

1. Tough lips – This was my solution. For the first few days, I had to pull my lips off the braces after I played because they were stuck to them. Within a few days the skin next to the braces became tougher and they stopped sticking.

2. Cigarette paper – Clarinetists used to use this to protect the lower lip from the teeth.

3. Floral tape – Over the years, several students have said they used this.

4. Chamois skin – This needs to be cut to size.

5. SeaBond denture adhesive seals – This also needs to be cut to size.

6. Morgan Bumper – I've heard good reviews on this product from people I trust. However, it's not everyone's favorite.

7. Comfort Lip Shield – I don't know anything about this; it came up during my search for these other products.

Apparently Discontinued Products

1. Brace Guard –a two-part putty.

2. Brace Shield

3. Brace Relief

4. Boxer's wax – I'm not sure this is available since the invention of mouth guards.

Brace Guard
dentalkit.com

And now the BIG question…drum roll, please…WHICH ONE IS BEST???

I don't know. If I had to pick one, I'd go with the Morgan Bumper. I've had students swear by the same products that others swore at. I don't believe there is "one size fits all" answer, so the student will have to experiment to find what works for them.

Suggestions from the High Brass Methods class of 2020:

> Use dental wax to help with braces.
>
> Two votes for comfort lip shield/mouthguard.
>
> Ibuprofen helps reduce pain and soft foods. The tougher the food the more the pain. In my opinion, the more pain the teeth experience, the longer the teeth need to recover, and the longer the student will have to go through the pain. All from personal experience.

Suggestions from the High Brass Methods class of 2021:

> Cameron – I would also suggest massaging your jaw (where it hinges) a little every night. When I had braces, I felt like that helped my mouth to feel better.
>
> William – My orthodontist had a plastic cover that I put over my braces whenever I played. It was similar to a straw with a cut down the side but made with softer plastic.
>
> Alex - temporarily placing sugar-free gum works well and is easier to apply and take off.
>
> Jonathan - Use the wax that the orthodontist gives you
>
> Krystyna - Wax. I had braces when I played the flute and my braces would catch on my lips and it hurt. I found out about dental wax that can be pressed on any wires or sharp bits sticking out. It helped a lot. Other than the wax, I recommend drinking something warm before and after rehearsals. I brought chai tea from home in a thermos; it was always nice to take a sip and the pain would resolve. It helps the gums stop hurting.

Part II

Brass Pedagogy

Chapter 8
Fundamentals/Basics

Pexels – Pixabay

This bridge cannot stand without the piers beneath, which is why we're going into great depth on the basics of playing – the foundation of everything we do. In fact, it will take most of this text to discuss them properly.

Before we do that, we need the view from 10,000 feet to see the big picture. I'm going to start by saying two things that are obvious, but it is amazing how many people fail to comprehend them and put them into practice:

The fundamentals/basics of playing MUST be correct for a student to make progress.

A student MUST practice to improve.

Rule: If you do things correctly and practice, you get better.

Rule: Practice makes perfect. Perfect practice makes perfect. Most importantly, practice makes permanent, so be careful what you settle for.

Fortunately, it is quite simple to do things correctly, and even practicing is easy when the student is motivated. (There's a challenge for YOU as a band director – getting your students to want to improve on their own. If you can do this, your success is guaranteed!)

There is a corollary:

Rule: If you do things wrong, you don't play as well. The same is true when you don't practice.

Seems simple enough – teach the students the correct way to play, provide incentives for them to practice, and you're done! You can sit back and dream about all the trophies coming your way!

Sadly, it doesn't work that way. In high school biology, I learned a fundamental rule of being human:

Rule: Use it or lose it!

Since we are humans and not machines, we must maintain muscles and mental habits. Worse, we lose skills and strength twice as fast as we acquire them. Motivated, talented, intelligent students can go wrong, even when they started out doing things correctly.

> Rule: Maintaining the basics keeps us on the straight and narrow path and is the best insurance policy against picking up bad habits.

Having done things the wrong way, please trust me: it is MUCH easier to learn to play correctly and maintain than it is to do things incorrectly and have to fix them.

In summary, it is necessary to review the fundamentals daily. The best time to do this is during the warmup, which we'll talk about in Chapter 26.

Here's a summary of the warmup procedure:

1. Attitude – Chapter 9
2. Posture – Chapter 10
3. Breathing – Chapter 12
4. Embouchure – Chapter 15
5. Mouthpiece Buzzing – Chapter 16
6. Tone Studies – Chapter 17
7. Range Expansion – Chapter 24

Many people also include lip slurs (Chapter 19) and tonguing (Chapter 20).

C.A.R.E.

Four of these areas are critical to the success of your students:

C – Concept of tone quality
A – Air
R – Rhythm
E – Embouchure

Not necessarily in this order, but I wanted a good acronym!

Be certain you watch this video by Dr. Wes Branstine on the Breath Impulse Method, the secret to a highly successful band program!

Of course, there's the "P" word – "practice," which too many students seem to think is a dirty word or something of doubtful value. Without practice, progress is slow at best. If you want to be ordinary, that's fine, but if you want to be extraordinary, you must practice! One of my favorite bloggers, James Clear (jamesclear.com), quoted basketball star Damian Lillard on hard work, "If you want to look good in front of thousands, you have to outwork thousands in front of nobody." Sounds like practice to me!!

Time to dive into the fundamentals in detail.

Damian Lillard
Frenchieinportland
CCA-Share Alike 4.0 International

Chapter 9
Attitude

Attitude is the first step in the warmup.

It only takes a second to get in the right frame of mind, but this should happen before anything else. Remember these two rules:

> Rule: People play instruments; it is their MINDS that tell the body what to do and how to do it. Therefore, how they THINK is the key to their success.

> Rule: You teach people how to think; you do not teach the trumpet/horn. You must convince your students to do what you have learned is the best way.

So, what is "the attitude"? It has three parts:

1. The trumpet/horn/trombone/whatever is the BEST instrument!

2. I'm not afraid of anything, not the demands of the music, not the conductor, and not the audience because I have a secret weapon – practice! If something isn't going well, I'll practice it until it does.

3. No one will die if I make a mistake. This is not brain surgery!

I took attitude for granted – all trumpet players were confident and undoubtedly had dreams of being a superhero, right? Horn players had to be the same – after all, you must be a daredevil to navigate the incredibly close partials of the horn! There was no reason to talk about this in high brass methods.

During some of my recruiting trips to high schools in the 1990s, I heard experienced band directors complaining about their students: "This senior class of trumpets is just weak. They won't play out. My sophomore trumpets are going to be good, but these seniors just aren't cutting it."

I was in shock! I didn't know that some students are just trumpet "holders." Inconceivable! Didn't they know they're supposed to play like superheroes??? Why weren't their directors telling them??? That's when I decided I needed to include attitude in this course.

And, I created T-Man and T-Lady in the mold of Superman. Nothing can hurt him (except kryptonite), so nothing can hurt us – there is nothing to fear. Here's the logo (which also works for trombone and tuba) plus one for horn and another for euphonium:

clipart-library.com

Your trumpet and horn players need to play like they're heroes. Who has the melody in marching band most of the time?? The trumpets. If the melody is "wimpy," the band does not sound good, and there go your contest ratings. What is more impressive than a horn countermelody soaring over the band?? Your horn players must be confident, too!

Let's switch gears for a minute and consider producing a movie. You have a great story requiring a hero. When you're thinking about who to cast in the lead role, you're thinking of the movies you've seen with great heroes and who played those parts. And, that's who you want – someone great at playing the hero.

Now let's think like a composer – you've written a heroic melody and a sad melody; which brass instruments do you want to play them? Hector Berlioz, in his *Treatise on Instrumentation* (1882) wrote:

> The quality of tone of the trumpet is noble and brilliant; it comports with warlike ideas, with cries of fury and of vengeance, as with songs of triumph; it lends itself to the expression of all energetic, lofty, and grand sentiments, and to the majority of tragic accents. It may even figure in a jocund [happy] piece, provided the joy assume a character of impulse or of pomp and grandeur.

Here's what Berlioz said about the horn:

> The horn is a noble and melancholy instrument, notwithstanding those jocund hunting flourishes so often quoted.

So, the trumpet plays the heroic melody and the horn gets the sad one. (Yes, that's typecasting, but it's usually what happens. I especially love it when the trumpet gets to play something haunting and lyrical; it is SO uncharacteristic of the instrument!)

You need confident, fearless musicians throughout your band. Where does this confidence or fear come from? YOU! The director sets the band's attitude – if you get after people when they make mistakes, they will be afraid to play. Your band's focus is on avoiding mistakes, which makes them more likely to happen. (We'll discuss this in Chapter 33 Psychology.)

Seriously, is it really life and death when someone plays a wrong note? Is the music totally ruined? All that happens is that the audience's eardrums vibrate from the wrong pitch. Is that REALLY going to make a difference in 10 years? I don't think so. (I must confess to playing some "clunkers" over the years that I'd like to take back, but they have had NO lasting impact on my life.)

Your students do not need to be afraid of the music they're playing, of making mistakes, or of your temper when they do something wrong. You want a band that "goes for it," trying to see how close they can get to perfection. Brag on your students when they get something right and encourage them to be aggressively confidant. And let's not forget our secret weapon: *practice*! If something isn't working, practice/rehearse until it does.

> You must be your own cheerleader – any time you do something well, be honest and compliment yourself. Recognize and reward success! The more you do this, the easier it is to praise your students!

It's important to remember that the purpose of music is communicating emotions, and the purpose of performing is sharing emotions with the audience. Perfection is NOT the goal! I love actor Michael J. Fox's statement:

> "I am careful not to confuse excellence with perfection. Excellence I can reach for; perfection is God's business."

Be sure your students express emotions in the music and themselves – they will sound great and make fewer mistakes because they are wrapped up in the moment. Encourage them to release their emotions through their instruments, so important in today's troubled times.

I must tell you, there is a trumpet attitude we do NOT want: "I play better than you." Some trumpeters think they're better than everyone else, and they're not shy about telling you. It is my belief that these boastful musicians are insecure; they know they're not that great, so they try to inflate their importance by putting others down. I have met MANY of the world's greatest trumpet players – NONE of them have any ego problems.

There is a lot of pressure on trumpeters — the instrument is highly directional; everyone in the audience can tell who played well or who played horribly. It's like having a neon arrow above your head that starts blinking every time you play. Trumpet players must be confident, but they don't need to be cocky; they should express their confidence in their playing, not in their talking!

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Yes, horn players are under a huge amount of pressure, but because their bells don't face the audience, it is harder to pinpoint which one of them played well or poorly.

Chapter 10
Posture

Great posture is the second step in warming up.

There are three important reasons to make sure your students do this correctly:

1. Breathing – things move better with excellent posture. Bad posture limits motion and hurts breathing. As we'll discuss in the next chapter, breathing critically impacts all aspects of playing.

2. Appearance – Most people cannot hear what trained musicians hear, but everyone knows if the band looks good. If your audience is impressed with how the band looks, they assume the band sounds equally good.

   Good posture is attractive – pay attention the next time someone catches your eye, the odds are it is because that person has great posture!

3. The way you hold your body influences your brain. Stand up at attention and notice how sharp your mind is and how aware you are of what's going on around you. Now, slouch and notice the decrease in both areas.

   You may have heard of psychosomatic illness, where a person thinks they're ill and the body exhibits signs of that illness. Somatopsychic is the mirror image, the body influencing the mind.

   What part of the body plays the instrument? The mind…because it controls the rest of the body. If your mind is in a slump because of poor posture, you will not play well. And the reverse is true – great posture puts your mind on high alert so you can play your best.

People tend to make posture complex: put your shoulders back, tuck your hips under, etc., etc. Thinking in this way keeps you from focusing on difficult music or intricate marching moves. There's a simpler way: simply stand or sit as tall as possible.

When you do this, everything happens that is supposed to happen (shoulders, hips, etc.), but it doesn't require any thought. When you can choose between a simple way of doing things or a complex way, choose simple! It leaves more of your brainpower to focus on sounding great and expressing music.

Arnold Jacobs taught that the best posture for breathing is standing and the worst posture is laying on your back because it limits your body's ability to move. Sitting is in between; "standing" from the hips up while you're seated greatly reduce the loss of body motion.

Rule: Stand or sit as tall as possible while you're playing.

If you want to slouch while you're counting measures of rest, it's ok, but NOT while you're playing! When you're seated, many people advocate keeping your back away from the chair. I think it's ok for your back to touch the chair, but you need to be holding yourself up, not the chair. Your knees need to be lower than your hips, and your feet can be crossed, if it doesn't detract from your concentration.

Big band lead trumpeters often say to stand with the feet apart, as if you were lifting weights. I'm sure there is some truth to that, but the feet should not be too far apart.

One word of caution – on bigger instruments (i.e., horns and low brass), be sure your posture is correct and bring the horn to you. Too often, students move to meet the instrument, introducing tension in their body and reducing breath capacity.

MANY trumpeters point their bell into the stand, muffling their tone and decreasing their volume, not a good idea when you need to be heard! It's like pointing a flashlight at the audience. If you point it at the stand, the audience will see a glow around the edges, but it you point it straight at them, they'll see it much better!

FYI, playing into the stand is a good idea when you cannot safely play as soft as the conductor wants. (Another easy fix is to reduce the number of players in soft passages.)

As a teacher and as a performer, require your students and yourself to *always* have great posture. Don't let them play a single note with bad posture! Joe Christensen, who taught my undergraduate brass pedagogy class, said that playing an instrument is a privilege, not a right. If students don't do exactly what you want, do not let them play. Very quickly, they'll realize they must do what you want so they can do what they want.

As a concert or contest gets close, it is tempting to let things like posture slide. This is a mistake – you may "win the battle and lose the war." Students who do things correctly ALWAYS play better than those who don't! Do not allow a short-term gain to create a long-term loss!

One more thing…you cannot teach good posture once and assume students will do it right from that point forward. You must constantly watch and insist things are done correctly. In time, it will become a habit and students will start correcting each other. (That's when you have it made!)

Rule: Maintain your standards at all times!

Chapter 11
The Mind/Body Interface

John Hain –Pixabay

Before we move on to the embouchure, let's consider the proper relationship between the mind and the body. Much of this information is from Arnold Jacobs and even more comes from W. Timothy Gallwey's *The Inner Game of Tennis*. (See Chapter 33 Psychology.)

There are many ways to consider the mind, but we'll start with the conscious and the subconscious. The proper role of the conscious mind is to set a goal (walk to the store, play a musical passage in a certain way, etc.); the subconscious mind moves muscles to make the goal happen.

> We learn how to control our body when we are very small children. I watched my first son when he was a few months old standing in a doorway, staring at his feet, trying to figure out how to take a step without falling. On another occasion, I saw my second son staring at his left hand, opening and closing his fingers over and over and over. I'm sure he was thinking, "Oh, that's how those things work!"

I doubt any of us remember learning to walk, which is a good thing; if we were able to remember, we would be forced to think how to walk. But, that's not what we do — we decide where to go and the subconscious moves our muscles without any conscious guidance.

Most people remember learning to ride a bicycle. Before you started, you watched kids in the neighborhood riding their bikes and you knew exactly what you wanted to do, but you didn't know how to actually do it. You didn't prepare by reading a how-to book on bike riding; you got on the bike with the sole desire of staying upright, your subconscious frantically figuring out how to avoid falling. Little by little, it worked it out and you got the "hang" or the "knack" of riding a bicycle. This is the natural and proper way the brain and body interface: you decide what to do and give the subconscious time to make it happen.

It's trial and error learning, and it's not a "collegiate" way of thinking. I doubt if many professors allow you to keep guessing until you get the correct answer, but those are academic subjects. Learning to control the body requires trial and error and then forgetting all the errors, retaining only what works.

Playing an instrument is more complicated than riding a bicycle, so we feel the need to understand all the steps required in playing. We're a lot older when we join the band and have been taught to think how things work mechanically and about processes and logical steps. So, we approach an instrument in the same way. Even worse, our teachers often focus on the mechanics of playing.

Trial and ERROR?? Because of peer pressure and parent/teacher expectations, we're undoubtedly afraid of failure, so we often hesitate to take the natural approach. And when everyone in the class can do it but you, it's even worse! No one wants to fail in front of their peers. As their teacher, you must create an environment where it's okay to "fail" so that the subconscious can do its job.

The goal in mastering an instrument is to become a cyborg – part human, part machine. The instrument is part of you, not something you manipulate with your body. That may sound strange, but you've already experienced it – shortly after you learn to ride a bike, you stop thinking about it. You just hop on the bike and ride to your friend's house. You and the bike move together as one. This is how we should play an instrument.

Think about the great musicians you have heard, especially in live concerts. Did you feel they were pushing buttons and moving their tongues? Or did you experience emotion coming from inside them and being released as sound? Artistry can only be achieved when the body is forgotten.

Still sound strange? Think about this – most of our lives we completely ignore our bodies and take them for granted. I'm sitting in a chair, typing away – not once have I thought about how to sit or move my fingers. You're reading this as a book or on your cell phone or on your computer. Have you been telling your body how to turn pages? Scroll up or down? Didn't think so.

It's like the genie in the story of Aladdin – when he rubs the lamp, the genie appears and says, "Your wish is my command." We think about something and our subconscious makes it happen. Let it be like magic – we don't HAVE to know what's happening to play well! In fact, the exact opposite happens – what we know often interferes with the results.

> **Note:** This isn't not true if you're building a robot that plays an instrument. The programmers must know EVERY SINGLE THING that must happen for this to work. Check out the Toyota Trumpet Robot on Youtube.

Finally, consider this…we trust our body implicitly in everything we do…except play an instrument. Why is our subconscious suddenly so stupid and incompetent when we pick up an instrument that we must tell the body precisely how to do everything?? It doesn't make sense!

Rule: Trust your body to do what you desire…but be patient while it figures it out!

FYI, over 30 years ago I attended a lecture on brain development. Two things stuck with me:

1. Young children cannot do certain things because their brain has not developed enough to handle the task. For example, babies normally do not walk before the age of nine months, and they may be as old as sixteen months before they walk.

   This has nothing to do specifically with brass playing, but it does point out the importance of the brain in using muscles and the wide time range of ability development. Ultimately, the people who learn to walk early do not walk any better than those who take longer.

2. The brain continues to develop until a person is in their thirties; the final brain development achieves the fine control of facial muscles.

   Does that explain why young people don't play well? I don't think that's it – there are child prodigies that play brass instruments quite well even before their teenage years.

   Still, it makes you wonder…maybe child prodigies learned to walk at nine months, maybe they pick up everything more quickly. Perhaps the rest of us need more time, but we can end up just as good!

Put It In Perspective

Bill Adam, trumpet professor at Indiana University from 1946 to 1988, said, "Trumpet playing is 90% mental concentration, 9% air, and everything else (horns, mouthpieces, tongue arch, pivots, etc.) constitutes less than 1% of trumpet playing."

More on Bill Adam at wikipedia.org

Chapter 12
Breathing

Proper breathing is the third part of the warmup.

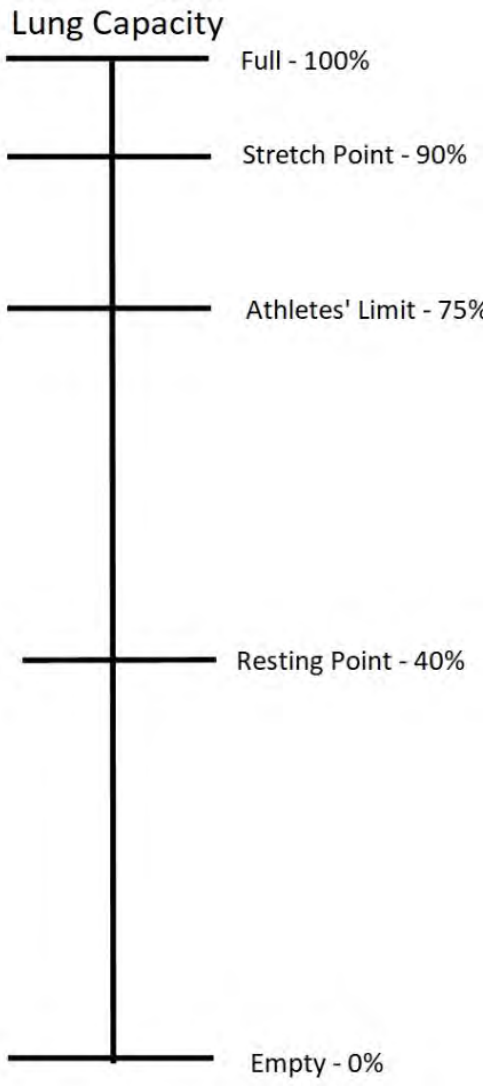
Other than a concept of great tone quality (Chapter 17), breathing is the single most important aspect of brass playing. After all, they're wind instruments!

Teachers need to understand the importance of proper breathing and the basic mechanics involved. With this knowledge, you can adapt your teaching to individual students. Without it, there may be students you cannot help.

Rule: Breathing impacts EVERYTHING for better or worse.

Lung Capacity

Let's look at the breathing "gas gauge" –



This drawing represents your total vital capacity, from completely full to completely empty. (FYI, air in the lungs is like water in a sponge – you can never get all of it out, unless you have a punctured lung, which is VERY painful!)

The resting point is 40% of vital capacity and is where you are as you read this. The body takes in a little air and then exhales it; there is very little motion because it doesn't take much air just to stay alive.

As you inhale, you will reach the 75% mark. Athletes normally breathe to this point — large amounts of air can be taken in rapid succession, which is very helpful when you're working hard. But, it's NOT enough for brass playing. We need to go to the 90%-mark, aka, the stretch point.

Students are frequently confused by this term. They feel motion in their ribs, and they think they are stretching. This is incorrect.

You reach the stretch point when you breathe in as much as possible. As you near completely full, your eyes begin to bug out and you start to shake. This is the stretch point, and it is not comfortable. Thank goodness, we don't need to go to the stretch point – we stop just short of it.

How We Breathe

Mr. Jacobs described inhalation as follows:

The ribs rotate upward and outward like bucket handles, enlarging the rib cage and decreasing air pressure in the lungs. Since nature abhors a vacuum, air rushes into the lungs through the nose or mouth to equalize the air pressure.

The diaphragm bisects the torso at the base of the rib cage. At rest, it shaped like a dome; when activated it pulls down, becoming flatter. Since it is attached to the bottom of the lungs, it pulls them down at the same time, further decreasing air pressure in the lungs.

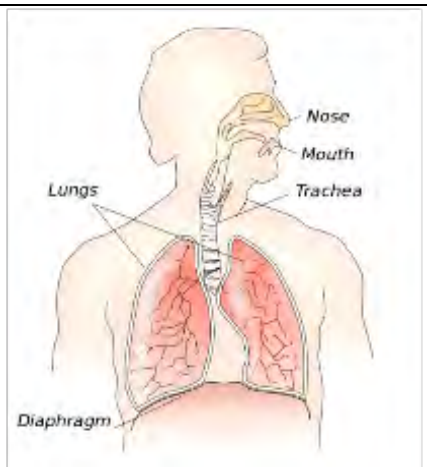
The diaphragm is unusual in two ways:

It has no nerves; if someone were to cut your diaphragm, you wouldn't feel a thing.

Most muscles are in opposing pairs, like biceps and triceps. There is no "anti-diaphragm" to push it back into its dome shape.

As the diaphragm descends, it pushes down on the internal organs in the bottom half of the torso (stomach, liver, spleen, and intestines). These organs have no place to go but out, primarily to the front; there is also some expansion in the back around the kidney area.

When blowing, the muscles in the lower abdomen pull inward, forcing the organs back in place and returning the diaphragm to its original position. Technically speaking, it is NOT possible to blow from the diaphragm – all it can do is inhale.



Teresa Knott, wikimedia.org – CC BY-SA

Variations in Capacity

The range of lung capacity in adult varies from 1.5 to 7+ liters.

Breath capacity increases until the age of 18; from that point forward, there is a gradual decrease in capacity for the rest of a person's life. This greatly impacts trumpeters; by the time they are 40 years old, the decrease is so significant that it becomes hard to play, causing many people to quit…UNLESS they are breathing properly. These people can play at least another 50 years.

Males tend to have larger lung capacities.

Body types with longer torsos have larger lung capacities.

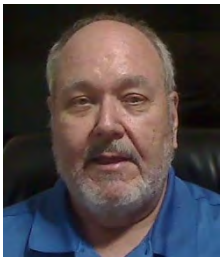
Being overweight reduces body motion, reducing lung capacity by as much as 10%.

Smoking reduces lung function and lung capacity.

The only advantage for a large lung capacity is the ability to play longer phrases. People with smaller capacity simply need to breathe more often.

This does NOT hurt the music! I have heard GREAT tuba players, who use air four times faster than trumpeters. Not once was I "offended" by their need to breathe more often!

How to Inhale for Brass Playing



The first goal of breathing is inhaling large amounts of air without friction; the second goal is staying in the top half of the breath (resting point to stretch point). Why? Musicianship, endurance, and career longevity. (Breathing – HMB video, part 1 and part 2)

Musicianship – when you take a large breath, you can play just about anything – big crescendos, long phrases, large intervals, tongued passages that really project, high notes, beautiful sound – and with endurance.

A simple analogy is rich vs. poor. When you're rich, you fly to Paris for lunch. When you're poor, you skip lunch so you can afford gas to get to school. When you're full of air, you can pretty much do whatever you wish; when you don't have enough air, the subconsciously automatically scales back on the air to ensure you reach the end of the phrase. Tone is the first thing to suffer, but increased tension from running out of air causes many additional problems. (See the second list under "Squeezing" below.)

You can also think of a full breath as helping your playing the same way a baseball batter uses a full swing to knock the ball out of the park. Speed and momentum accomplish what brute muscle strength cannot.

And what do you do when you run out of air? Take another big breath – there's always more air!

> **Note:** People OFTEN rush tempos at the end of phrases to avoid running out of air. I've done it, and I bet you have, too. It is NOT musical!

Endurance – When you breathe fully, most of the work is done inhaling, allowing you to be more relaxed while you play, increasing your endurance. It is the most efficient use of our energy. More in Chapter 28 Endurance.

Longevity – Your playing career is lengthened indefinitely. Lung capacity decreases with age. (See the sidebar "Variations in Capacity.") By the time someone reaches their 40s, the decrease is significant enough that playing trumpet is much more difficult. Without a change in their approach to breathing, many trumpeters give up playing. Considering that some trumpeters continue to play well in their 90s, this is a shame.

What does "without friction" mean? Restriction during inhalation slows the rate of air coming into the body and causes noise, probably from a tight throat or a high tongue position. While it's

Top Three Breathing Gurus

- Arnold Jacobs, tuba, THE expert because of his encyclopedic knowledge of breathing and over six decades teaching the finest musicians in the world.
- Pat Sheridan, tuba.
- Sam Pilafian, tuba.

Sheridan and Pilafian studied with Jacobs and co-authored *The Breathing Gym*.

Notice anything in common? They're ALL tuba players! Because if you don't breathe properly playing tuba, you die…plain and simple. You can breathe badly and sort of play trumpet, but not the tuba! It's no wonder they're the experts.

easy to keep your tongue low, I've always had a hard time consciously keeping my throat relaxed. Fortunately, we do NOT need to think about either one. Breathing in quietly takes care of both without conscious awareness while allowing the air to move rapidly.

The Importance of a Full Breath

The most efficient part of your breath is the top part, from the stretch point to the resting point. This is because the bulk of the work is done INHALING, so you don't have to work as hard BLOWING. You could say it's the lazy way…you work hard for half a second to inhale and then you take it easy for the next 15 seconds. Sounds lazy to me! On the other hand, if you take it easy inhaling, you pay for it almost the entire time you're blowing. Too much work!

A big, full breath wants to come out, but a small breath often means forcing as you run out of air.

Rule: When you play, ALWAYS start with a full breath.

Breathe again as you near the resting point. Exactly when you do this will be determined by the phrasing of the music. Occasionally, you will need to play past the resting point and into the bottom part of the breath. This doesn't hurt a thing but do it only when necessary. In this way you maximize your endurance.

Much repetition is necessary to strengthen breathing muscles and establish new habits. Large breaths are somewhat uncomfortable at first because the intercostal muscles (between the ribs) need to develop; unless you are a runner, you are not used to expanding your rib cage this far.

The Cost of Air

Loud playing, low and high notes, slurs, and large intervals are expensive – they take a great deal of air:

The louder you play, the more air you use.

The notes that cost the most air, surprisingly, are low notes. Play a G below the staff as loud as possible and see how long you can hold it. Then try the same thing with the G at the top of the staff. You can probably hold the higher note at least twice as long as the lower pitch.

Playing wide intervals is much easier when you use a lot of air. This is particularly true with ascending intervals, and even more so when the notes are slurred.

In time (six months or more), you will take large, full breaths without even thinking. When you see someone who doesn't take a full breath, you will wonder why they don't breathe properly — it's so much easier to play the right way!

Why don't people always take full breaths? Because we're "couch potatoes" at heart – all of us struggle against laziness!

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Breathe Like the Pros!

Professional brass players use large quantities of air and is an important reason why they play so well. It is vital that young brass players do the same thing.

Baseball provides a great analogy – EVERYONE at bat in baseball stands with the same basic posture because it has proven to give the best chance of hitting a home run. Even little league players stand like the professionals. Your beginning

students need to breathe like the pros – large, quiet breaths. If you start them correctly and insist that they always breathe properly, you will end up with a KILLER high school band! If you don't do this, your band will sound like every other band. The choice is up to YOU!

Teaching Breathing

Many methods exist for teaching breathing, and most require a certain degree of conscious control of the breathing process. Breathing correctly is incredibly simple, but it can be made difficult and complicated. We're not going to do that!

Rule: ALWAYS choose the simple way of doing things!

Before we go on, remember that the best posture is standing, and the worst is laying down. When seated, "stand" from the hips up. (Chapter 10) Because posture affects the size of the breath, it is best to practice sitting or standing to match your performance situation, so you practice with the amount of air you'll have in the concert.

Let's start with inhaling. You must be quite good at this…if you weren't, you'd be dead! But breathing to stay alive is not the same as breathing to play a brass instrument. The only difference is the quantity of air required. (Well, that's not *quite* true…when we're not playing an instrument, it takes us about the same amount of time to inhale and exhale. When we play an instrument, we inhale quickly and exhale for considerably longer time periods. This is NOT how we normally breathe and can present a challenge in playing long passages.)

To breathe properly, inhale as quietly as possible; your ribs and diaphragm move correctly without any conscious control. (Seriously, do you EVER think about breathing when you're NOT holding your instrument??? It is NOT necessary for us to complicate things by actively trying to run our body.)

Here are several mental images to help:

1. Imagine a gentle summer breeze blowing through the trees and imitate that sound as you inhale.

2. Pretend to yawn through slightly opened lips, as if you don't want anyone to catch you yawning.

3. Think about "breathing low" –

   Breathe low in the body. It's not true, but psychologically it helps to imagine the breath going to the bottom of the abdomen. This aids relaxation and helps move large amounts of air.

Myth Dispelled

The motivation for our bodies breath is exhaling carbon dioxide (CO_2), not inhaling oxygen (O_2).

This explains why you can be full of air and feel like you're suffocating. Oboe players deal with this constantly because the oboe flow rate is so slow (5 liters/minute), but it can also be a problem for trumpeters in the high range, especially when playing piccolo trumpet.

The only solution is to exhale, getting rid of the CO_2 and then breathe again. If you can't find a place to exhale, add slurs to the music you're playing; the air is continuous instead of being interrupted by the tongue which slows the effective flow rate.

Breathe low in pitch. When you tell a small child to take a big breath, they inhale noisily, confusing volume of sound with volume of air. Try it yourself – a noisy breath is rather high in pitch. When you inhale with a lower pitch, you open internally to drop the pitch. FYI, people with higher voices tend to inhale at a higher pitch; my theory is that they're used to hearing higher pitches, so they tend to inhale with a higher pitch. Telling them to inhale at a low pitch quickly solves this issue.

Listen to the sound of your breath. As you near the stretch point, the pitch of the breath drops due to the natural ritard in the inhalation as you fill up. This drop in pitch is an important clue that you are breathing properly.

Note: The sound of a single person inhaling should be almost unnoticeable, but when your band breathes correctly, you need to hear the inhalation! If you don't hear it, stop! Insist they do it correctly EVERY time. It won't take long before it becomes a habit, and your band will sound great!!

Rule: To inhale correctly, breathe in as quietly as possible, all the way to the stretch point.

Too often people drop their jaw as far as possible to help take a big breath. Ironically, the exact opposite happens – dropping the jaw excessively closes the throat, slowing the airflow. It is better to breathe through partially close lips; the throat instinctively opens to help air move more easily.

Guppy Breathing. In "guppy breathing," the mouthpiece stays in place on the top lip while the player drops the jaw to open the mouth, moving the lower lip out of the way. Not only does this tend to tighten the throat, it creates the potential for the lower lip to end up in the wrong place at the end of the breath.

What Happens During Sleep

Sleep causes us to forget where the 90% mark is, so we need to re-learn the size of our lung capacity every day. In fact, it's a good idea to remind ourselves even after a nap.

The correct way to breathe while playing is to leave the jaw in place. Stretch the corners back and breathe through them. At the end of the breath, the corners fly back into place as if they never moved. We'll discuss this process in Chapter 15 Embouchure as "leak and seal."

Back to our "keep it simple" philosophy – all you need to do is monitor the sound of the breath during inhalation. Get the correct sound and the rest takes care of itself, leaving your mind free to focus on that crazy 32nd note run in front of you!

Rule: The way you inhale in sets the way you blow!

If you breathe in with tension, you blow out with tension. Relaxed inhalation encourages relaxed blowing, producing a great sound that projects! It also helps with intonation, endurance, range, and technique.

Try the following:

1. Inhale slowly and exhale slowly.
2. Inhale slowly and exhale fast.

3. Inhale quickly and exhale slowly.
4. Inhale quickly and exhale fast.

I'm sure you found that numbers 1 and 4 were much easier to do than the other two. Match the speed of your inhalation with the speed of the air you need to blow. (In long, lyrical passages we sometimes we must breathe like number 3 and overcome the body's desire to exhale quickly.)

While inhaling affects blowing, blowing should NOT affect inhaling. When you breathe during long passages, the blowing muscles need to be completely relaxed. If they're not, they will interfere with the size of the breath, reducing the quantity of air taken in and introducing tension which affects tone, endurance, range, technique, and everything else.

How to Blow – Blowing vs. Squeezing

Many years ago, Tom Stein was the guest tuba soloist at the Henderson band camp. At one point, we discussed range; I've never forgotten his comment that trumpeters stiffen against the resistance they encounter in the upper range. He hit the nail on the head! Instead of dealing with the resistance in the instrument, most trumpeters internalize the struggle, fighting themselves. How do you do that? It's all too simple: the blowing muscles fight the inhaling muscles.

We're going to borrow two terms from Edward Kleinhammer's *The Art of Trombone Playing*:

- Blowing – inhaling and blowing muscles take turns and do NOT engage at the same time.
- Squeezing – inhaling and exhaling muscles fight each other by engaging at the same time.

Blowing enhances relaxation:

1. The throat stays open, producing a better tone.
2. Since you are not working harder than necessary, more strength is available, opening the possibility of increased range.
3. Endurance increases for the same reason.
4. Tension in the core of the body radiates out to the extremities, slowing your fingers and tongue. Relaxed breathing allows better muscle coordination resulting in better technique and articulation.

Bonus: deep breathing encourages calmness, helping with nervousness.

Squeezing is like stepping on the gas and the brake of your car at the same time, producing unneeded tension, resulting in:

Myth Dispelled

There is a rumor that Mr. Jacobs had only one lung. This was not true; he had two lungs, but due to health issues they were reduced to the effective capacity of a single lung.

Now, how do you play TUBA in the CSO with only half of your capacity??

Mr. Jacobs did not come out and say it, but I believed he went past both the stretch point and the resting point. That must have been UNCOMORTABLE, but he did it anyway.

1. Reduced range.
2. Reduced endurance. (Bad gas mileage!)
3. Reduced coordination.
4. Distortion of tone.
5. Brighter tone.
6. Smaller sound.

Blow from the lips, not the body!

Pandanna Imagen – Pixabay

7. Sharper pitch. (Students may compensate by pulling the tuning slide out too far, creating a vicious circle. See "Vicious Circle" under "Tuning Slide in Chapter 31 Intonation.)
8. Attacks "sizzle" or "crackle" in the upper part of the middle range (around the top of the staff for trumpeters)

Rule: Either inhale OR blow; NEVER do both at the same time!

Since squeezing is primarily a problem in the upper range, we'll discuss it more in Chapter 24 Upper Range. For now, I'll tell you that leak and seal is the best way to prevent squeezing.

When to Take the Next Breath

Start with a full breath and begin playing. When you get close to the resting point, take another breath at a musically appropriate time. It can be a little before the resting point or a little after. The important thing is to not go much past the resting point because you begin fighting your own body. I'll prove it:

Take a breath to the stretch point, hold it for 5 seconds. Feel that pressure in your body? The air WANTS to come out and it WILL come out! The only reason it's staying inside is because you are holding it in. Now relax. What does the air do? It comes out!

Let's do the opposite. Take a small breath and then push out as much air as possible – it's not going to be fun. When you're as empty as you can get, hold for 5 seconds, and then relax. What happens? The air comes in!

Notice two things at the bottom of the breath:

- It gets harder and harder to get the air out. You are working AGAINST yourself once you go past the resting point.

Myth Dispelled

Mr. Jacobs constantly made the point that the shoulders must be allowed to move when taking large breaths. You've probably heard, "Don't raise your shoulders when you breathe."

There is, however, a difference in the shoulders coming up as a result of breathing vs. shrugging or hunching shoulders, which can be done without breathing.

Some people shrug their shoulders when they breathe…and they shouldn't. It does NOT help their breathing. The statement needs to be, "Don't shrug your shoulders."

- If you do a REALLY good job of pushing all the air out, your body locks up; it can become DIFFICULT to breathe again. You do NOT want to use this part of your vital capacity!!

The idea is to stay between the stretch point (90%) and the resting point (40%), or "the top half of the breath." When using the top half, the bulk of the work is done during inhalation, not during playing.

Concentrate on taking large breaths in all your playing: band, jazz, solo playing, and especially in your practice sessions. During every rehearsal you take hundreds of breaths, giving you hundreds of opportunities to develop correct breathing.

Timeout. When you are first learning to breathe this way, you need to use timeouts in your practice sessions: when it's time to breathe, pause the music for as long as needed to take a slow, FULL breath. As soon as you've inhaled, start the music again. Do NOT allow yourself to take less than a FULL breath. In time, this becomes a habit and the breath speeds up without losing the fullness. Once this happens, you no longer need the time outs.

Breathing from the Diaphragm

Let's go back to breathing from the diaphragm. Musicians frequently argue whether it is more important to breath from the diaphragm or the chest. Both sides of the argument are wrong:

- Rib motion accounts for 55-60% of vital capacity.
- The motion of the diaphragm provides 40-45% of vital capacity.

When you get your paycheck, do you want 40% or 60%? If you're like me, you want 100%! To reach your true potential, it is necessary to use 100 percent of your lung capacity.

Test for All Ages

How can you know if you are using your full capacity? Thanks to Arnold Jacobs, there is an easy way to find out:

Inhale and exhale fully three times, pausing only for about a second between breaths. If you are breathing properly you will experience the beginnings of hyperventilation: slight dizziness and the lights seeming to dim.

If you don't hyperventilate, don't pat yourself on the back for being in such great physical shape. It means that you didn't take big enough breaths! Try it again but inhale much more fully. These are the size breaths you need to play your best.

If you remember the sidebar at the beginning of this chapter "Variations in Capacity," you may wonder if this test works for everyone and at all ages. The answer is YES, it works for EVERYONE!

But, what about all those people who focus on breathing from the diaphragm? They have you lay on the ground, put books on your stomach, and push the books up and down. They tell you that babies breathe from the diaphragm when they sleep.

I bet there are NO tuba players who only breathe from the diaphragm. What is the relationship between a baby sleeping and a middle school student playing a brass instrument? I'm sorry if I offend anyone, but instruction regarding the diaphragm is unnecessary and makes breathing correctly more difficult by ignoring rib motion.

This is my explanation for the emphasis on diaphragm breathing: when people first began writing books on playing wind instruments, the focus was on breathing from the ribs; the diaphragm was ignored. When people realized this was a mistake, they taught breathing from the diaphragm IN ADDITION to breathing from the ribs. Since everyone was already breathing from the ribs, it wasn't necessary to talk about it; eventually, all people heard about was the diaphragm and the ribs were forgotten.

In other words, instead of adding the diaphragm to make complete use of the lungs, we ended up forgetting the ribs.

Facts About Flow Rates

Q: Who takes the bigger breath? Tuba or trumpet?

A: Inhalation is the same for all brass players, so the tuba player and the trumpeter should take the same size breath. Unfortunately, most trumpeters don't take a full breath, but if they pretend they're playing tuba, they take a HUGE breath! The reason for this is psychological – the tuba looks big, so breathe big. The trumpet isn't so big, so don't take in much air.

WRONG!! ERROR!! INTRUDER ALERT!! Bad thinking! Bad thinking!

Rule: Inhale like a tuba player no matter what brass instrument you're playing.

Q: Who uses the most air? Tuba or trumpet?

A: Flow rates during exhalation vary considerably between brass instruments:

The trumpet reaches 40 liters/minute playing loudly.

The tuba reaches 120!!

Let's do the math:

Average large lung capacity = 6 liters

Tuba maximum flow rate = 120 liters/minute

Tuba players can use their entire capacity 20 times/minute

A tuba player goes from FULL to EMPTY in 3 seconds!!

How about the trumpet player? Let's do the math again:

Average large lung capacity = 6 liters

Trumpet maximum flow rate = 40 liters/minute

Trumpeters can use their entire capacity 6.67 times/minute

A trumpet player goes from FULL to EMPTY in 9 seconds.

The tuba uses the most air per second.

Q: Who uses the most air pressure? Tuba or trumpet?

A: The trumpet uses 4 times as much air pressure. We'll get to the details in Chapter 24 Upper Range.

Setting and Other Bad Breathing Habits

It is best for inhalation to be immediately followed by blowing in one smooth motion without pause. Too often brass players stop between inhaling and blowing, falling into a bad habit called "setting." The probable reason for setting is a failure to decide exactly what you're going to play before you inhale. This is not a good plan (and I've been guilty of it). Decide what you're going to do, then inhale and immediately blow. Let me explain by starting with a confession: I've never jumped off a diving board. Too chicken when I was a kid and now, I'm too old. But it makes a great analogy for setting:

> Option 1: you walk to the end of the board and immediately jump in. On the way down, you decide what kind of dive you want. Result? BELLY FLOP!
>
> Option 2: you walk to the end of the board, visualize what you want to do, and then you jump in. Result? A great dive!

If I asked you to choose between the two, would ANY of you choose Option 1? You would be crazy! And, wouldn't it be just as crazy to start blowing before you figured out what you wanted to play?

Some of you might be thinking "I know what I'll do. I'll breathe in and then stop to think before I blow. No belly flops for me!" That might work on a diving board – walk to the end, think for a while, and then jump. But it doesn't work in brass playing. Why? Time for a baseball analogy:

> It's the bottom of the ninth inning in the last game of the World Series. Your team is three runs down, the bases are loaded and you're at bat. Hit a home run and you win!!!! But if you strike out, it's going to cost you and your teammates a fortune! (Winnings change from year to year, but it's probably safe to say you would lose $100,000-150,000.)
>
> No pressure whatsoever!
>
> While they're waiting for the pitch, baseball players constantly move their bat. Muscles in motion stay loose, but when you stop moving, there is a good possibility of muscles locking up from isometric tension (muscle fighting muscle). If your muscles are tight, you can't swing the bat fast enough to hit the ball out of the park; in fact, the ball may go past you before you can even start your swing. (In the major leagues, baseballs are typically thrown at over 95 miles per hour!)
>
> So, you keep moving the bat while you're waiting…waiting…waiting for the pitch…for fame, glory, and riches…waiting and…

Oh, that's right, this is just a story. Bummer! I was trying to decide how many trumpets to buy with my winnings!

Setting during breathing introduces the possibility of blowing and inhaling muscles becoming locked in opposition. You can't produce wind without movement, so setting prepares the stage for a monumental failure: it's time for you to play and NOTHING COMES OUT!

Many brass players have had this experience, especially first chair trumpeters. (Why trumpeters? Higher pitches require more muscle tension, making it easy to do too much.) Not only is it embarrassing and

humiliating for the student, it is a nightmare for you as their director. NO ONE wants a first chair player that is unreliable! Besides the student's trauma, YOU are going to lose sleep worrying about what's going to happen at contest tomorrow.

Sometimes students manage to get something out as their blowing muscles overwhelm the inhaling muscles. The result is more like an explosion than music. NOT the outcome you're looking for!

This is so easily avoided – here's the cure:

"Oh, Too"

Instead of setting, we want a release of air; the air comes in and immediately turns around, never getting a chance to stop. Here's how you teach this:

1. Say "Oh, too." Be sure the sound is continuous between the "Oh" and the "too." Zero break between them.
2. Whisper "Oh, too." Whispering is very important because it shuts off the vocal cords. Often, you hear students grunt while they tongue. This is because they are talking while they play – it comes out as a grunt. The whisper stops grunting.
3. Inhale in with "Oh" and blow with "too." Again, zero break between them. They must connect, eliminating setting.
4. Play a note on the instrument, breathing and blowing just like step 3. Remember, you release the air into the instrument.
5. Bonus: "Too" takes care of the tongue, greatly reducing the challenge of initial attacks. (See Chapter 21 Initial Attacks.)

Students sometimes have a hard time with this. One solution (courtesy of Joe Neisler) is to put a slight ritard at the end of the breath which helps the blowing muscles stay relaxed. Another way to think of it is that the air turns around at the end of the breath without stopping. You may have to improvise your explanation to fit your students; just be certain that the results are correct.

Here's an issue that I run across all the time: your student knows how to breathe and produce a good sound…while they're playing easy music. But when they play something hard, they revert to small breaths and tone quality is completely forgotten…the only thing that matters is getting the right pitch and rhythm. Forgetting to breath and play with a good sound makes the music even harder! Even worse, sometimes I get caught up in what's on the page and stop nagging them about breathing and tone!

Rule: Tone is everything!

We'll discuss this more in Chapter 17 Concept of Sound.

Mr. Jacobs said that most "bad days" are caused by poor breathing. I was told this by the tuba virtuoso and breathing guru Patrick Sheridan. I didn't believe him at first (boy, was that stupid!), but when I put this theory to the test, I became convinced he was correct. One small point – the improvement in how your chops feel is not instantaneous; nothing happens because you took one big breath. However, within a few minutes, you'll be fine.

Rule: Poor breathing creates the illusion of tiredness. Fix the air, end of problem.

In Chapter 34, we'll discuss problems. For now, you should know that air is the number one suspect when things aren't going well; bad rhythm is the other likely culprit.

Efficiency

To be efficient, a person needs to use THEIR lung capacity, whether it's large or small. Not doing this results in a lower level of performance. Let's look at two individuals playing a phrase requiring 1.5 liters of air:

Mr. 6-Liter inhales 3 liters, more than enough to play the phrase. He starts at 50% of his capacity, plays past the resting point (2.4 liters for him), and ends at 1.5 liters, which is 25% of his capacity. The only efficient part of his playing was from 50% to the resting point; from that point on he was working against himself.

Mr. 3-Liter inhales to the stretch point, which is 2.7 liters. (This breath is a 10% less than that of Mr. 6-Liter.) By the time Mr. 3-Liter has blown 1.5 liters, he has reached his resting point (1.2 liters). His entire breath was efficient.

Mr. 6-Liter	Mr. 3-Liter
Inhales 3 liters – 50% of capacity Ends at 1.5 liters (25% of capacity)	Inhales 2.7 liters - stretch point, 90% of capacity Ends at 1.2 liters (resting point - 40%)
Top half of breath - 0.6 liters (from 3 to 2.4 liters)	Top half of breath - 1.5 liters
Bottom half of breath - 0.9 liters (2.4 to 1.5 liters)	Bottom half of breath - 0.0 liters
Efficiency rating - 40%	Efficiency rating - 100%

Mr. 3-Liter will be more relaxed; this translates into better tone, more endurance, and better flexibility.

Note: Only people with large lung capacities playing slow flow rate instruments have the "luxury" of breathing too small. Consider this:

- Tuba players MUST take large breaths to play even short phrases. "Small breath" isn't part of their vocabulary.
- People with small lung capacity must take large breaths to keep up.
- BUT, people with large lung capacity can take a small breath and play the same phrase length as most people.

In other words, it's immediately obvious to tuba players and people with small lung capacity that they didn't take a big breath. Players with the large lung capacity "get away with" small breaths." They don't play as well and they don't sound as good, but they got through it.

Toys

It is difficult to know what is happening with our air when we play. When you teach a string player, the bow rubs the string, making a vibration. How they use the bow is completely visible. For wind players, the air rubs the lips or the reed, making a sound…and it's completely invisible.

For this reason, Mr. Jacobs used devices to help students get feedback on what was happening when they played. Unfortunately, I don't remember everything I watched him use, but I do remember two:

Incentive Spirometer – this device measures lung capacity while providing a strong visual stimulus. I have used these in the past; one thing I observed is that a rapid inhalation ALWAYS resulted in more air than a slow breath.

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Rebreather bag – although this doesn't specifically measure breath capacity, it does provide visual feedback as the bag fills with air on the exhalation. There is an additional advantage – since you are breathing the same air over and over, you do not hyperventilate (get dizzy) as quickly you can practice your breathing longer. Of course, at some point the CO_2 level is too high and you need to start over.

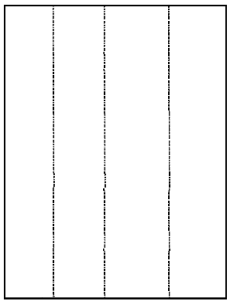
gottfried.dk

During 1979-1980, I studied with Susan Slaughter, principal trumpet for the Saint Louis Symphony for 40 years. Susan came up with the idea of putting a plastic bag around the bell of the trumpet along with a

rubber band to keep it from leaking. She had me start playing with the bag collapsed; watching in a mirror, I could see the bag inflate as I blew. At the end of the breath, I squeezed the air out of the bag back through the trumpet and repeated the process. It provided a great incentive to take a large breath and was very inexpensive! It's to adjust the placement of the bag on the bell to adapt to your lung capacity. Not the coolest toy – but it's effective.

Here are a few other "toys" –

1. Cut a sheet of paper in fourths vertically. (A full sheet of paper works, but it's a bit stiff.) Hold the strip in front of your mouth and blow through your lips, watching the paper move. Do the same thing, but low air through your mouthpiece without buzzing and observe the effect of the air. Finally, buzz the mouthpiece and watch the paper move. **Note:** As you go up in pitch, the movement of the paper decreases; as you descend in pitch, it moves much further. Again, this is a visual aid to "see" what the air is doing.



2. Blow against a pinwheel to see the effect of the air.

allysonmiller1969 – Pixabay

3. Cut a 4-inch length of 3/4"-diameter piece of PVC pipe and inhale through it. The pipe creates a large, relaxed inhalation without conscious effort. Once you get comfortable with the pipe, the goal is to breathe the same way without it. One way to work on this is to alternate breaths with and without the tube. Be careful you don't get dizzy!)

lowes.com

5. Windmaster – designed by Michael Levine of the Dallas Brass

facebook.com

Link to instruction manual - Dallas Brass WindMaster Instructions Manual (19 pages)

Circular Breathing

You may be interested in circular breathing. In this process, the performer allows their cheeks to puff out while playing and then uses the air in their cheeks to continue blowing while quickly inhaling through the nose. When done properly, playing is continuous. Most trumpeter prefer to do this during busy, slurred passages where the effect on tone quality is not noticeable. The master of this technique was Rafael Mendez who taught himself to circular breathing while double tonguing so he could perform Paganini's violin masterpiece Moto Perpetuo – 4.5 minutes of non-stop double tonguing! More recently, Sergei Nakariakov has also learned the technique to play the same work.

Clark Terry was a master of circular breathing – you could see his cheeks puffing out and coming back, but you could not hear it in his playing. Dr. Swift told me that he was experimenting with this while at the Navy School of Music. A trombonist friend saw him and asked what he was doing. Dr. Swift explained; the trombonist said, "Let me try that" and could instantly circular breathe while playing. That evening, they performed with a dance band. The trombonist had a featured solo – for three choruses, he held his trombone so that the bell blocked the dancer's view of his cheeks while he was circular breathing. Little by little, the dancers began to think he was playing all three choruses on one breath. By the end of his solo, no one was dancing – they were staring at him in amazement. When he finished, he "gasped" for breath and the crowd went wild! Obviously, this technique is easier for some than others.

I have experimented with circular breathing with limited success. I found it easiest to do playing oboe (when I was taking double reeds methods). The air flow on oboe is so slow that you can play for quite a while with only the air in the cheeks, plenty of time to breathe in through your nose. Several times in my life I would like to have mastered this technique, but that's not much in 58 years of playing. At the moment, it's pretty much at the bottom of my bucket list.

Additional Reading: Edward Kleinhammer *The Art of Trombone Playing*

Chapter 13
Arnold Jacobs' Breathing Exercises

Mr. Jacobs presented the following information and exercises during a week-long masterclass at Northwestern University in the summer of 1981. I believe these exercises were the inspiration for *The Breathing Gym* by Pat Sheridan and Sam Pilafian.

It is very helpful for brass players to practice large volume movements of air away from the instrument and music. By doing this, the body learns the correct processes much faster. Eventually these processes unconsciously transfer to his or her playing. Within a few weeks, these exercises begin to produce results, but they must be practiced for six months or longer for them to move into the subconscious. At that point they will replace old breathing habits; the player's breathing is changed forever.

The body will be learning new skills during these exercises. It must be remembered that the goal is large volume movements of air, not large body movements. While doing these exercises it is helpful to exaggerate the physical phenomena to ensure that the body learns proper movement. It is also wise to establish motion independent of the air by attempting to breathe without allowing air to enter the body; it is somewhat difficult to do. This effort helps the body learn function and teaches the player that body movements alone do not guarantee proper air flow.

When the player goes to his or her instrument, these exercises must be forgotten. The player must focus on art, not mechanics. It will be helpful to the player to spend twenty minutes per day with increased awareness of function. During this time the player should observe that a large breath is being taken and that it is flowing freely from the body. In time, these awarenesses should be forgotten -- they will have entered the subconscious level of the brain and become a natural part of the playing.

Note: Mr. Jacobs' instructions are in black. My comments are in blue.

Exercise No. 1

1. Fill your lungs to the count of 5 while raising your arms above your head.

   This doesn't mean sort of over your head – put your arms ALL the way up until your fingers touch. The reason for raising your arms over your head is to aid the motion of the ribs.

2. Drop your arms on count 5.

3. Retain the air with an open throat.

   Think of the army drill sergeant – "Suck in that gut. Stick out that chest."

   While you're retaining the air, say something truly profound, like "hello." If you're retaining the air correctly, it is easy to speak and your voice is resonant.

   If you do it incorrectly, your voice will catch and it's difficult to get the air going again because you've closed your glottis (vocal cords) and are using them to hold the air in instead of using your intercostal muscles between your ribs to "stick out that chest." (It's like blowing up a balloon and

pinching the neck shut to keep the air in instead of somehow holding the wall of the balloon to prevent it from moving.)

Retaining the air with an open throat teaches you to use the intercostal muscles and keeps the glottis from closing as you transition from inhaling to exhaling.

4. Gradually exhale.

   No need to force the exhalation – simply relax and let the air come out as fast as it wants.

5. Do this exercise in front of a mirror with 6 repetitions.

   Mr. Jacobs stated that the more senses involved, the better the learning. The mirror provides visual feedback, you have the sound of the breath (audio feedback), and the feeling of your body moving (kinesthetic feedback) That's three different senses involved.

   I really enjoy how relaxed this exercise makes me feel.

6. After a week, do this exercise in 3 counts.

   This was easy! I can't wait until next week!

7. After another week, do this exercise in 1 count.

   I thought this would be easy, too – boy, was I wrong! I had no clue what was going to happen; the first time I did this exercise, it felt like a hand grenade went off in my chest! When I teach these exercises, I always have students inhale in 2 counts first to give them a heads up on how much motion will be involved with 1 count and how fast it happens!

Exercise No. 2

1. This exercise is done while walking.
2. Inhale through the nose for 5 steps – a slow, smooth inhalation of large quantity.
3. Exhale through the nose for 5 steps.

   A piece of cake and so relaxing! Next week is 3 steps…I wonder why there is no "1 step." Guess I'll have to trust Mr. Jacobs.

4. After a week, perform the same exercise in 3 steps.

   This is tiring! And now I know why there's no "1 step!" My nose isn't big enough to handle that much air in one step.

The purpose of the first two exercises is to create your awareness of YOUR lung capacity.

Exercise No. 3

1. This exercise should not be done until Exercises No. 1 and No. 2 have been practiced for three weeks.

2. Take a breath in thirds (partial breaths, not Yoga breaths which fill up from the bottom instead everywhere at the same time).

3. Pause between each partial breath and observe how it feels
4. Exhale in thirds.
5. Pause between each partial exhalation and observe how it feels.

This brings me to my favorite story of all time. Unfortunately, it's total fiction, but I still love it. Here goes!

PublicDomainPictures – Pixabay

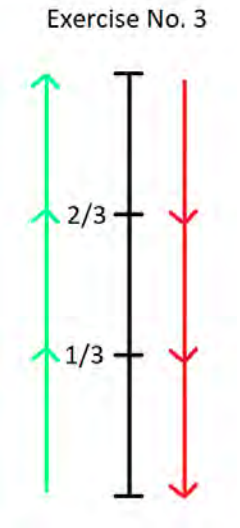
A student walks in for their lesson; on the floor is a HUGE pile of money. Very few coins and LOTS of bills with LOTS of zeroes. The student says, "Wow! What's this all about?" My reply is that we need to divide it into three equal amounts. One-third of the money goes to our band director, one-third goes to me, and the student gets to keep the last third as a reward for sorting them money and the delivery to the director. (See why it's my favorite story!!!)

Then I ask the student what needs to happen first. The response was, "We have to get three equal piles." I ask them, "Well, how are we going to do that? Find three $5 bills and start three piles and then find three $20s and add them to the piles, etc., etc.?"

And then the student gets it – "We'll have to count the money, get the total, divide that number by three, and then we'll know how much to put in each pile!!

Exactly! In order to take a third of something, you must know what the total is. The point of Exercise No. 3 is to increase your awareness of YOUR lung capacity. I watch students breathe in thirds and guide them into getting the thirds to be equal in size. It takes some a little longer than others, but it never takes long.

Here's a drawing of how to perform this exercise:



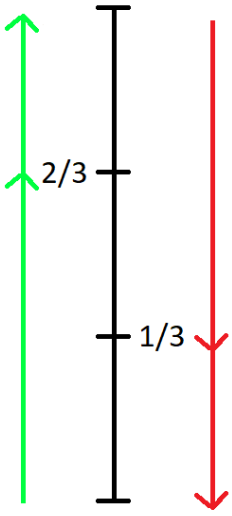
The green arrow represents the inhalation and the red arrow shows the exhalation. Notice that you pause at the 1/3rd and the 2/3rd marks during inhaling and exhaling.

Exercise No. 4

1. This exercise may be done only after Exercise No. 3 has been mastered.
2. Take in 2/3's of a breath and pause.
3. Take in last 1/3 of breath and pause.
4. Exhale 2/3's of a breath and pause.
5. Exhale last 1/3 of breath.

This is a more sophisticated way to breathe in thirds. Students often do it incorrectly.

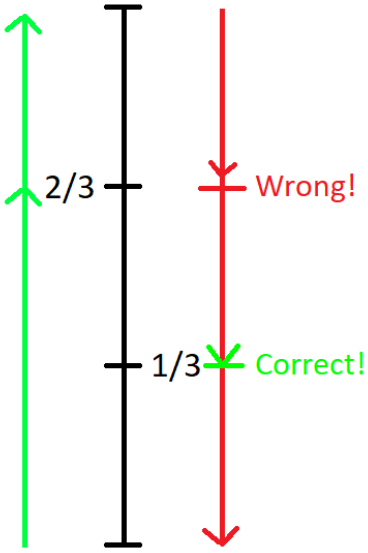
Exercise No. 4



Notice that you inhale to the 2/3rd point before pausing and you exhale to the 1/3rd point before pausing.

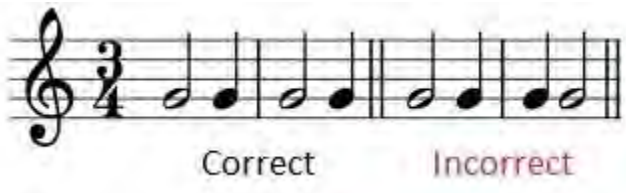
Exercise No. 4

- the wrong way -



Before I began using drawings students invariable practiced incorrectly, stopping at the 2/3rd point on the both inhalation AND the exhalation.

It may be helpful to think of the rhythm involved:



Breathing with the rhythm of the first two measures will have you breathing at the correct places. Breathing with the rhythm of the second two measures means you will incorrectly stop at the 2/3rd point both on the inhalation and the exhalation.

Exercise No. 5

1. This exercise may be done only after Exercise No. 4 has been mastered.

2. Inhale fully and pause.
3. Exhale fully.
4. This exercise must be done for three months.

Three months means that the correct breathing is moved into your subconscious. Congratulations! BUT you still need to practice this every day. It is SO EASY to let this slip away from you!!!!

Exercise No. 6

1. After Exercise No. 5 has been completed, this exercise may be done.
2. Inhale for 1 count – complete inhalation.
3. Exhale for 3 counts – complete exhalation.

Time to speed up the inhalation.

Exercise No. 7

1. This exercise may be done only after Exercise No. 6 has been mastered.
2. Inhale for 1/2 count – complete inhalation.
3. Exhale for 3 and 1/2 counts – complete exhalation.

Speed up even more.

Exercise No. 8

1. This exercise may be done only after Exercise No. 6 has been mastered.
2. Repeat Exercise No. 7 with a faster tempo.

And faster still!

Exercise No. 9

1. This exercise is for those who need help breathing from the diaphragm area.
2. Put hands on stomach with the middle fingertips on the navel.
3. Spread fingers over stomach.
4. Push stomach out without breathing.
5. Pull stomach in until "you touch your backbone."
6. Repeat steps 4 and 5 while breathing.
7. Try to establish a range of motion.
8. Do this quite a few times a day.

9. The use of the hands ensures correct motions – nerve impulses alone from this region can be misleading.

Exercise No. 10

1. This exercise helps the player learn to develop air pressure without large muscle contractions.
2. Inhale fully.
3. Begin to exhale rapidly through partially closed lips.
4. Continue to blow, but seal lips with first finger held sideways (parallel to the floor).
5. Continue blowing – no change in the blowing muscles even though no air is coming out.
6. "Pop" finger away and continue to exhale.

Used in connection with leak and seal, this is a VERY important exercise in developing range. See Chapter 24 Upper Range.

The following exercises are designed to help the player learn to use large quantities of air while remaining relaxed:

Exercise No. 11

1. Take a large breath.
2. Count out loud, pausing after each number -- the throat must remain open during pauses.
3. Use very little air while speaking.

Exercise No. 12

1. Inhale.
2. Exhale in the most unrelaxed manner possible.
3. Inhale.
4. Exhale as relaxed as possible.
5. Transfer the quality of step 4 to the instrument.

Mr. Jacobs called this "turning two shades of gray into black and white." It is an EXTREMELY useful technique! If you are not positive that you're doing something correctly, do it as wrong as possible. It is surprising how much that helps your understanding of what you are supposed to do. More in Chapter 34 Solving Problems – see "Shades of Gray" under "Other Issues.")

Exercise No. 13

1. Hold a book at arm's length.
2. Blow the pages apart.

Exercise No. 14

1. Hold a lit match at arm's length.

2. Blow it out.

Exercise No. 15

1. Imagine holding a drinking straw with a bean inside it.

2. Blow the "bean" across the room.

Final Thoughts from Mr. Jacobs

Anything that improves the vitality of the brass player will improve his or her playing and mental attitude. Exercises such as running, swimming, etc. are very good. It should be realized that exercises like these contribute to the player's general health, but they do not transfer directly to the breathing skills needed by brass players. Only exercises of the type listed above do that.

An excellent overall test to determine that breathing is correct and involves large volumes of air is to take three full breaths in close succession. If done correctly, this will produce the first stage of hyperventilation.

If hyperventilation is encountered during these exercises, the player should breathe into some type of bag, recycling his or her own air. This will enable the player to continue practicing them for a greater length of time.

Personal Notes

I taught the first five exercises to all of students for many years without much success. Was Mr. Jacobs wrong???

Nope. It was my students' failure, not his. You can cheat on some things and get away with it – if you take something from a store and don't get caught or if you don't report all your income on your tax return and aren't audited, there are no consequences (other than a guilty conscious). BUT you can't cheat on a diet – if you eat an entire bag of chips or a gallon of ice cream and nobody sees you, you're still busted. Don't believe me? Step on the scale!

<u>And you can't cheat on these exercises! You MUST do them EXACTLY as written or they WON'T work</u>.

If you follow instructions, you will reap the rewards…period! A lot of my students pretended to have followed Mr. Jacobs' instructions, but I knew they hadn't. They thought they fooled me, but they didn't.

So, I finally gave up teaching them to my students. However, I have practiced Exercise Number 5 every day since 1981 – that's thirty-nine years – because it helps me play better! The choice is yours!

If you are wise enough to use the exercises, here a few things I learned about them:

The exercises are extremely easy. The only thing hard is remembering to do them. In this day of cell phones, I guess you could just set an alarm, but that kind of technology was decades in the future when Mr. Jacobs gave us these instructions. I would do great for a few days, forget, and have to start over. This happened too many times – in desperation, I found a way to ensure success:

Rule: No playing before breathing exercises. Not a single note!

I never forgot again.

Once you have completed exercise No. 5, you can do it walking down the hall or while taking your horn out of the case. (It's best if the case is high of the ground, like on a file cabinet, so your breathing isn't restricted.)

I was complaining about my students, but some of them did practice the exercises faithfully yet the y did not achieve the success that I did. I believe the difference was that I did more than just practice the exercises – I applied them to <u>everything</u> I did. For weeks I made certain that EVERY breath I took was to the stretch point. It took some time before I could breathe that full very fast, so I called a timeout before each breath. I paused the "clock" even in the middle of a phrase and took as much time as necessary to completely fill up. In time, my subconscious learned that this is what I wanted, and it not only became easier to breathe this full, it gradually became faster and faster.

Rule: Practice breathing correctly with every breath you take in practice, rehearsal or performance. Your playing will show definite improvement!

One final thought – I ALWAYS talk about breathing during clinics, especially during band camp sectionals. Many times, students have told me, "I watched your breathing last night when you performed. You really do the things you're telling us!"

Practice what you preach…and preach what you practice!

Chapter 14
Relaxation

During the last two chapters we considered inhalation, blowing, and breathing exercises. A major point of that discussion is to guide us into using minimal effort when we play (just enough, only what it takes). Unfortunately, this is rarely the case – it doesn't fit the brass player personality of "die trying." (This is more a high brass "thing" than low brass, but it affects most brass players to some degree.)

We'll discuss this more when we talk about range and endurance, but I want to plant some seeds and let them grow before we go into great depth.

The goal of the brass player should be to relax, take a full breath, and blow freely, using just enough effort to get the job done. (In other words, our blowing and inhaling muscles are cooperating, not fighting each other.)

Trumpeters have the biggest problems, followed by horn players. The lower you go, the less this is a problem –it is unusual for tuba players to confront it.

What goes wrong when we're too tight? Pretty much everything. We get tired faster, our range is diminished, our throat closes (hurting our tone), and our flexibility drops.

Why does it happen? Because we think we need to work <u>hard</u> when we play. Since we think it's difficult, our subconscious causes our muscles to fight each other to bring about the results we asked for. This is why it is so incredibly important to know that brass playing is easy (when done correctly).

> **Note:** There is nothing easy about playing a double C on trumpet…but it's not THAT hard, either. It's not the equivalent of bench pressing 300 pounds!

Arnold Jacobs

The first time I heard Mr. Jacobs speak was in 1976 at my alma mater (Iowa State University). It was 100-mile drive from where I was teaching and well worth it. (The Chicago Symphony performed that evening – talk about a bonus!)

One thing Mr. Jacobs said about abdominal muscles surprised me: "flab is your friend." I interpreted this to mean that the stomach should be relaxed when playing. Twenty years later I took six lessons from him; in one of them I said, "I thought you said I was supposed to be relaxed when I played," referring to his lecture at Iowa State.

He replied, "I never said you should be relaxed. I said you should use minimal effort," meaning <u>only</u> the effort necessary to play the passage and nothing more. He also called it "minimal strength" – just enough to get the job done.

Breaths that are too small lead to tight sounds because of unnecessary tension. Because we don't have enough air, we must go past the resting point, fighting our body to get air out. This leads to tension during inhalation and you become trapped in a vicious circle.

Mr. Lillya taught that technical passages require more air to help the notes come out, but our tendency is to use less air. He believed this was caused by our experience as young musicians – we're afraid of fast notes, so we tend to use less air.

Mental tension radiates into the body, leading to physical tension – focusing on mentally hearing pitches with a good tone keeps your mind on the music instead of the physical process.

Susan Slaughter told me that we too often overestimate the difficulty of the music and underestimate ourselves. Just because the music is "ugly" to look at doesn't mean it's hard! Start slowly with a great sound and gradually speed up to full tempo while maintaining that great sound.

Another possible cause is trying to play too soft. Brass instruments are loud and meant to be heard; they are designed to be efficient, "idling" between mezzo forte and forte so that a single player can balance a 100-piece professional orchestra. (An easy way to let your students play louder without overbalancing the band is not letting the entire section play during the soft passages. It won't kill them if they take turns playing.)

For me, the trumpet tone color varies from white with a hint of pink at triple piano to blood red at triple forte. (You can tell the dynamic level a player used during a recording even when the playback equipment is turned down because of the tone quality you hear.) It is not possible to get a heroic sound at pianissimo and it is not possible to produce a gentle sound at fortissimo. Let the emotion of the music dictate the tone required and that will set the volume level. Do not make your kids suck on the horns to achieve balance! My motto is: "The trumpets are never too loud; the rest of the band is too soft."

> Okay, okay, the trumpets can be too loud…I admit it. But if the tone quality they are producing matches the music and they're too loud, you need to get the band to balance up to them or cut the number of players at that point in the music.

This applies just as much to the rest of the brass section – pay attention to the sounds you hear during movies and how the tone quality of the brass matches the emotion of the film. That's what you need from your students. Your audience will love it!

Finally, how can we achieve relaxation, using just enough effort to get the job done? Here are some things I've used with my students to help them understand.

1. I learned this approach from Susan Slaughter – it's a bit awkward to teach, but it is effective.

   a. Take a large breath and exhale through the mouth without force – simply relax and let it come out. (Sometimes I call this "dropping the air" because you just let it go. Notice how quickly it comes out because there is no resistance.

   b. Do the same thing, but exhale with your lips around the leadpipe (no mouthpiece). Again there is no forcing the air, but observe how much slower it comes out because of the resistance of the instrument.

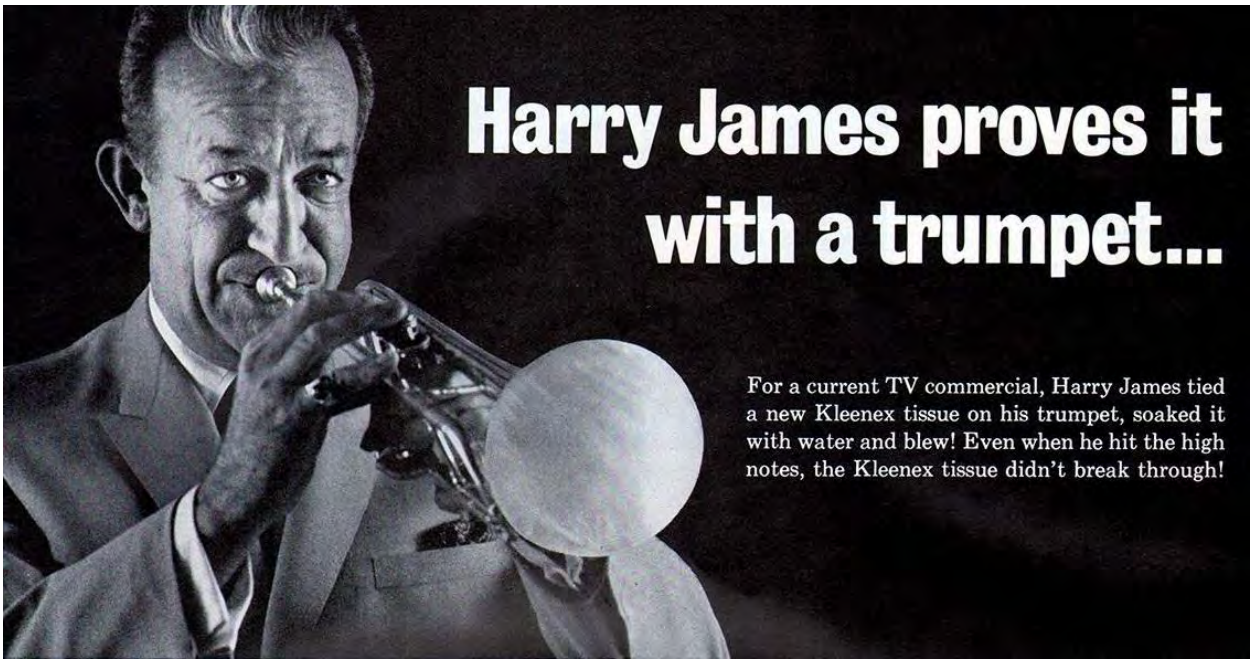
   c. Put the mouthpiece in the instrument and do the same thing, this time with the lips around the rim of the mouthpiece (not in the cup). Still no forcing, and the air is even slower – which makes sense. Look how much smaller the throat of the mouthpiece compared to the diameter

of the leadpipe.

d. Guess what's next?! The same thing, this time with your lips in the mouthpiece, but keep them far enough apart that they don't buzz. No forcing; the air is even slower.

e. Do the same thing but let the lips buzz so you produce a sound. Still no forcing, and the air is even slower than before.

2. Remember, the goal is moving large quantities of air with as little effort as possible. Here are two stories to illustrate this:



Pinterest

One I was a kid, there was a TV commercial with the great jazz trumpeter Harry James playing with a wet Kleenex over the bell of his trumpet. The statement was made that "Even Harry James can't blow a hole in a wet Kleenex." (Here's a link to the music in the ad with Harry playing.)

Mr. Lillya helped me understand how little air flows through the trumpet. He told me to play a tuning note loudly, and then he lit a match. He held it in front of my bell and the match kept burning. He moved it closer to the bell; the flame flickered but did not go out. He moved it closer and closer – the match only went out when it was inside the bell.

Is it any wonder that Harry James couldn't blow a hole in a Kleenex?? ESPECIALLY on a high note – remember the air flow slows down the higher we go. Good ad…bad science.

3. I ask my student to exhale slowly, like they're sad that we still have weeks and weeks and weeks of classes before break. Then I ask them to exhale rapidly as if they're exasperated by having to

write a 30-page paper for a 1-credit course.

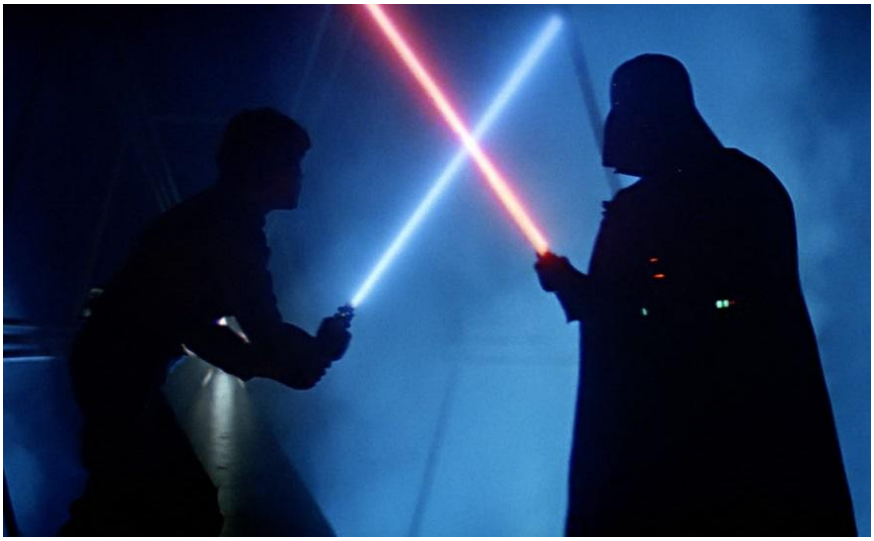
I follow this with a question – was it any harder to exhale fast than slowly? The student always says no, it wasn't. This helps them understand that you can move a lot of air with force with little physical effort.

4. I love *The Wizard of Oz*, especially the scene where the Wicked Witch of the East turns the hourglass over and says, "That's how much longer you've got to be alive. And it isn't long, my pretty. It isn't long. I can't wait forever to get those shoes." (filmsite.org) (FYI, the hourglass sold in 2014 for $80,000!)

Pinterest

I make the comparison between the air in our bodies and the sand in the hourglass. The sand at the top is not trying to force its way through the small hole in the middle of the hourglass; it's waiting patiently. If we could somehow make the hole the same diameter as the hourglass, the sand would instantly drop. But, we can't, so the sand must wait.

When we take a large breath, the air is coming out…period; it only stays in because we hold it in. If we pass out, the air comes out. So, we don't need to force the air – let it come out as fast as the instrument wants it. Of course, this rate changes as we change register and/or volume, but we don't need to force any more than the sand does in the hourglass.



starwars.com

We repeat the process until I get what I want.

5. Another movie analogy – the light saber from *Star Wars*! I tell my students to imagine that when they play the trumpet, a light saber beam comes out of their bell. I have them sustain a 2nd line G; most of the time the "light saber" is less than a foot long.

I show them with my hand that I want it to project at least 3 feet beyond the bell.

It always amazes me how big the sound gets and how little effort the student uses to produce it. (It surprises them, too!) FYI, the color of the beam is up to you – I sort of like a fluorescent green.

6. Mr. Didricksen liked to use "whoo." He didn't say it…he blew air to make the sound and he always moved his hand from near his mouth as far forward as he could reach to emphasize the motion of the air. He did this whenever I started to tighten up.

7. Here's another air sound that helps with breathing in and blowing that I learned from Jon Whitaker when he taught at Henderson. Place your hand vertically in front of your mouth with the palm facing to the side. When you inhale, you hear a very interesting, deep pitch. After you breathe in, move your hand a bit further out with the palm facing you and blow a large quantity of relaxed air.

freepik.com

8. Mr. Chichowicz preferred the word "flow." This refers to air flow, but I like the analogy of a leaf floating on a slow-moving river. The leaf moves without effort, yet there is a great deal of force in the motion of the river.

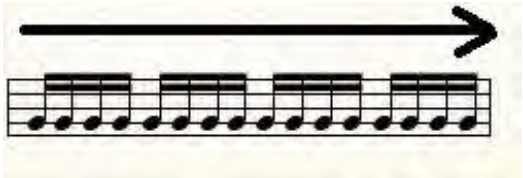
ssielou2 – Pixabay

9. Faster air – moving the air faster produces great force with minimal effort. We'll discuss this again in Chapter 24 Upper Range.

10. Similarly, blowing farther away helps create motion without unneeded tension. Imagine blowing your sound so that it hits the back of the auditorium.

11. The air leaves the body, goes through the instrument, and into the room. The air must move to get out!

12. Draw an arrow across the notes where more air is needed:



13. Calm your mind – you must be mentally relaxed to be physically relaxed.

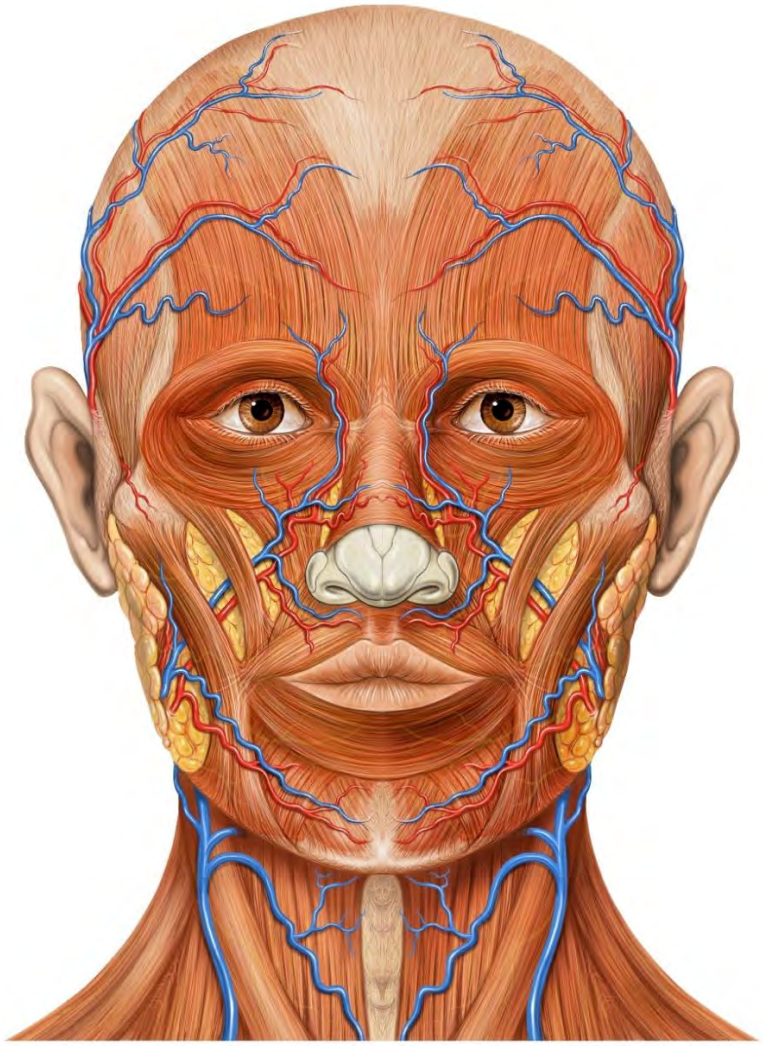
14. Relax the stomach to relax the throat. This does not mean that the abdomen isn't firm from blowing, but it does mean that there is no isometric tension in the torso.

15. Mr. Jacobs talked about thin air vs. thick air and he used the word "keyhole" to help the tongue stay down and out of the way – more on this in "Thin Air vs. Thick Air" in Chapter 24 Upper Range.

Chapter 15
Embouchure

Forming the embouchure correctly is the fourth part of warming up.

As you can see in the photo below, the muscles of the face are complex! Twenty-six muscles are used to form an embouchure. Although we don't need to know a lot about them, but it is important to have a basic understanding of how things work.



Patrick J. Lynch; illustrator; C. Carl Jaffe; MD; cardiologist, Yale University Center for Advanced Instructional Media Medical Illustrations, 1987-2000. CCA2.5 Generic

"Scientists, who have studied faces, for example, report that there are huge differences among people in the location of facial muscles, in their form, and also – surprisingliy – even in their prevalence." (Malcolm Glidewell, *Tipping Point: : How Little Things Can Make a Big Difference*, 2002, p. 85)

Knowing this, is it any wonder that there is no single way that works best for everyone?

Before we go farther, watch the short Youtube video titled "Lips inside trumpet mouthpiece - Highspeed Video" and imagine trying to precisely and consciously control your lips to make this happen.

> **Note:** The trumpeter is tonguing between the teeth on low notes; some people do this, but I'm not in favor of it because the attack or front of the note is often unclear.

As discussed in Chapter 11, learning to move muscles occurs through trial and error; the subconscious controls muscles, not the intellect. Embouchure muscle movements are much too subtle to be controlled by the part of the mind we use to think.

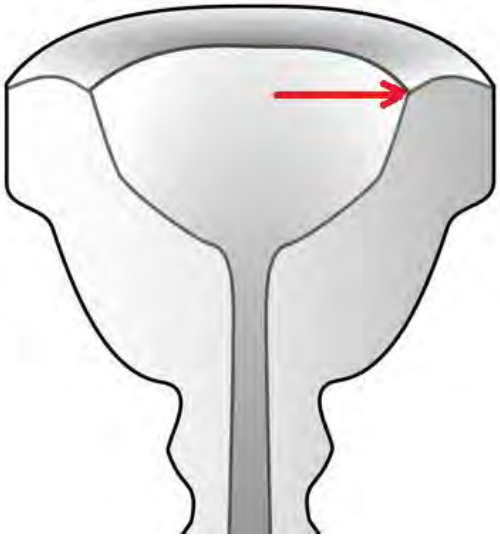
Another point from Mr. Jacobs: you cannot play by feel. The 7th cranial nerve sends instructions to the lips, and the 5th cranial nerve reports how it feels AFTER the lips have already reacted to the signal from the brain. Trying to play by feel is like looking only in the rear-view mirror while driving your car.

Andrew Martin – Pixabay

The "Bite"

"Embouchure" is a French word and is usually understood to mean the muscles of the face used in playing a wind instrument. There is another meaning to this word: mouthpiece. In French, the mouthpiece and the face are both called "embouchure;" this is important: you cannot form a brass embouchure without a mouthpiece. Here is Mr. Jacobs' explanation:

The nerve signal from the brain goes to the ENTIRE lip, regardless of the size of the mouthpiece. This isn't much of a problem for tuba players since the lips are almost entirely covered by the mouthpiece, but that is not true for the other brass instruments, especially trumpet and the horn. Only the tissue inside the mouthpiece should respond to messages from the brain. Isolation of this tissue is created by the "bite" of the mouthpiece, the point where the rim drops into the cup (indicated by the red arrow):



edited from David Bolton
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Since the bite allows only the portion of the lip inside the mouthpiece to respond to the brain, the rest of the lip ignores the nerve impulse. A sharper bite on a mouthpiece improves isolation, along with improving articulation clarity. A more rounded bite is more comfortable and makes slurring easier, but it less effective isolating the tissue inside the rim. More on mouthpieces in Chapters 40, 41, and 42.

Because of isolation created by the bite, free buzzing (buzzing without a mouthpiece) is physically different than buzzing a mouthpiece (or playing a brass instrument). Mr. Jacobs was not in favor of free buzzing because it is not a true embouchure.

> **Note:** Some brass players advocate free buzzing as a means of developing embouchure strength. Perhaps there is some truth to that, but it cannot replace mouthpiece buzzing, which we'll discuss in Chapter 16.

Additional Evidence of the Need for Isolation

Mustaches can interfere with isolating the lip. Trumpeters frequently trim their mustache so that the mouthpiece rests directly on the skin. Trombonists often shave the entire upper lip; their mouthpiece is so much bigger that little is left of the mustache.

Mr. Jacobs told the following story about a mustache interfering with his playing:

> A tour with the CSO included daily performances of the extremely high tuba solo in "Bydlo" from the Ravel version of Mussorgsky's *Pictures at an Exhibition*. The tour started well, but as it progressed, Mr. Jacobs began missing notes. He was perplexed – that NEVER happened to him! After a few days, he started wondering what had changed since the beginning of the tour. His mustache! He started growing it when he went on tour. He shaved it off and the problem immediately disappeared – his accuracy was back!

I had a similar experience following a very demanding week of brass choir and brass quintet during senior band camp:

> The final concert for me was the brass choir on Friday night; I barely got through it. I don't think anyone could tell, but it was touch and go. Saturday morning, I began to warmup and was shocked to discover that nothing was working – NOTHING! I thought about how hard the week had been and the challenge of the concert the night before, so I decided to take the rest of the day off. That's all I needed; by Sunday, I would be as good as new.
>
> Except that I wasn't. Sunday was the same as Saturday. Too make matters worse, on the following Thursday night the Arkansas Brass quintet was performing an hour and a half for 600 band directors at Arkansas Bandmasters Association (ABA) convention. This was a great opportunity to show them that I was a fine player and that they should send students to study with me. But the way things were Sunday, NO ONE would be sending me their students after Thursday.
>
> While our music building was being remodeled, we had moved to an old dormitory. I have a LOT of books, music, papers, instruments, etc. and they were all over the place. I had to do something about my chops, so I decided to practice a short time, put things away, practice a little more, clean up more, etc. I repeated this process for hours and hours Sunday through Wednesday. By the end of Wednesday, I could play, and my new office looked pretty good!

The performance at ABA went well, but it was a close call; the next couple days, I could barely play. After that, things went back to normal. A few months later, I discussed this with Mr. Jacobs during my first lesson with him. He said that my mustache caused this problem – it prevented me from having a good isolation of the lip tissue in the mouthpiece. Trying to get this isolation, I used too much pressure and that's what caused my problem. Not wanting to shave off my mustache, I started trimming it so that the bite of the mouthpiece rested on bare skin on both lips. No more problems.

Mouthpiece Placement

Before we get into creating an embouchure, let's talk about mouthpiece placement. All brass mouthpieces should be centered side to side on the teeth, not the nose. It may be tempting to center on the nose, but remember, the mouthpiece is resting on the teeth!

For all brass instruments EXCEPT THE TRUMPET/CORNET/FLUGELHORN, the mouthpiece is placed 2/3^{rds} on the upper lip and 1/3rd on the lower lip. This is particularly important for horn – this placement puts the mouthpiece above the fleshy mound of the upper lip, darkening the sound.

Old trumpet texts sometimes say to place the mouthpiece 1/3rd on the upper lip and 2/3^{rds} on the lower lip, putting the mouthpiece right on the fleshy mound and creating a bright sound. Many decades ago, trumpeters switched to ½ on the top lip and ½ on the bottom. I only mention this because at some point in your career you may come across advice to use the 1/3rd upper position. Don't believe it!!

Please note – these are starting positions for the mouthpiece. It is normal for the mouthpiece to drift a little side to side, up, or down to find a better position over the teeth. However, excessive deviation is not a good thing. Fortunately, all you must do is watch your students while they play; you will easily see if you need to intervene.

If possible, the bite of the mouthpiece should not be on the red of the lip; instead, it should extend onto the muscle tissue adjacent to the lip. This muscle tissue handles mouthpiece pressure better than the lips. It is NOT a hard and fast rule – there are many AMAZING brass players with the mouthpiece rim resting on the lip.

Wet Lips

Before placing the mouthpiece on the face, the lips should be wet. A slight motion of the tongue is adequate. There are three reasons for this:

1. Virtually all brass players agree that the mouthpiece should always be in the same place; it is the only way to develop accuracy. As a brass player increases in lip strength, the lips tend to develop a bit more on both the inside and on the outside of the bite of the mouthpiece, resulting in a slight groove where the mouthpiece needs to rest. A dry mouthpiece tends to stick wherever it is placed, even if it's the wrong place. Wet lips, however, allow it to slide into the correct position if necessary. (I was always fascinated to see Doc Severinsen's care in putting his mouthpiece in exactly the correct place.)

2. Wet lips promote a more correct production of the upper register. Since dry lips tend to stick to the mouthpiece, they stay in place for high pitches. It does work…if you can keep from

sweating! If you watch old movies with big bands, you will sometimes see the lead trumpeter wiping his mouthpiece with a handkerchief to dry it off. But what are you going to do if you're in a marching band in the South???

3. Since lips stick to dry mouthpieces, when you take the horn down, the mouthpiece pulls at the lip and can tear off a very tiny piece of the lip. If you're not playing very much, this doesn't cause problems, but it you are playing a LOT (like college students do), those tiny tears add up.

   I had a student years ago who developed a sore on his lip that would not go away. It looked like a fever blister, but it wasn't. We determined a dry embouchure might be causing the sore. He had always played with dry chops but had no problems in high school. When he became a college music major, the amount of his playing increased significantly, and the sore appeared. We decided he should try playing with wet lips; I was concerned that it might take him a while to develop the additional lip strength required, but he was fine within a week. His lip healed and he NEVER had the problem again.

How the Embouchure Works

The embouchure reacts to air and pitch in the brain. Mentally hearing a note determines muscle tension and the size of the aperture (the opening in the lips, like the end of an oboe or a bassoon reed).

Charles Double Reeds

Note: I can't prove this, but I believe the lips quickly learn to do what the brain tells them, perhaps within just a few weeks. (How long does it take to learn to ride a bicycle Playing an instrument can't be THAT much harder!)

This begs the question, "Why don't young students sound great?" Mr. Jacobs stated on several occasions that young musicians can and should sound great, so what's the problem?? The challenge is getting young players to create wonderful sounds in their minds. Remember, the lips can't do any better than what they're told. (On rare occasions, you'll come across students who sound fantastic but don't seem to have a great sound in their minds. These fortunate few are lucky enough to do things correctly from the beginning. Sadly, most of their classmates do not hear how much better these students sound and don't try to match their tone quality.)

Lip movements are controlled by:

the jaw –

say "AH" and "EE" back and forth – notice how the jaw moves and the lower lip with it; the tongue also moves – we'll come back to this in Chapter 19 Flexibility.

and two sets of small insert muscles –

- protractors, which pull the lips together to make high pitches, and
- retractors, which pull the lips apart to produce low notes.

These insert muscles must coordinate; if they "fight" each other, it becomes very difficult to change the size of the aperture. This coordination is easily developed and maintained by practicing sirens on the mouthpiece (see Chapter 19 Flexibility).

The subconscious learns how to move the insert muscles and the jaw through trial and error.

The lips must have firmness to vibrate. A violin or guitar string will not vibrate until there is tension added by tightening the tuning peg. Firmness of the lips is accomplished by isometric tension – muscle against muscle. The "pucker" muscles pull inwards while the "smile" muscles pull out and the chin muscles pull down, creating tension and firming the lips. The degree of tension/firmness is subconsciously controlled depending on pitch and volume.

The best visual illustration for this is found in Farkas' *The Art of Brass Playing*, figures 5-8. Mr. Farkas uses a metal coffee can to represent the skull and a cloth drawstring bag to represent the lip and cheek muscles. The four pictures show:

1. The coffee can and bag separate.
2. The bag over the can with the drawstring pulled tight; this represents tight lips and loose cheek muscles.
3. The bag pulled back tightly with the drawstring loose. This represents tight cheek muscles and loose lips.
4. The drawstring pulled tight while pulling back on the bag, representing tight cheek muscles and tight lips. A drum is created by the drawstring (lips) resisting the pulling back of the bag (cheek muscles).

Just like air, the embouchure affects every aspect of playing: tone, endurance, range, and flexibility. It is critical that the embouchure is formed correctly:

- the corners are in the correct place
- the lips have a forward focus
- the lips are firm

This is best achieved using "leak and seal."

FYI, Mr. Farkas' *The Art of Brass Playing* includes another superb illustration, "The Brass Player's Face." (Figure 26.) It is well worth your time to search this out – in fact, I would recommend committing the

Myth Dispelled

What would happen if I held my mouthpiece in the air and opened my fingers? Would it float?

Of course not! What would happen is that I would cry because I dented my mouthpiece!

If I stretched a rubber band between my thumb and finger and plucked it with the other hand, what are the odds that it would stay in the plucked position and not vibrate?

Zero! The laws of physics dictate that I messed up my mouthpiece and that the rubber band vibrates. Therefore:

If you form an embouchure and move air across the lips, you WILL get a buzz. The fear of blowing and nothing coming out is FALSE and completely IRRATIONAL!! (You could hit the wrong pitch, but silence is NOT an option!

image to memory since it shows all the visual components of a proper embouchure. (I requested permission to include it and the coffee can/drawstring bag photos in this book but received no response.)

These are the points Mr. Farkas lists for a correct embouchure:

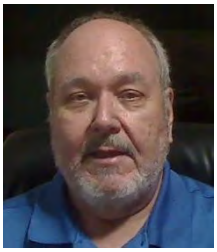
1. Puckered lips
2. Tension in the lips
3. Lower lip is not tucked-in
4. The chin has a U-shaped valley
5. The jaw is forward to align upper an lower teeth
6. Chin is arched down
7. Instrument is straight out from the teeth
8. The teeth are "quite open"
9. The mouthpiece is in the correct location.

Elsewhere, Mr. Farkas talks about the importance of wet lips. I suspect he forgot to include it on this picture.

A former band director told me that he taught "the brass player's face" to his students so that they could keep an eye on their own embouchure as well as their friends' embouchures. He felt this prevented many problems for his students…and himself!

> **Note:** As important and helpful as "the brass player's face" is, Dr. Swift told me that a textbook embouchure rarely works. The ultimate test is ALWAYS in how well someone plays, not how they look.

Leak and Seal



(Leak and Seal - HBM video)

Joe Neisler, retired professor of horn at Illinois State University, first showed me this technique; I believe he learned it from Mr. Phillip Farkas.

First, we must learn why this technique is important; several steps are involved:

1. Stretch the corners of your mouth as wide as possible while keeping your lips closed.

2. Use one of your fingers to feel your teeth through your lip.

3. Observe how thin the lips are; they are very susceptible to injury in this position.

4. Pucker the lips.

5. Use a finger to feel the "meat" now in front of the teeth; this helps prevent injury from excessive mouthpiece pressure (which we'll discuss in Chapter 29) and promotes endurance and range.

How do we achieve this "pucker" position while playing? Leak and seal. It's very simple to do, but it also requires several steps:

1. Place your mouthpiece on your lips with a finger completely covering the backbore.

2. Stretch your corners wide.

3. Breath in through your corners.

4. Begin to exhale through the corners.

5. Continue to exhale while gradually moving the corners forward.

6. Keep exhaling and moving the corners forward until the air stops leaking.

7. Remove the finger from the backbore and repeat steps 2-6. Many students will produce a buzz as soon as the corners seal.

8. If a student doesn't get a buzz, tell them to let the lip buzz when the corners seal. This usually fixes the problem.

9. If a student still doesn't get a buzz, go back to steps 1-6 with the backbore sealed. After the corners seal, keep blowing against the mouthpiece and then pop away the finger. The student WILL get a buzz!! (See "Myth Dispelled sidebar.)

You achieved "leak" (steps 4-5) and "seal" (step 6). More importantly, your lips are puckered beneath the mouthpiece. It is my belief that the corners end up where they started, but the lip muscles are now energized instead of just hanging on your face. You have an embouchure!

Big deal...why do I need to do this? Why should I teach it? Why don't I just tell the kids to say "M" like I was taught? Okay, try it. Are your lips firmed up when you say "M"? Mine aren't.

But wait, there's more to it than pucker! With leak and seal, the lips have a forward focus, extremely desirable in developing upper range.

Watch for this in your students: too often, they stretch their corners back to play higher. You can see this happening and you will hear their tone progressively thin out as they go higher. Two bad things result from stretching:

1. The student can't play very high; there is a limit on how far the lips can be pulled back.

2. The risk of injury skyrockets. Remember the thin lips we felt above? That's what they achieve by stretching.

Using leak and seal, the stratosphere becomes a possibility! Endurance is greatly increased! Wow! What's to stop me??

Nothing…IF you practice leak and seal every day to MAKE SURE you are playing correctly. Talk about an inexpensive insurance policy!

And, there's the benefit of leak and seal we discussed in the previous chapter: reinforcing how to breathe properly through the corners when playing phrases requiring more than one breath.

Note: Either tired or stretched corners can cause a leak around the mouthpiece. Most leaks are small enough to not cause problems. My advice:

1. If there is a leak and the student is not tired, he or she needs to practice leak and seal to solve the issue.

2. If the student is tired, the leak is a symptom of tiredness and is not a problem.

3. If it leaks all the time (which sometimes happens to me) and the student is using leak and seal, ignore the leak (but keep an eye on it, just in case).

Rule: Practice leak and seal at least three times every day BEFORE you start warming up.

We'll come back to leak and seal in Chapter 24 when we talk about upper range.

Pause for confession – when Joe Neisler first showed me leak and seal, I thought it was unnecessary and proceeded to ignore it. This went on for years, but it kept haunting me. Finally, the light bulb went on; I have used leak and seal daily for over 20 years. Why? Because it works! It greatly helps my upper range and endurance.

Colin Behrens –Pixabay

Let's talk for a second about puffed out cheeks. To do this, the cheek muscles must be relaxed; there goes the tug of war between opposing muscles and the likelihood of playing high notes correctly. In addition to opening the door to injury from excessive arm pressure, tone quality will deteriorate. Dr. Swift told me that air in the embouchure equals air in the sound.

Although puffing cheeks is less of a problem for low brass players because less lip tension is required, I still don't think it's a good idea. Many years ago, I coached a brass quintet with a GREAT tuba player who played with puffed-out cheeks. He could do anything! Except play softly. It looked to me that his chops only worked when he had so much air moving that his lips HAD to vibrate. I believe that firm corners and cheeks held in place would have allowed him to play quietly.

Note: In Chapter 34, we'll discuss the significant challenges in making an embouchure change.

Myth Dispelled

Observers of great brass players have noticed that the better the player, the less motion is visible in the face outside the mouthpiece. Doc Severinsen is a terrific example – NOTHING moves when he plays! The deduction is that by preventing visible embouchure motion, you'll be a better player. It makes sense…how can you hit the correct pitch if your muscles are constantly moving around??

Except its wrong! Arnold Jacobs explained that beginner embouchures move a lot and we must allow them to move. As the player improves, the motion decreases. In other words, becoming a better player reduces motion; reducing motion does NOT improve playing. (Also, some faces show muscle movement more than others.)

I have watched videos of Adolph Herseth and Phil Smith. I was surprised to see some facial motion when they play, but they are as good as they come.

One final thought – a few times I have observed students whose embouchures moved a LOT. To decrease this motion, I told them that less motion was desirable and that they should practice while looking in a mirror. The goal was to observe motion in their embouchure, not to eliminate it. Simply by calling attention to it, the motion always decreased significantly without any conscious effort or detriment to their playing.

Chapter 16
Mouthpiece Buzzing

Buzzing the mouthpiece is the fifth part of the warmup.

In a 1981 masterclass, Arnold Jacobs related that he caught scarlet fever when he was 14 from the first girl he ever kissed. This developed into nephritis, or inflammation of the kidneys.

Medicine wasn't the same in 1929 as it is today. Mr. Jacobs was seriously ill, so much so that he didn't care if he lived or died. To help him heal, he was put in the hospital where he was wrapped in towels heated in an autoclave to sweat the poison from his system. After about 14 days of treatment, the cure worked but left him very weak.

Not only was medicine different all those years ago, so was entertainment. Here's a 14-year-old boy laying in a hospital bed with weeks of recovery ahead of him. So, he logged onto the hospital Wi-Fi and played games on his cellphone. Nope, there were no such things. Oh, he watched TV and movies on DVD. Nope, not that long go. No video cassettes, either.

It's possible his parents could have brought him a record player, but I doubt the hospital would let him out of bed to change records, especially with long-playing records almost 20 years in the future. He could listen to the radio, read, visit with family when they were there, or sleep. How would YOU like that to be your life for a solid month???

So, he asked his parents to bring his trumpet so he could practice…in a hospital…quiet hours…not a chance. Fortunately for all brass players, his doctors agreed that he could buzz his mouthpi ece, but NO TRUMPET!

Four weeks later, Mr. Jacobs was discharged from the hospital. When he got home, he couldn't wait to play his trumpet. (Do you see why I like him so much?!!) He said it took him a couple minutes to get used to playing it again and then he was shocked to realize that after 6 weeks of not playing the instrument, he was a better trumpeter than ever, solely because of the mouthpiece practice. This experience profoundly affected on him and his approach to brass playing.

That's one of the reasons I advocate mouthpiece buzzing. Here's another:

> When I first started working with Arthur Swift to undo the damage of my embouchure change, he had me practice the Schlossberg mouthpiece drills (*Daily Drills and Technical Studies for Trumpet*) and sirens. The Schlossberg studies proved easy, but it took me months to have smooth sirens coming down. I finally figured things out and faithfully buzzed my mouthpiece daily…until the beginning of the spring semester of my sophomore year when I decided that my lips were doing exactly what they were told. Since I had "mastered" buzzing, I no longer needed to practice it. As the semester progressed, my playing went downhill. Nothing radical, just a slow, steady decline. In desperation, I remembered that mouthpiece buzzing helped before, so I gave it a try. Within just a few days, I was back! I learned my lesson – ALWAYS BUZZ!

Except that I didn't. During my senior year, I once again came to the erroneous conclusion that I had mastered mouthpiece buzzing and no longer needed to practice. I stopped buzzing and my playing immediately took a turn for the worse. This time I was quick to recognize my error and started buzzing every day. This time I learned my lesson!! That was the spring of 1974 and I continue to buzz to this day, 46 years later.

Rule: Buzzing is the cheapest insurance policy in the world to keep you playing correctly.

If someone was a bad singer, would you blame the PA system? The microphone? Would new equipment make them sing better? No, of course not. All a brass instrument can do is amplify the buzz from the mouthpiece and, thankfully, turn it into a beautiful sound. (I liken the sound from a mouthpiece to a pitched mosquito.)

So, you MUST buzz what you are playing, which means you MUST hear it accurately in your head. It's not the instrument's fault or your fingers or even your lips if something is wrong – take responsibility for what comes out the bell! If it's not right, YOU are hearing it incorrectly and need to improve what's inside your head. Buzzing the mouthpiece puts us on the same playing field as a vocalist – internal hearing is EVERYTHING!

Aside – actually, in some respects a brass player must hear even better than a singer. While it's true that the valves and partials give us some guidance on hitting the right pitch, but what about tone quality? An unaccompanied vocalist can produce a beautiful tone even if they're a quarter-step off pitch. Unless the audience has perfect pitch, who's to know? Play a brass instrument a quarter-step out of tune – EVERYONE can tell it's a bad sound!

Rule: You and the mouthpiece are the instrument; the brass instrument is only the PA system.

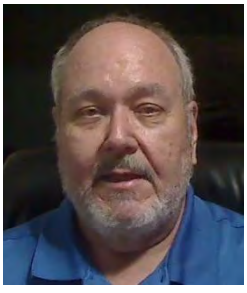
How long does it take for the lips to learn to do what they're being told? I have no way to prove this, but I believe it happens within a few weeks of learning to play. Why so little time? Because we learn other physical skills quickly…why would the lips be so much different?

Then why don't beginners sound good? Because they are not giving good instructions to their playing muscles. Why don't they give good instructions to the muscles? Because they have no idea what GOOD sounds like!

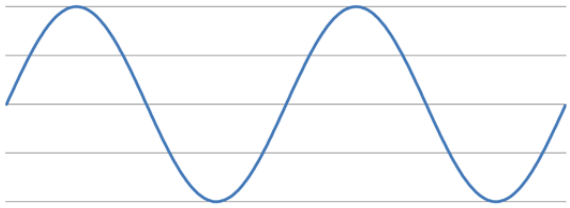
Pause – there are some students who just seem to KNOW how to play. They just do things correctly the first time. Do they HEAR internally better than their peers? I used to think so, but I'm no longer sure. It's quite possible that they were lucky and just happened to do things right.

What to Buzz

Two things need to be practiced on the mouthpiece: sirens and melodies. While you're doing this, you must monitor pitch and function to be sure they are correct. (Buzzing Sirens and Melodies – HBM video)



The first thing to buzz in your warmup is a siren, similar to a sine wave. Other than sustaining a note, it is the most basic thing we do – speeding up or slowing down lip vibrations to achieve the pitch we want.

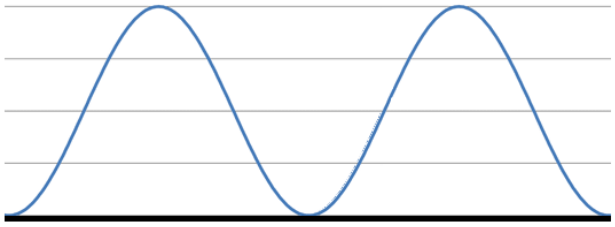


Sine Wave (unknown source)

No specific pitches are required for sirens, just a pattern matching this drawing. Protractors pull the lips together to ascend and retractors pull the lips apart to descend. Insisting on smooth sirens will produce good coordination between these muscles. The volume should stay the same throughout to ensure good air flow.

It is NOT necessary to start with perfectly smooth sirens – give them time to develop. After all, when are you going to use this in a concert?? The ONLY time composers ask for mouthpiece buzzing in a piece of music is to get the audience to laugh. So, no pressure!

Its' important to go above AND below the starting pitch. Too often students play the pattern to the right. By only going up, the retractors are not developed over their full range of motion.



(unknown source)

When buzzing melodies, the pitch MUST be accurate! Mr. Jacobs told me the following story during a lesson:

> The CSO was on tour in New England during the winter. Following the concert, a reception was held in hotel several blocks from the concert hall. Someone had spiked the punch, and after a few hours Mr. Jacobs and Mr. Herseth were under the influence and plodding through a large park on the way to their hotel; it was bitterly cold, about 0°F. Mr. Jacobs looked at Mr. Herseth and said, "I bet you $20 that you can't pick off a G-sharp above the staff." Mr. Jacobs said to me, "I picked that note to make it interesting" because it's just as easy to play F-sharp or A-sharp, especially when you haven't played for hours. Mr. Herseth looked at Mr. Jacobs through bleary eyes and said, "You're on." He bent over, took his trumpet from its case, nailed the G-sharp and collected $20 on the spot. (In today's money, that would be almost $200!!)

After the story, Mr. Jacobs told me, "Make it a point of pride to hit the correct pitch."

Over the last 10 years, the Henderson trumpet guild has brought in MANY of the world's greatest trumpeters, including Doc Severinsen, Wayne Bergeron, Allen Vizzutti, Rex Richardson, Charles Lazarus, Andrea Giuffredi, and Thomas Hooten. Not once did any of them mention the importance of hearing the correct pitch or playing rhythms correctly with a steady beat. Why?? Well, do I need to tell you to keep breathing while you're reading this? That would be ridiculous! Correct pitch and rhythm are a given when you're a world-class musician, so why would you even bring it up?

For us mere mortals, however, we must "make it a point of pride to hit the correct pitch" and the correct rhythm.

Monitoring pitch is obvious, but what do I mean by saying we must monitor function? When we blow, there must be an instant response. When we tongue, the attack (or front) of the note must be clean, and when we slur, there must be a fast siren without breaks as we move between pitches.

These things may not happen immediately, but if you keep after them and never let up, in time you will have great response, tonguing, and slurs on the mouthpiece. Once that happens, it takes only a couple minutes daily to make sure everything is working correctly.

Here are six reasons to buzz the mouthpiece:

1. Doing so strips away all mechanical aids – there is no place to hide!
2. Pitch accuracy improves; the lips learn to synchronize with the inner ear.
3. It allows the player to develop their sense of melodic line since they're not focused on the mechanics of playing.
4. It calls attention to air flow. Put the back of your hand in front of the mouthpiece (it's more sensitive than the front) or hold a strip of paper in the same place. You can feel or see the air moving.
5. Since the instrument has more resistance, it's easier to play than a mouthpiece.
6. Who really cares how well you buzz??? There is no pressure to succeed and there is no reason to fear failing, so you can completely focus on improving.

How to teach buzzing:

1. Start with leak and seal (Chapter 15 Embouchure). Be certain the student can do this before proceeding!
2. Hold mouthpiece near tip so the student and teacher can see the lips.
3. Start beginners with a single pitch with correct embouchure and air. Use whatever pitch is easiest for them: low, middle, or high. (I've forgotten the name, but there is one beginner method book that addresses this by letting students start on either low C, 2nd line G, or 3rd space C – whichever is easiest. Over a short period, the book moves to the student being able to play any of these pitches. From that point forward, all players play the same thing.
4. After the single pitch is established, start with small sirens.
5. Gradually increase the width of the sirens.
6. The sirens do NOT need to be fast, but they MUST be smooth with a constant volume (air flow).
7. Have the students match specific pitches.
8. Start with EASY melodies the students already know, like "Mary Had a Little Lamb."
9. Scales and chords are also good.
10. As much as possible, have the students slur everything – no tonguing until after they become proficient at slurring. (Tonguing adds another level of difficulty; master one thing at a time!)

11. When slurring, all sirens should be exaggerated and not fast. This is still a learning process. As students progress, they can make faster sirens.

    Admittedly, slow sirens sound BAD on the instrument and make it difficult to move around, but the student needs time to learn how to do them before speeding up. (Did you learn to walk first or run? Same principle.)

12. Add tonguing – start with repeated notes; when that sounds good, have the students tongue simple melodies.

13. Once tonguing is mastered, be sure students slur, tongue, and mix the two while buzzing.

14. For all practical purposes, buzzing the mouthpiece IS brass playing…with two important differences: the beauty of sound is missing, and so is fingering/slide practice.

15. If the student is having issues, have them work on octave sirens. The biggest cause of problems is usually a lack of air.

16. Arnold Jacobs stated that anything you can play on the instrument, you should be able to buzz on the mouthpiece.

    Note: This is generally <u>not true</u> for trumpet notes above high C because the acoustics of the mouthpiece interfere. There is a "work around" – partially cover the end of the mouthpiece with your hand, messing up the acoustics of the mouthpiece.

    You can buzz a little higher on a cornet mouthpiece because it's shorter than the trumpet mouthpiece.

    Note #2: <u>Very</u> strong trumpeters can buzz these pitches despite the acoustics of the mouthpiece.

17. Buzz-Aid/B.E.R.P. (Buzz Extension Resistance Piece) and similar products can be helpful for several reasons:

    - Resistance is like that of the instrument.
    - Mouthpiece angle to the face is the same as playing.
    - Fingers aid in pitch recall.

    The Buzz Aid goes into the leadpipe and then the mouthpiece goes into the Buzz Aid, moving the mouthpiece a couple inches closer to your face. Be careful – if you bring your arms up to your normal holding position, you could knock your teeth out! The B.E.R.P. attaches next to the leadpipe, so this is not an issue.

Buzz-Aid from Windsong Press

B.E.R.P. (Buzz Extension Resistance Piece)
available from many distributors

Controversy

Some brass players say that the lips do not buzz when playing. As proof, they play a very soft note and remove the instrument while continuing to blow. As soon as the instrument is off the mouthpiece, the sound stops. They continue to blow air without the lips buzzing. When they add the instrument back to the mouthpiece, the sound comes back. Therefore, the lips do not buzz while playing. How is the sound produced? Blowing air through the mouthpiece sets up wave patterns that produce sound.

However, there is another explanation – since the note is so soft, the lips are on the edge of not responding. The instrument adds resistance, making it easier for the lips to buzz. When the instrument is removed, the resistance drops, and the lips stop vibrating.

Adding resistance to a mouthpiece makes it easier to buzz. When students have response issues, I tell them to put their pinky over part of the end of the mouthpiece because it more closely duplicates the resistance of the instrument. Invariably, they have success. Another way to do this is to put a hand around the shank of the mouthpiece, partially obstructing the air flow, adding resistance. The amount of resistance can be adjusted by tightening or loosening the fingers.

Consider this – the bore of the trumpet is usually about 0.460 inches (measured at the 2nd valve slide). When you buzz the mouthpiece by itself, the "bore" of the room is 8 FEET or more! That's why it is more challenging to buzz the mouthpiece without the instrument.

Once my student can buzz with the pinky or fingers around the mouthpiece, we gradually reduce the resistance by covering less with the pinky or opening the fingers more. In a short period of time, they can buzz the mouthpiece without the added resistance. When they go back to the instrument, they find it's easier to play.

Chapter 17
Concept of Sound

Tone studies are the sixth part of the warmup.

Brass instruments are tone machines – it is the reason for their existence. There is something so special and unique about their sound that it strongly impacts our emotions. Composers know this very well and take advantage of it in their scoring.

For this reason, tone is EVERYTHING! But there's a practical side to this statement, too. Brass instruments sound wonderful only when played correctly; if something isn't right, they don't sound that good.

Rule: Tone is everything!

Rule: Tone quality is the best feedback you have to know if a student is playing correctly.

Classically trained vocalists focus on "bel canto," literally, "beautiful singing." The beauty of the voice is EVERYTHING! Sounds like the way brass players should think!

> FYI, "steal" from everyone, no matter what they sing or play. Attend masterclasses and clinics and see what you can adapt to your own playing and teaching. Arnold Jacobs changed my playing and teaching as much or even more than most of my trumpet teachers.

Listening is critical in developing a great sound. How can you produce what you've never heard?? Words do NOT cut it – more on this under Teaching Tone Production.

Student Success

Tone quality has a huge impact on student success. Consider this:

> When a student first begins playing, they are EXCITED that they can play anything! Wow!! Mary Had A Little Lamb! What fun!!!!
>
> That lasts for a little while. During this time, the band director helps students become aware of good and bad tone quality; they become more sophisticated – hacking through a tune is no longer enough; it must sound GOOD!
>
> Except that a lot of students don't sound good and they're quick to realize it. They no longer want to listen to a bad tone, which makes it harder to practice. The excitement begins to die…if they don't regain their enthusiasm, they'll probably quit band. Sad, but true.
>
> How about those students who naturally produce a great sound? They're getting a lot of praise from you and, let's face it, a beautiful sound is its own reward. They practice more because they have a great tone, so they get even better, which makes them want to practice even more, etc., etc. It's a wonderful, upward spiral.

Let's look at it another way:

You move to a new room in your dorm and get permission to redecorate. You go to the store and find the ugliest paint they have and then you buy a rug that is gross to look at and hurts your bare feet. After you paint your room and add the rug, you go back to the store and find posters that you HATE and get a bunch of them. You put them up and turn on your least favorite music.

And people wonder why you are NEVER in your room…

Let's do the opposite – beautiful paint, lush carpet, great posters, and your favorite music. Admit it…it's going to be hard to go to class because you LIKE your room!

Ok, back to music…if a student goes in a practice room and only encounters ugliness, WHY WOULD THEYI WANT TO GO BACK????? But if the kid is surrounded by beauty, WHY WOULD THEY EVER WANT TO LEAVE?????

A beautiful sound encourages practicing – imagine producing the most incredible sound ever heard! Wouldn't you quickly fall in love with it and never want to quit? When you sound great, it's easy to practice; when you sound bad, why would you put yourself through that???

Your Success

Your students' success is important to you, too. Of course, you want them to succeed and feel good about themselves and you want your band to get good ratings, but there is a bigger reason:

I hate to tell you, but band directors don't get paid that well. Yes, your salary will be better than a LOT of the people in your community, but when you consider how hard you have worked as a music major to get your job and how hard you are now working as a director and how much stress you're under, you will realize that doctors, lawyers, etc. are making a LOT more money than you. Many band directors change careers for this reason.

But what about those directors who LOVE their job and wouldn't trade it for ANYTHING?? Why do they stay? Two reasons:

1. They love their students and the impact they make on their students' lives.

2. The joy of making music together is beyond price. No salary can buy the joy of group success and the reward of hard work successfully done.

If you don't have these two things, you will probably get out of music or end up as another "lifer" just putting in their time, waiting to retire.

On the other hand…

What if your high school band sounded as good as the top college group at your university? How hard would it be to go to work? Remember the old saying – love what you do, and you'll never work a day in your life.

Or…

Stand in front of a horrible band, day after day, year after year…why would you stay??? YOU need your students to sound great for your sanity and career longevity. You'll never want to quit when you're standing in front of a band full of wonderful musicians!

So, tone is EVERYTHING! Well, we better add musicianship, too. A pretty sound devoid of emotion isn't worth much.

Beginners

You are probably thinking, "But they're only beginners…they CAN'T produce a great sound." Arnold Jacobs emphatically stated that beginners can sound great – all they must do is play correctly and it will happen.

As a teacher, you must embed the correct sound concept in your students' minds. Joe Christensen, my brass methods teacher, said that the main reason beginners sound bad is that they have no one to imitate except each other; you have the blind leading the blind. It's like asking students to draw a picture of an elephant when they'd never seen one. A picture is worth a thousand words and a sound is worth a million words! (Remember our discussion of wav files in Chapter 6 Two Contrasting Approaches.)

I should mention that some students do everything right from the beginning, but most do not. Without guidance and help from you, they will continue to sound bad – they're doing things wrong and becoming all too good at playing incorrectly.

It's no wonder that most beginners don't sound good – they need high-quality role models! Find a way to make listening part of your instruction; the time you "lose" working pitches and rhythms will be made up at least 10 times over by how great your band sounds!

FYI, when I was a beginner, recordings of good players were far and few between, especially solo recordings where you could really hear the player's tone. That is no longer the case! If you have internet access, you have more music available than you can ever listen to. Cell phones don't have the world's greatest speakers, but they're pretty good! You have NO EXCUSE for not providing examples of great tone for your students to emulate!!! Better yet, get them excited enough to listen on their own and bring recordings for YOU to listen to!

Where do you develop your concept of sound? Live performances are the best…period. Take your students to concerts!! No recording successfully captures all the nuances that are heard live. HOWEVER, recordings of great players are MUCH better than not listening. How much listening should they do? The great trumpeter Vince DiMartino recommends that each hour of practice be matched by an hour of listening. That's a LOT of listening and it will pay off!

Your students need to love the sound of their instruments, and they need "heroes" to emulate and who inspires them to achieve higher and higher levels. When you play recordings, be sure you tell the students who is playing!

I'll tell you a secret – when you play great music for your students, it's going to affect you as well as them. You have to put wood on the fire or it will go out – you became a band director because you LOVE music, but if you never experience great music and wonderful performers, you'll fall out of love. Trust me on this…I've seen it happen.

Teaching Tone Production

My philosophy is that the instrument wants to sound good; if you play correctly, you will have a great sound. Well, there are two more things –

1. You must practice. No matter how good your approach, strength can only be built by playing and much repetition is required to create strong habits that hold up under performance pressure.

   The correct approach coupled with adequate practice produces endurance, range, intonation, technique, flexibility, etc. Incorrect playing and/or lack of sufficient practice results in weaknesses and problems.

2. You must know what you're supposed to sound like.

   Tone quality is the performer's and the teacher's key to evaluating playing. Your knowledge of what brass instruments should sound like plus your ability to discern the difference between that and what you are hearing from your students is critical to successful brass playing and teaching.

   Many great brass teachers have stated that they would probably be better teachers if they were blind because they would not be distracted by what they see; listening would help them more accurately determine what needed to be fixed.

   FYI, many years ago I had a trumpet student who was an accomplished pianist. As a trumpeter, this person had solid technique and could accurately play difficult music. But the tone …it was possibly the worst sound I've ever heard. I was puzzled for a long time, and then it hit me…you don't have to create the tone of the piano; the tone is built into the instrument. (Yes, I know that "touch" is important, but the basic timbre is already there. This is NOT true of the trumpet or any other brass instrument.) Gradually, the student began to listen to the tone quality they were producing; we were making good progress, but I took the job at Henderson State, so I unfortunately don't know the end of the story.

   This experience taught me something very important – your approach to brass playing and teaching is colored by your own background. In high brass methods, most woodwind players do not use nearly enough air, and percussionists…well, they're puzzled that you can make a sound without using your arms. If you are not a brass player, you need to learn to think like one!

There are many, many good sounds; we can describe our emotional response ("bright," "heroic," "warm," etc.), but words are inadequate – tone quality is created by the relative strength of overtones, which are constantly in flux during attacks and volume changes, along with pitch changes created by vibrato. Keith Johnson, retired trumpet professor (University of North Texas) and author of *The Art of Trumpet Playing* stated that all great tones are "full, freely flowing sounds," and that's as close as you can get.

Think of it like this – how would you tell someone the difference in the taste of an apple and an orange? You could talk for an hour without them truly understanding. Let them take a bite of each fruit and words become unnecessary.

After a Chicago Symphony concert, I once spoke to their principal trumpeter, Adolph "Bud" Herseth, whose beautiful tone was legendary. I asked him what he thought about when he played, was he thinking of words like "dark" or "Teutonic"? He said, "No, you tend to produce what you hear in your mind." So, there is no point is talking about tone – it must be heard to be understood.

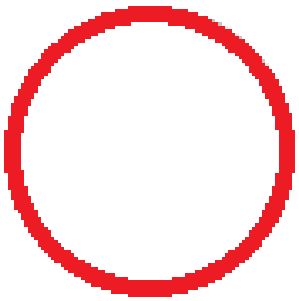
One last thing – record your students and play it back for them. It takes time to learn to hear yourself accurately while you play; most people don't listen to themselves, so they're missing the most important feedback they can get – their tone quality!!

What do you practice to develop tone? *The Carnival of Venice*? No, practice simple things – your mind can focus on the sound you're producing instead of simply hitting the right note . When playing easy music, the *slightest* imperfection is apparent.

Let me share a story with you that Dr. Swift told me:

> Around 1500, monks in Italy decided to add a fresco to their abbey. It had to be beautiful and an inspiration for them. They began to discuss potential artists and quickly got into an argument over who to hire. Finally, one of the monks said, "How can I make a decision? I don't even know most of the artists you're talking about!"
>
> The other monks agreed with him, but no one knew how to proceed. Finally, one of the monks had an idea – they would ask all the artists to submit an example of artwork so the monks could study them. At the end of four weeks, the monks would meet to pick the best artist. There were only two rules – the artist had to submit a work by the deadline, and no one would be considered who did not submit artwork.
>
> Paintings began showing up at the abbey and were placed in an unused room where the monks could examine them. Several of the monks wanted to hire Raphael – he was the greatest artist around! They anxiously awaited his painting so they could see if anyone else came even close to his artistry.
>
> A week went by. Two weeks. Three weeks. Only one more week – if Raphael didn't submit something, he would be disqualified, and they would be stuck with a painting by an inferior artist!
>
> The monks went to see Raphael to his studio. When they arrived, several people were waiting in the hallway. Entering the studio, they found Raphael painting the portrait of a young lady. The monks asked Raphael if he knew about the fresco for abbey. Yes, he'd heard. Did he understand he HAD to submit something to be considered? Yes, he knew that. Getting desperate, the monks asked him if he was going to submit something!
>
> Raphael was getting a little short on patience. He replied, "No, I'm not. I'm too busy. Didn't you see the people in the hallway? I've got to finish this portrait NOW and get started on their portraits this afternoon. I'm booked up for months! I DON'T HAVE TIME TO SUBMIT AN "AUDITION" PAINTING!

The monks pleaded with him. “No!” They pleaded again. “No!!” The monks would not relent. Finally, Raphael grabbed a sheet of paper and drew a circle using the red paint on his brush. “Here. That’s the best I can do. Now please go away so I can get back to work!”



The monks looked at the circle – it was FLAWLESS! They took it to the abbey and placed it on easel with the rest of the paintings.

The monks gathered and began evaluating the paintings. “Oh, this one is good!” “This one is a possibility, but definitely not this one.” Finally, they arrived at the paper with the red circle. “What is this? A joke? That’s not a painting! Somebody used a compass to draw a circle or traced around a bowl and then painted over it? Who submitted this??”

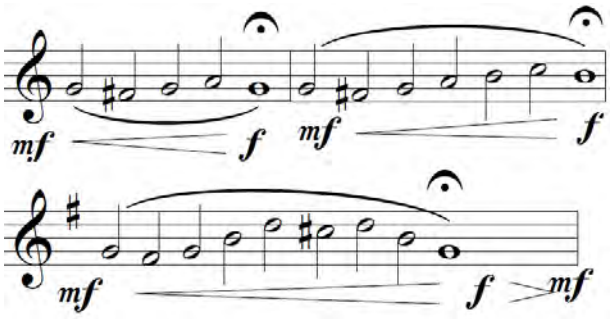
The monks who had gone to Raphael explained that they watched him paint this freehand. The monks were stunned! “But that’s not possible! A circle is so simple that the slightest imperfection is obvious – this man is clearly the most talented of all the artists!!”

So, Raphael painted the fresco. I don’t know which one it was, but this is an example of his work:

Rafael – The School of Athens - Public Domain

Other than the arch, this painting is complex! It's difficult to tell if someone's hand is a little too big or small. Complexity (like the *Carnival of Venice*) can hide flaws, but simplicity reveals them. Playing something simple flawlessly opens the door to playing something a little harder at a flawless level. Keep increasing the difficulty while maintaining perfection, and you become a superstar!!

Tone Studies



Okay, so what is the musical equivalent of a circle? Melodies like these:

(More tone studies are included in the Appendix.)

These tone studies were written by Mr. Cichowicz– they're wonderful examples of musical "circles," revealing the slightest flaw in your playing.

Exercises like these should be played in every day in every key. The flaws will not immediately disappear, but if you keep after them, they will go away.

These melodies are best played in the middle range where they are not remotely challenging…until you decide to play them flawlessly! Also, they need to be slow so you can concentrate on the tone quality of *each* note and the sound as you move between the notes. (I used to call them "moving long tones" – thinking them with this title will help you hold the tempo back – it is way too easy to play them fast!)

Is it humanly possible to be flawless? No. Remember Michael J. Fox's statement from Chapter 9:

"I am careful not to confuse excellence with perfection. Excellence I can reach for; perfection is God's business."

On the other hand, it is very possible to play so well that no one is aware of any microscopic flaws, so get started!

The Sound Between the Notes

Tone studies only work if your complete concentration is on the tone of every note and what you sound like as you move between the notes. This is just as important as the sound of the notes themselves.

Imagine a supermodel striking a gorgeous pose and then awkwardly struggling to the next position. Kind of blows your impression of them…

What should you hear between the notes? It's hard to put into words – if you press me, I'd have to say it should sound "clean" between the notes, and the notes should instantly be on pitch – no scooping. If you're slurring, there is no muffling of the sound caused by slow valve movement; if you're slurring larger intervals, you should hear a very quick gliss between the notes.

That's as good as I can do – you have to hear it! This is a particularly good example: Summon the Heroes Solo Featuring Tim Morrison, one of John Williams' favorite trumpeters. Listen to it several times (it's short – just over a minute). There are glisses on almost every slur he plays. Does it sound bad? No! It's wonderful!

Low Range

I strongly recommend that you transpose tone studies to the bottom of your low range as part of your warmup to ensure that you do not neglect this important part of your playing. It only takes a couple minutes, so it will not greatly add to your low range endurance, but it will keep things working properly.

The Underlying Cause May Not Be Obvious

One final point for future teachers – the obvious solution may not address the underlying cause: one of my students at Western Carolina University consistently played flat; no one could get him to play in tune. One day it hit me – he was confusing flat with "dark." (This is a valid mistake – orchestras often tune a bit sharp to get a more brilliant sound and bands sometimes tune a little flat to darken their sound.) Once he understood the difference, his intonation instantly improved 50%. (Progress continued after that at a slower pace.) Attacking the problem directly ("you're flat") didn't work but determining the underlying problem created room for improvement.

Chapter 18
Holding Positions

First, we need to assemble the instrument. Fortunately, this is very simple – place the mouthpiece in the leadpipe and give it a slight twist as you press in. When you take the mouthpiece out, reverse the process.

Note: Mr. Didrickson advised me to always put the mouthpiece rotated to the same position because it responded differently according to the rotation. In the days when mouthpieces where primarily made by people, there probably were off-center backbores, etc. In this CNC (computer numerical control) age, I doubt there are such variations. Nevertheless, I ALWAYS put my mouthpiece in with the number at the 3:00 position…just in case.

Rule: Do NOT let student "pop" the mouthpiece by hitting it with their palm. It has a great sound and is a great way to have the mouthpiece stuck!

The tuning slide on the trumpet should be pulled out about ½-inch to put the trumpet at A440 or close to it. (Instrument designers leave a little room to push in to allow for groups that play sharper than that.) The valve slides (one for each valve) are normally in but the 1st and 3rd slide need to be adjusted while playing.

Similarly, the tuning slide AND the valve slides on the horn should not be pushed all the way in. More on this in Chapter 31.

Holding the Instruments

What could be simpler than holding an instrument properly? Apparently, almost everything because few people hold the trumpet and the horn correctly. Does it make a difference? Yes! It affects fingering on both instruments and dramatically impacts intonation on the horn.

Rule: Start your students correctly and insist that they do things the right way! The results may not be much in the short term, but you and your students will reap great rewards long term.

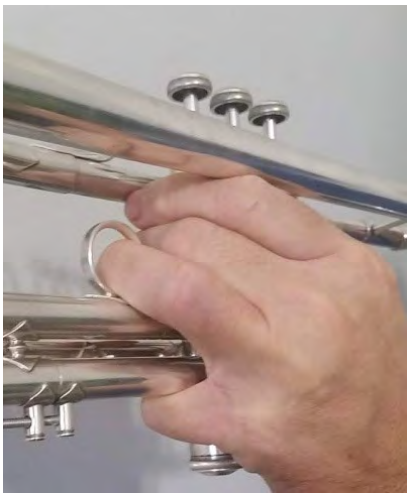
Rule: Bring the instrument to you! Do NOT go to the instrument!

Trumpet – Left Hand

Holding the trumpet is straightforward, but there are some variations due to hand size.

Pick up the trumpet and place the left hand around the valve casing. Most modern instruments have a saddle on the 1st slide and a ring on the 3rd valve slides. Be sure the thumb is in saddle and that the middle or ring finger is in the ring, whichever is most comfortable.

If the middle finger is in the ring, most people put two fingers below the valve slide.



Ring finger in the ring – some let the pinky stay loose; others put it below the bottom of the valve slide. (I do this to keep my thumb in the saddle.)

People with large hands sometimes put their first finger on top of the bell.

One of the bad habits you'll sometimes see with lead trumpeters is holding the trumpet without putting their thumb and finger in the hook or the ring. Some even hold the trumpet by the bottom of the valve casings. It might be okay for them since they never play notes low enough to require that these slides to

be moved, but it's not okay for students! Not using slides leads trumpet students into accepting bad intonation… and that is going to cause your band problems!


Two versions of holding the trumpet by the bottom of the valve casings.

Trumpet – Right Hand

Before we talk about the right hand, let me ask you which musicians use their fingers the most and in the most complicated ways. Pianists and organists, right? How many piano teachers let you play with flat fingers? None! Have you ever asked yourself why? Why do all great baseball batters stand in the same position? Because history has proven that provides the best chance of hitting a home run. Why do piano teachers harp on hand position? Because history shows that it produces the best pianists and it reduces the chance of injury. (Yes, pianists can sustain injuries from playing.)

If arched fingers create the best pianists, doesn't it make sense that it also provides the best hand position on trumpet?? Of course, it does! Here's how to hold the right hand:

Put the thumb under the leadpipe between the 1st and 2nd valve casings, anchoring the hand in place so the fingers can come down hard, creating the cleanest possible playing. (It also allows the use of hand vibrato on open notes.)

The fingers need to be arched, like playing piano, so that the ball of the fingertip is on the valve. If the fingernail hits the valve cap, the fingers are too arched.

Here are photos of an ***INCORRECT*** right hand position that I see most trumpeters use:

What so bad about them?

1. The thumb is in the wrong place – so much for clean playing and vibrato on open notes.

2. The middles of the fingers are over the valves. This creates three problems:

   a. The tip of the finger moves MUCH farther than necessary – this translates into slower finger speed.

   b. The fingers are more flat than arched, increasing tension in the fingers and slowing them even more.

   c. The valves are pushed at an angle, increasing the chance that they will stick and wear unevenly.

3. And now, the biggest error committed by most trumpet players – the right-hand pinky is in the hook!! There is a hook or ring for the pinky, so you must use it, right??

WRONG!!!!

The pinky hook or ring is for one-handed playing ONLY, for example, turning a page while playing, making a quick mute change, using a plunger mute, etc. (I was told that the ring was added to the cornet so that early band leaders could play while conducting.) The also hook lets you hold the trumpet with just the right hand <u>when you're not playing</u>.)

Why is it so terrible to use the hook? Because the third finger is the least coordinated part of the human body. If you don't believe me, work on the low exercises in Herbert L. Clarke's Second Technical Study. [When I first learned them, I was convinced that someone else's 3rd finger had been grafted on my hand – it REFUSED to cooperate!]

The ring finger and pinky are best thought of as a single finger with two parts. Their tendons function together and there is a nerve that goes to both the pinky and the pinky side of the ring finger. If the 3rd finger is such a klutz, WHY would you do anything to slow it down???

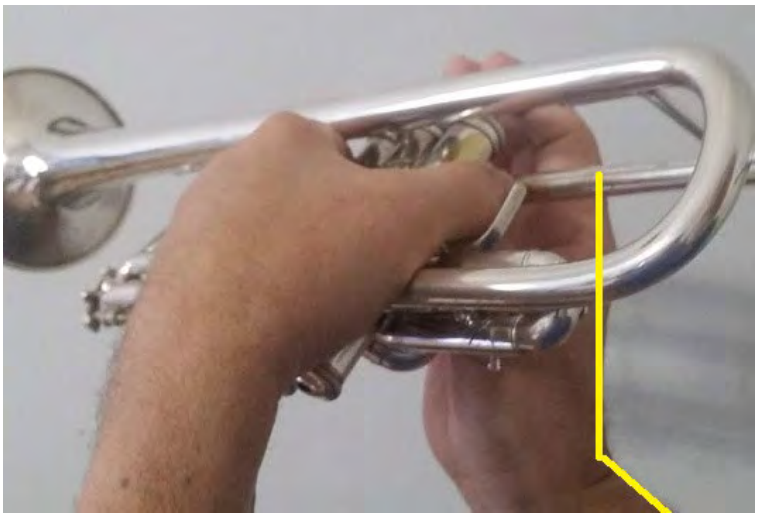
Some band directors teach that the pinky should stay on top of the pinky ring. No good – that ties the finger down just as much as putting it in the ring. My advice is to let the pinky float and move however it wants along with the 3rd finger. (Directors advocating the finger on top of the ring are probably trying to reduce pressure on the lips. I don't buy that, either. I can more than hurt my lips with my left arm – how much more additional damage can I do with a pinky!!??)

"But it's there! I have to use the pinky ring!!" Right. And do you put one foot on the brake and the other on the gas because there are two pedals in your car?? Didn't think so. The pinky and brake pedal are there when you need them, not for constant use.

"But I saw [insert amazing trumpeters' names] and they play with their finger in the ring." That's correct and they are indeed phenomenal, but it's despite the pinky ring, not because of it. Just think – they'd be even more amazing it they did things the right way!

The trumpet should be held with the valves pretty much straight up and down, keeping the wrists of both arms essentially straight.

Many trumpeters like to hold their instrument with a tilt so that the left wrist is straight. Taken too far, the right wrist ends up bent. This may look "cool," but it slows the right-hand fingers…NOT cool!



Setting the Trumpet Down

When setting the instrument down, there is a strong temptation to lay it down with the left hand. This results in the 2nd valve slide setting on the table which can warp the 2nd valve casing, causing the valve to stick. The other temptation is that the trumpet is very stable when you set it down this way.

WRONG!! - Anna Armbrust – Pixabay

Set the trumpet down with the right hand; the 2nd valve slide is up in the air and doesn't get bent, so the valve continues to work well. Yes, the trumpet rocks a bit from side to side, but it's not going anywhere.

> **Note:** Some students set the trumpet down on its bell without using an instrument stand. Bad idea!!! The trumpet is NOT stable without a stand; just a tap will knock it over, probably requiring an expensive repair at the shop.

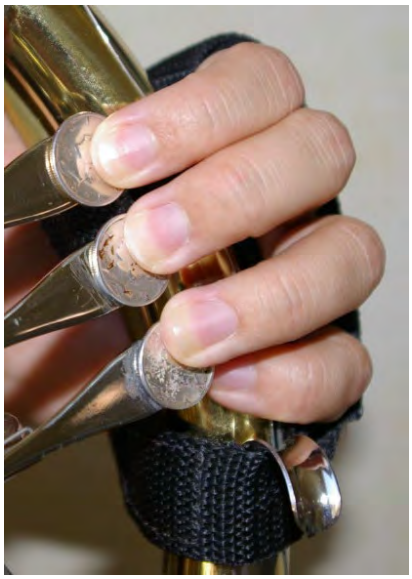
Also, the five-legged trumpet stands are much more stable than the three-legged stand.

Horn – Left Hand

We're going to start with the left hand on the horn because is essentially the same as the right hand on the trumpet…with two important differences.


I flipped the first photo, so it appears to be a right hand – notice how similar it is to the trumpet right hand position.

On to the two differences…



hornmatters.com

First, the valve levers are not always long enough for the player to curve their fingers and still reach the valve. Sometimes horn players have silver dimes welded to the end of the levers to make them easier to reach.

Second, the pinky must be in the pinky ring to keep the horn from falling. It's just as bad to do this on horn as it is on trumpet; if you're right-handed, it's even worse! Two alternatives exist:

1. A hand strap can be added. The player slips their hand into the strap, placing the weight of the horn on the hand between the base of the thumb and the base of the first finger. (Used in the picture with the dimes on the levers.)

Houghton Horns

2. ter solution is a “flipper” soldered on the horn that puts the weight of the instrument in the same place as the hand strap. They’re called flippers because they flip up for playing and flip down when putting the instrument in the case.

No, your school horns will not have flippers, and yes, you need to have them put on. It’s a one-time expense. Most school instruments must last for DECADES and your horn players will play better than every other else’s horn section. DO IT!!

Houghton Horns

I’ve saved the best (the worst?) for last. The dreaded right hand!! It is very simple to do correctly, but you must stay on top of your students or you will have an out-of-tune horn section! If you stay after them, in time your students will correct each other, and wouldn’t that be great??!!

Horn – Right Hand

Horn players have a great advantage over trumpeters – they can use the right hand to correct major intonation problems. The more the hand closes the bell, the flatter the pitch; opening the hand raises the pitch. (Use the embouchure to correct minor intonation problems.)

Additionally, the tone is darkened by closing bell and brightened by opening. Traditionally, horn players worked for a darker sound; this trend has been reversed in many major orchestras -- bright projects better, requiring less effort on the part of the player to balance the trumpets and trombones.

FYI, orchestration books generally recommend scoring two horns in unison to balance one trumpet or trombone at mezzo forte and louder. Softer than mf, one horn can balance one trumpet or trombone. For many years, I lived under the mistaken assumption that the horn is not as loud as the trumpet/trombone. Not true!! The problem is that it’s pointing backwards! If you have a great reflective surface directly behind the horns, they will balance trumpets/trombones one to one, even at loud dynamics.

Why do horns have the bells facing backwards? And what’s with the hands in the bell???

We need to talk a bit of history so you know why horn players MUST hold their instrument correctly, so let’s wind the clock back about 400 years. Trumpet players were busy playing for kings and queens and signaling troop movements in the armies. Horn players were at the front of the hunting parties, blowing signals to the aristocrats who followed so they would know where the fox was. Yes, that’s why the horn bell faces backward! Not exactly the best thing, but it’s the way things are. If someone started making bell-front horns, everyone would come unglued. “Why, it just isn’t done!!”

After the foxhunt, everyone went home and watched movies on the internet…nope. There wasn’t much entertainment, until someone came up with the idea of OPERA!! I’m aware of the stereotype vision

most people have of opera, especially when they've never seen one, but when opera first came out, it was FANTASTIC!! It was the blockbuster movie of the 1600s!!

Just as it is in movies today, opera composers were constantly looking for special effects. They used cutouts of ships pulled across the stage with cutouts of waves moving up and down – primitive by our standards, but exciting four hundred years ago.

One day, someone said, "Let's have a foxhunt in our opera – it's never been done! We'll even get some horn players to be in it. Wow!!" So, they found horn players who could get away from their hunting duties for a few days and put them in the opera. These horn players were STRONG and played LOUDLY because that was the only way the nobility could hear them off in the distance.

The horns completely covered the orchestra. In desperation, someone said, "Can you put your hand in the bell to tone it down a bit?" and horn players have had their hands in the bell ever since.

Hard to believe but true. It gets even worse…

A horn player figured out that by closing the right hand, it effectively changed the length of the instrument and produced a new overtone series, filling in the gaps of the original overtone series. The hand horn was born! (This was the instrument used in the orchestras of Mozart, Haydn, and Beethoven.)

> **Note:** Trumpet players later followed suit with the trompete demi-lune, a natural (valveless) trumpet with enough curve in it that the player could put their hand in the ball.

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Crooks

Valves were about 200 years in the future, so horn players were limited to notes in the instrument's harmonic series. (See Chapter 4 Harmonic Series.) The only way to play diatonic melodies was in the extreme upper range and the only way to change overtone series was by playing a horn with a different length. (Trumpet players were facing these same problems.) Someone came up with the idea of "crooks" that could be inserted between the mouthpiece and the instrument to lengthen the instrument, providing a new overtone series. Pretty soon, horn players and trumpeters switched to the shortest instrument length possible, carrying crooks with them to play in every key needed. (I've been told that in the orchestra pits of European opera houses there are boards still attached to the walls with holes for the crooks to be stored when not needed.)

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What a pain, dragging around all these crooks, and it took a while to change them, too. Wasn't there a mechanical way to change instrument length rapidly? This question led to the invention of the valve around 1814. Valves were NOT added to create a chromatic instrument; their purpose was facilitating crook changes. FYI, many variations were tried before manufacturers and players settled on today's rotary and périnet (piston) valves.

Okay, so what has all this to do with the right hand of the horn??? It's simple – before valves, horn players used hand horns. Valves were added to the existing technology – HAND horns!

Since most people are right-handed, the right hand did all the work playing hand horns. The left hand was simply used to hold the instrument. Remember, the original purpose of valves was to provide rapid crook changes; even with the addition of valves, it was still played as a hand horn, not as a chromatic instrument. You pushed a valve down to play in the correct key and kept it down while playing the instrument as a hand horn.

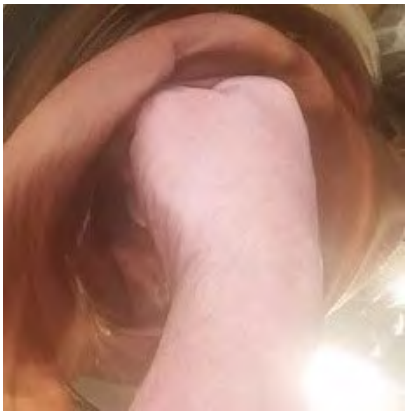
Since finger dexterity was not an issue, valves were placed where the left hand could reach them, allowing the traditional use of the right hand to change pitch. If they only knew how hard 21st century horn music would be – perhaps they would have flipped the design!

Rule: Horn players hands MUST be in the bell! Period!

If the hand is not in a hand horn, the sound of the instrument is not the traditional timbre and it's OUT OF TUNE!! By at least ¼-step!!

How do you know your student's right-hand position is correct? You must get behind them and look. Most young horn players do NOT hold the instrument correctly, so you need to do this – start a march, leave the podium, and walk behind the horns and see what they're up to. I've watched the best horn players at All-State in Illinois and at Four States (Arkansas, Oklahoma, Texas, and Louisiana) – most of them do NOT hold the instrument correctly. If the best players don't do it right, you can be certain the rest of the section is wrong, too.

It's not that hard to do – I NEVER hold a horn incorrectly, and I'm a trumpet player. What's their excuse???



Okay, I almost forgot to tell you how to hold the right hand, but I wanted you to understand WHY it is so important. Here goes:

1. Hold your hand in front of you, palm up.

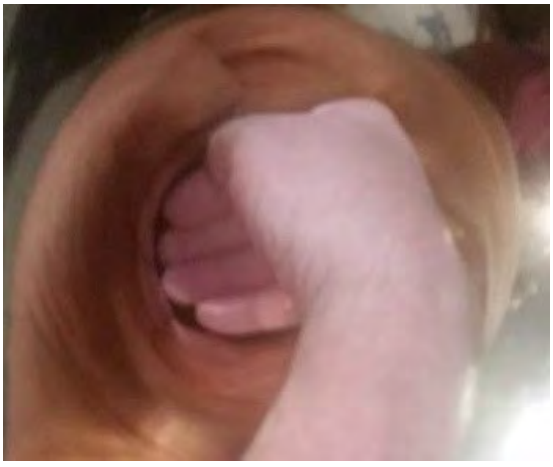
2. Cup your palm as if you were trying to hold water, i.e. no gaps in the fingers.

3. Rotate your hand so that it's vertical – so much for our imaginary water!

4. Place your hand in the horn bell AWAY from you…on the far side of the bell.

5. It needs to go in far enough that the big knuckle of your first finger touches the bell. When you do this, it is easy to raise the horn with your right hand and keep it there. If it's not in far enough, the horn feels like it will slip.

6. The fingers of the right hand need to be flat and alongside the outer wall of the bell. Watch for this – students often curl their fingers into the bell, blocking the sound. (Usually the right hand is positioned so that you can't see the fingers this easily.)Be sure the bell is not pointing at your body – it's bad enough that the sound is going away from the audience; the last thing you need is for it to be absorbed by your clothes.



We'll talk about stopping the horn in Chapter 36, but for now it's important for you to know that your right hand is in the proper position to stop the horn.

When you're standing, you hold the horn with only the left and right hands, but you have an option when you sit down – you can rest the bell on your right leg. It's easier to hold this way but it's also easy to adopt bad posture by moving your body to the instrument instead of bringing it to you, resulting in unequal pressure on the lips and making it harder to breath properly. This can easily be corrected by changing the position of your right leg.

The other problem with the horn in the leg is that it stays put; if you turn to see the conductor better, the horn doesn't move unless you also move your leg.

To go with stereotypes, younger players place the bell on their leg. Older and better players prefer to hold the horn off their leg.

Most horn players place their hand around the 2 o'clock position in the bell to make this easier.

Here are several ways the horn should NOT be held:

Wrong side of bell!

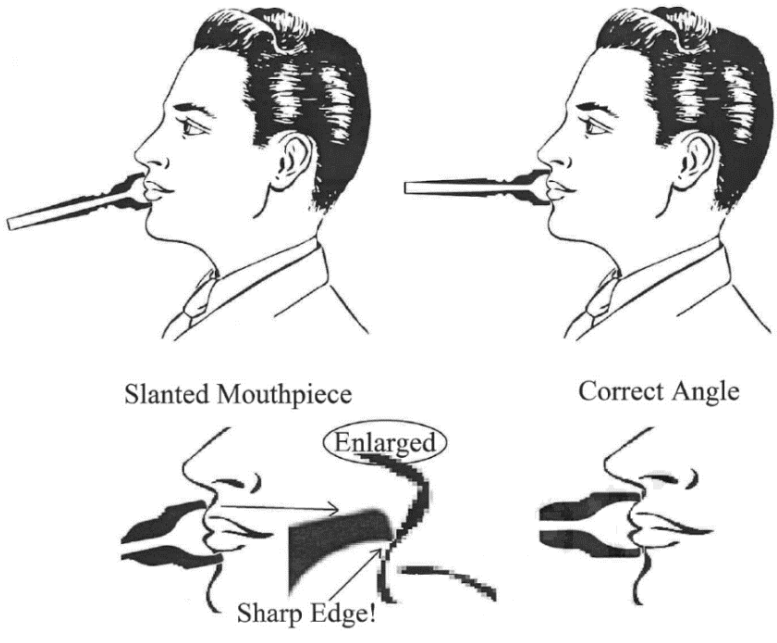
Bottom of bell

Look, Ma! No hands!!

Here's an example of incorrect hand position on the horn – note the gap between the thumb and first finger and that the hand is covering most of the bell.

Angle of Leadpipe to the Teeth

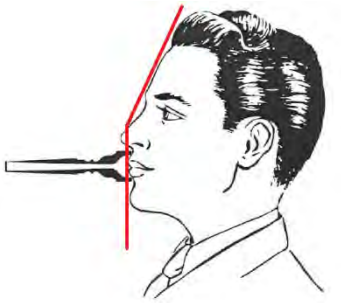
It is critical that the leadpipe be held at a right angle to the teeth. I learned from hard experience…if the leadpipe (and the mouthpiece) are not perpendicular to the teeth, the bite of the mouthpiece presents a sharp edge to the lips. Although this doesn't cut the lip, it focuses pressure on a very small part of the lip, reducing endurance greatly.



I picked up a bad habit somewhere along the way of letting the trumpet angle down, resulting in a slanted mouthpiece and the edge of the bite on my upper lip. When I got to college, Dr. Swift told me to hold the trumpet straight out from my teeth. Yes, sir! I'll do it!

Except that I'd forget, so he'd tell me again…yes, sir! And I'd forget – this happened at least six times during my freshman year. Finally, he said, "If you hold the leadpipe straight out, you'll have better range and endurance."

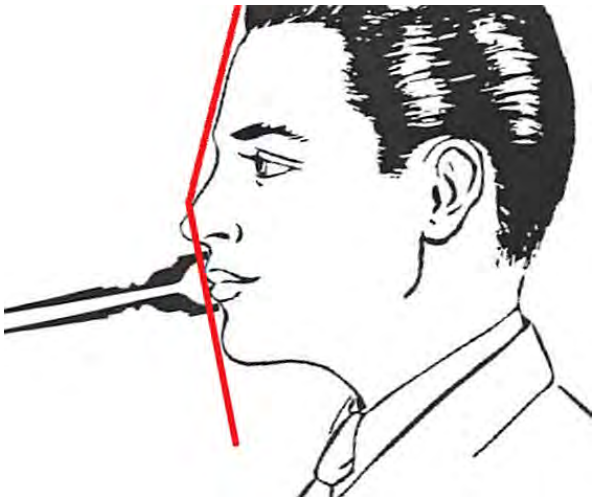
Better range??!!! That got my attention! So, I worked diligently, keeping the proper angle at all times by moving my jaw forward, keeping my teeth in line and the pressure the same on both lips. My jaw muscles ached for about two weeks, and it was done; it has not been a problem since and…my range and endurance got better!



The moral of the story: hold the right carrot in front of the student and they'll do what you want.

You'll notice that I said hold the mouthpiece/ leadpipe at a right angle to the teeth, not to the face and not parallel to the floor. The face of the individual in the drawing has two planes forming an angle. This is quite common; there are also people whose face is virtually a straight line – they can stand straight up, hold the trumpet parallel to the floor, and still have the correct mouthpiece angle.

In drawing on the previous page, the person's head is tipped back to get the mouthpiece parallel to the floor. When we rotate the head to a more typical position, the mouthpiece angles down…but it's still perpendicular to the teeth.



If you want bells straight out (highly desirable for looks and so the sound goes to the audience and not into the ground), there are two options:

1. Tip the head back – this tends to put tension in the throat.

2. Lean back – this can put tension in the abdominal muscles if students lean too far back.

If students don't overdo it, I recommend solution #2.

Chapter 19
Flexibility and Slurs

Many brass players include lip slurs in their warmup.

Definition of "Slur"

Before we talk about flexibility, we need to define "slur" as the moment of change between notes. I'm sure we're talking only hundredths of a second, but it is a very important part of music. In its quest to create realistic sounds with a computer, Garriton recorded the sound instruments produce between pitches to improve the realism of its Personal Orchestra software. (They even recorded the sound of woodwind keys to add to the realism!)

Rule: Listen to the sound between notes.

Memorize the sound great performers make as they move between notes. When you sound like they do, you will be a great player yourself!

Flexibility

Flexibility is more than lip slurs; it refers to any movement between pitches. The best definition I've found came from Keith Johnson: "the ability to move quickly, freely, and smoothly around the instrument." The problem for many people is not playing the notes but moving between them – they try too hard and tense too many muscles. (See Chapter 14 Relaxation.)

Moving quickly, freely, and smoothly means that opposing muscle groups must cooperate. In fact, it's one of the two definitions of muscle coordination. (The other refers to muscles moving rhythmically, like great NBA basketball players dribbling the ball.)

What are the requirements for superb flexibility?

1. Tone quality must always be great – the more correctly you play, the better you sound. Therefore:

   If you have a great sound, you are playing correctly. Your muscles cannot be fighting each other. Focusing on a beautiful sound removes any possibility of unnecessary tension.

2. Air must flow freely, using just enough energy to get the job done. (Using more energy than the minimum can only occur when muscles fight each other.) See the "Arnold Jacobs" sidebar in Chapter 14 Relaxation.)

3. Sirens are the foundation of flexibility, therefore, daily practice of sirens on the mouthpiece, making sure they are smooth without any break in the sound. This ensures that protractor and retractor muscles coordinate and that the air is continuous. (See Chapter 16 Mouthpiece Buzzing.)

   If you look at only the note heads in more advanced music, you often see a series of siren-like

patterns. This music presents no difficulties for the embouchure If you've been practicing sirens.

4. The jaw must be allowed to move slightly, helping the lower lip move. In fact, Mr. Christensen called them "jaw slurs" instead of lip slurs. I was shocked to hear him say this, but when I allowed my jaw to move, my lip slurs improved dramatically.

   As further proof, play a note at the bottom of your range and then play a note two octaves higher. Did your jaw move? I thought so. If it moves a lot for two octaves, then it seems likely it moves for smaller intervals.

Note: Many teachers advocate "ah, ee" for lip slurs – "ah" for the low note and "ee" for the upper. They'll cite the Bernoulli principle as the reason for this, but the truth is that "ah, ee" moves your jaw. Try it! We'll come back to this in Chapter 24 Upper Range.

Gliss

A mouthpiece siren is a glissando or "gliss." Glisses in jazz are usually obvious, especially when someone is playing "tailgate trombone." Although less pronounced, glisses are also present in "classical" brass playing, particularly in large downward slurs. There are only two ways to prevent a large-interval gliss: tongue during the pitch change (which means it's not a slur) or stop the air between notes (which isn't a slur, either).

Compared to jazz, "classical" glisses are quite rapid and don't draw attention to themselves. Once you become aware of them, however, they are quite noticeable and sound wonderful! Listen to this again: Summon the Heroes Solo Featuring Tim Morrison.

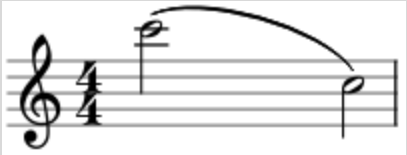
More on Sirens

Rule: When it's time to move, MOVE!

Sirens must be as fast as possible between pitches (unless you want the music to sound jazzy). Why can't they be slow? Well, why do we have valves or a slide on brass instruments? To play the notes in the gaps of the overtone series. If you're playing this on the trumpet:

Glisses in Classical Music

I was having trouble playing this slur in the Jolivet *Concertino*:



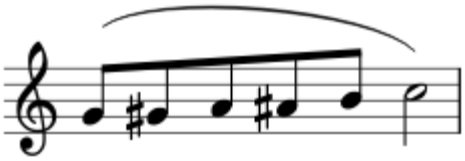
Mr. Clifford Lillya, my teacher at the University of Michigan, told me to put a gliss between the notes. I was confused – yes, the *Concertino* has jazz elements, but it was a *CLASSICAL* piece! I wasn't about to add a gliss that the composer hadn't specified!

Still, I trusted Mr. Lillya – somehow, I had to reconcile what he was telling me with my concept of classical music. I started listening to the great musicians around me. The first thing I noticed was that vocalists constantly put glisses between their pitches. (It only makes sense – there are no keys in the larynx to prevent a gliss.) I also noticed that string players used glisses when they changed positions, and the more emotional they wanted the music to be, the longer they took with the gliss.

What surprised me most was that the vocal and string glisses sounded GREAT! I simply hadn't been aware of them before this. I took Mr. Lillya's advice and that solved the problem of the octave slur.

FYI, a gliss greatly helps the octave-and-a-half slur in the 1st movement of the Hummel *Trumpet Concerto*.

your lips must move through these notes and all the frequencies in between:



The only way we can play the middle notes is with valves – you can't make it work any other way.

While you're playing the second example, your lips are making a slow gliss, but when you play the first example, your lips need to move quickly; if they don't, the instrument will fight you! Fight you? Yes – you can't play the middle notes without valves, so it gets stuffy!!

On the other hand, if your lips move quickly, playing a fourth is no more difficult than a half step. Before the instrument can fight you, you've already arrived at the note. It makes playing EASY!

How to Practice Lip Slurs

The ONLY shortcut to lips slurs is to work on them every day. Think of it like this:

> Your hometown is 100 miles away. You're about to head home for the summer when your car dies. You're broke, all your friends have already left, so you decide to walk. What else can you do? There are several ways to approach this:
>
> 1. Walk 20 miles a day for 5 days
> 2. Walk 5 miles a day for 20 days.
> 3. Walk 1 mile a day for 100 days
> 4. Walk when you feel like, maybe once or twice a week and stop as soon as you get bored. Time required? Months! Years! Decades??

If you practice lip slurs every day, they'll happen a lot faster than if you work on them occasionally. Here's a "secret" to make that happen: put them in your warmup. Since you warm up every day (you better!), you'll work on lip slurs daily. (This tip comes from Mr. Cichowicz.)

Practice Secrets

Here's a secret from one of Joe Neisler's teachers (I've forgotten the name):

Practicing is going in a small room and making a bunch of bad sounds. When things sound good, take on something new and you'll be back to the bad sounds. Repeat as needed!

Another secret I learned from a motivational speaker (sorry, I don't remember her name): if something's worth doing, it's worth doing poorly.

Wait! That's not right!!! If it's worth doing, it's worth doing well! Not poorly!!!

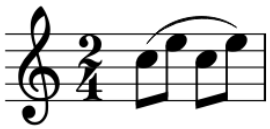
Except that if it's worth doing, you probably won't be very good when you start. You must be willing to be bad at the beginning so you can learn how to do it well. MOST people fail to do this – seriously, who wants to sound bad?? Especially, when you're in a Wenger practice room and everyone walking by can see that it's YOU making those sounds!

Put your back to the door and keep practicing – one of these days, people will be looking into your practice room to see who's making those wonderful sounds!

There's nothing wrong with practicing lip slurs at the end of the day, but you're more likely to forget or you may be too tired to get much out it.

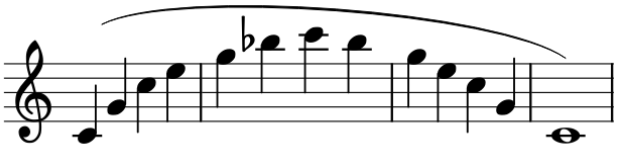
There are a LOT of different lip slur patterns, but they fall into eight basic types:

1. Adjacent overtones



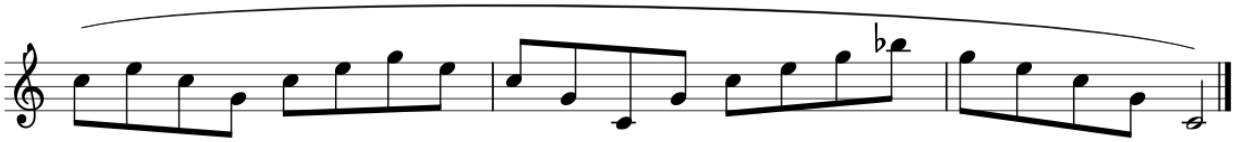
2. Arpeggios

3. Up and down the overtone series

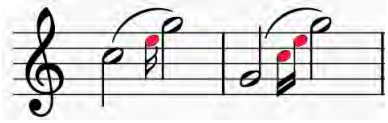


Note: The B-flat is the 7th partial; it is about 1/3 of a half step flat

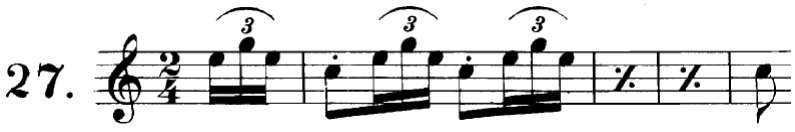
4. Expanding overtone series (Colin *Advanced Lip Flexibilities*)



5. Skipping overtones (notes in red are to be skipped)

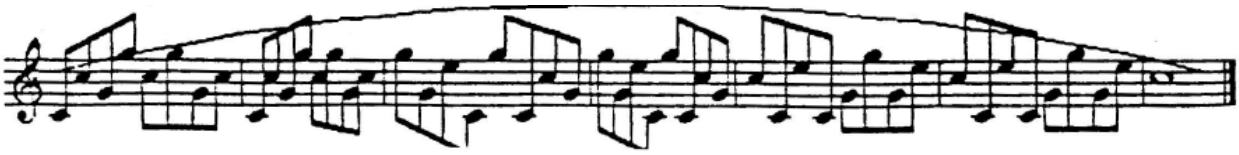


6. Instant flexibility (Arban *Complete Conservatory Method*)



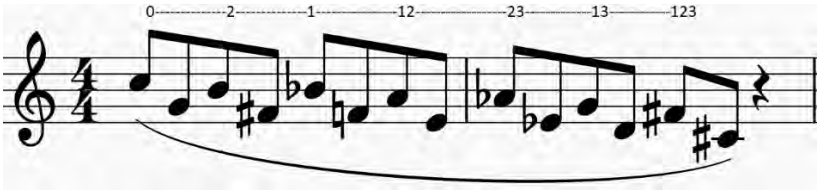
Arban *Complete Conservatory Method*

7. Convoluted patterns, such as this example from the Dirty Dozen:



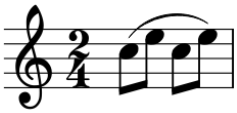
Chase, Dirty Dozen #12

8. Changing Valves

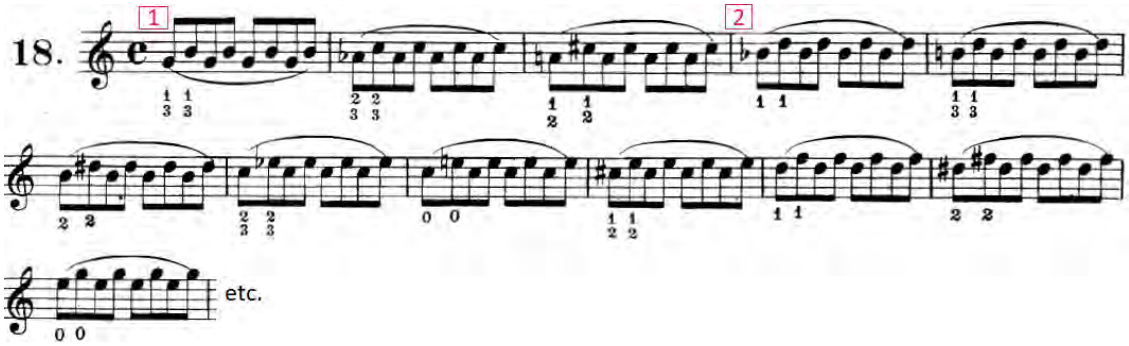


The permutations of these basic patterns are limitless. Let's discuss each of them in more detail.

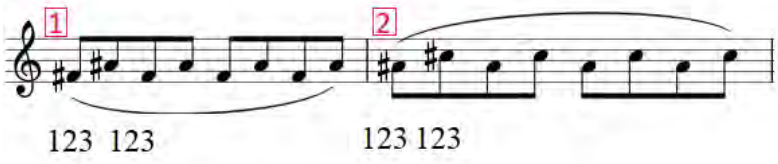
1. Adjacent Overtones



Where do you begin? With the simplest task – back and forth between two adjacent overtones. Arban begins this lip slur study with half notes followed by quarter notes and then eighth notes:

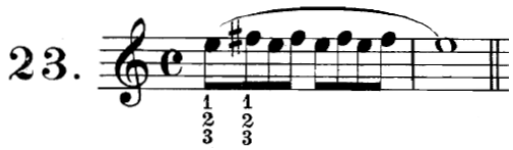


Note the use of alternate fingerings used to increase the number of possible lip slurs. I've always thought it interesting that Arban avoided the 123 combination – perhaps the instruments of his time weren't as good as modern instruments. When I practice these exercises, I add the following two measures to each exercise (indicated above in red).



The red numbers show where each measure goes in #18.

Note: Arban did include the 123 combination in exercises # 23-25. It is always from the 7th to the 8th partial.



Also, see "The Wisdom of Arban" in the sidebar at the end of this chapter.

Secret to Success

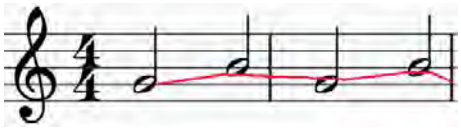
Everyone loves secrets, so I'm going to share the "secrets" to learning these exercises:

1. Be honest –start as slowly as necessary to play the lip slurs well. Watch out for the trumpet ego!

2. Be sure every pitch has a great tone! Imagine a recording with Virtuoso Trumpet (VT) in the left channel playing a long tone on second line G and Trumpeter Extraordinaire (TE) in the right channel playing a long tone on B. Use the fader to rapidly switch between VT and TE and you'll hear great tone on each pitch. That is the role model you want to emulate when you play these exercises. Remember the rule:

   Rule: Tone is everything!

   Buzzing the interval on the mouthpiece is the easiest way to determine if the student is playing the pitches in tune. Quite often, students fail to go all the way to the top note (as you can see in the example below) and sometimes they don't make it all the way back to the lower note.

   If you listen carefully, you can also hear the distortion in tone on the instrument when the siren doesn't fully reach the pitches.

3. Mentally rewrite #18 so that each measure is a separate exercise with its own tempo. You'll find some easier, so let them be faster. If some are harder, let them be slower. In other words, you are trying to master each measure, not the entire exercise. You may start with quarter = 80 for several measures and then need to slow the metronome to 72 for several measures and perhaps slow down even more. (Most people find the lower intervals easier, so they tend to be easier to play quickly than the high intervals. That is NOT true for everyone, so be flexible.)

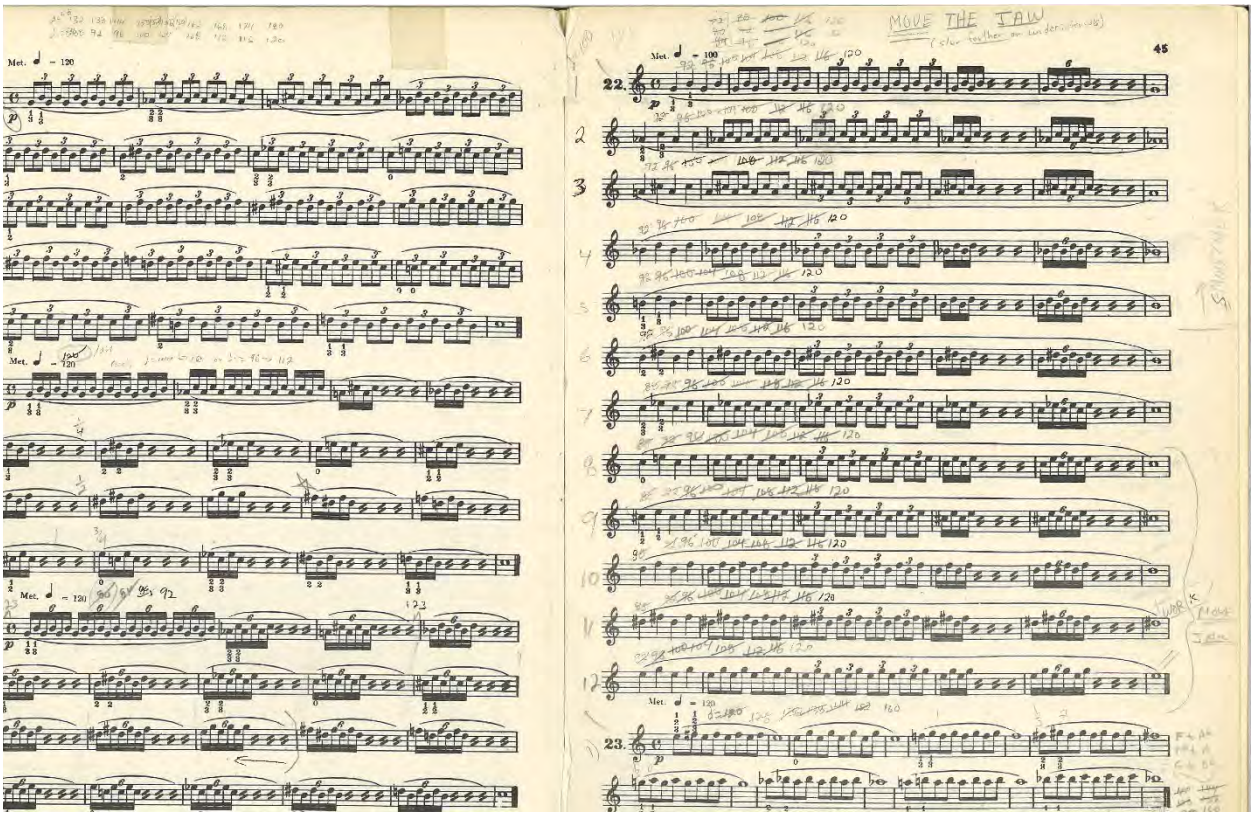
4. Use a metronome to gradually increase tempo. The best increase is small because it's almost unnoticeable. Going from 80 to 100 is a challenge (which is what you'll probably do without a metronome) but moving from 80 to 84 is relatively easy. In fact, you may even get it the first time.

5. If you don't sound good when you increase the tempo, you must:

a. Stay at the new tempo. No more tempo increases until it sounds good.

b. Go back to the previous tempo, re-establish good tone, and try the faster tempo again.

6. Record your progress – write the tempos right on the music. When you master it, cross it off and increase the tempo. After a while, you'll see a string of crossed off tempos. That is a clear indication that you're making progress and is great encouragement to keep going.



Most of these metronome markings are from the summer of 1974 when I decided to develop first class lip slurs. You can see the amount of work I put in, but it's deceptive. I started with totally blank pages – little by little these marks were added over a three-month period.

7. Be satisfied with small improvements. The goal (not the requirement!) is to speed up each measure every day. That is NOT going to happen – some days 5-6 measures will speed up and some days perhaps only 1 will increase. It's a process, not a race.

8. Put in a consistent amount of time very day. I recommend 20 minutes daily, but 10 minutes will work, and even 5 will eventually show progress.

Whew! Sounds like a lot of work! True, but imagine having world-class lip slurs…it's worth it!

Weightlifting vs. Lip Slurs

Olympic lifter Lasha Talakhadze
lifting 503 pounds (258 kg)
2016 Olympic games
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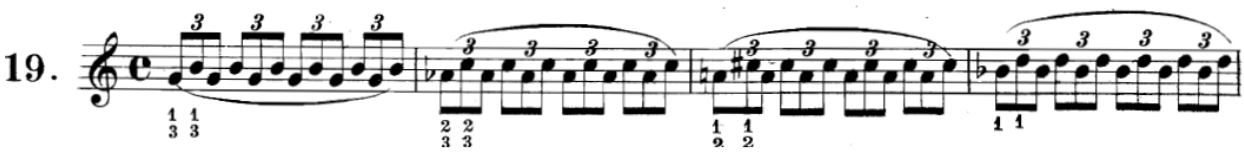
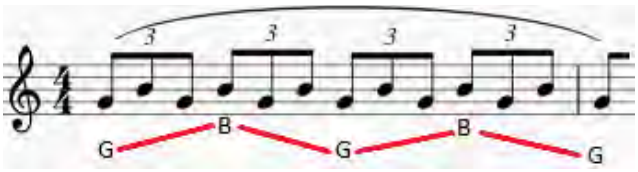
There are many of parallels between weightlifting and this approach to lip slurs:

1. You must start where you're at, not where you want to be. (Only play lip slurs as fast as they sound good.)
2. Good form is important! Bad form can result in injury. (At least we don't have to worry about getting hurt!)
3. You adjust the weight for the muscle you're working on. You don't use the same weights for arms, legs, etc. (Find the starting point for EACH interval.)
4. You increase the weight only as your body adapts to it. (You can try to speed up the tempo, but you can't make it happen. It takes the time that it takes.)
5. If you can't handle the weight you're on, you would be foolish to increase try something heavier. (Don't increase tempo until you master the current speed.)
6. You need to record the weight you're using for each exercise so that you can pick up where you left off and so to measure your progress. (We're not recording weight, we're recording speed.)
7. Any increase is good. Weightlifters are optimists by nature, focusing on progress and predicting where it will lead. (Musicians tend toward negativity, focusing on what's wrong instead of what's right.)
8. You must work out consistently to maintain your gains and to open the possibility of more gains. (This is true of lip slurs, but it's more about maintaining agility than muscle mass.)

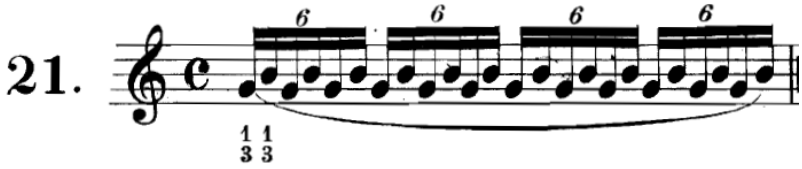
Students often encounter issues when they begin #19 because it is a two-note pattern over triplets: beats 2 and 4 different than beats 1 and 2. They are the same in all the other exercises.



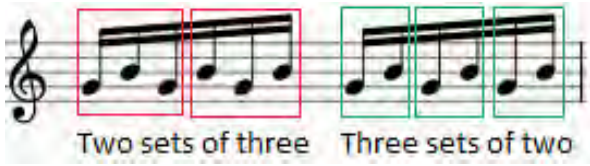
Students have less trouble when I explain to them the pattern "swings" between the G and the B:



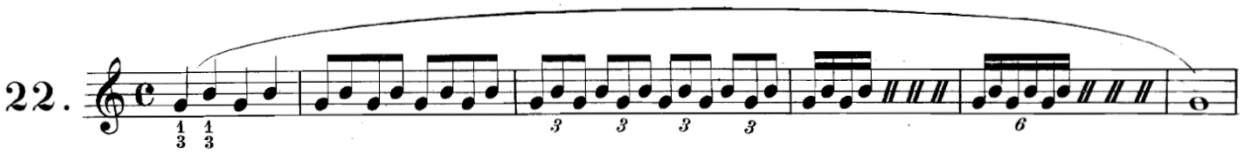
Following triplets, Arban moves to 16th notes in #20 and then triplet 16th notes in #21.



This can be handled as two sets of three or the student can think of it as three sets of two:



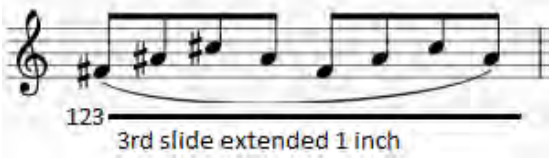
Many students find the sextuplets difficult. It is much easier to approach them as in Exercise #22:



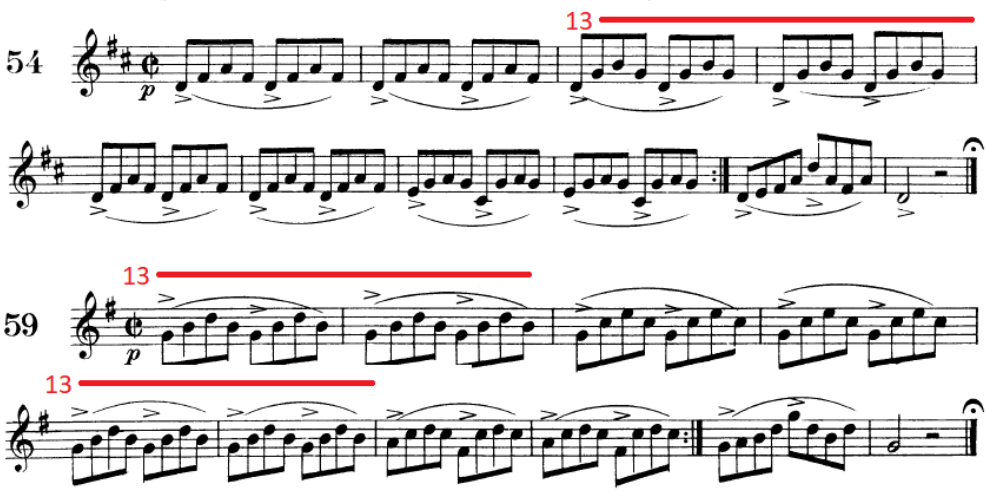
When I learned this exercise, I added to the challenge by taking a breath at the end and repeating the next-to-last measure four times. When you do this, #21 is no longer a challenge.

2. Arpeggios

It is often easier to start with lower arpeggios and work your way higher as your gain strength and confidence:



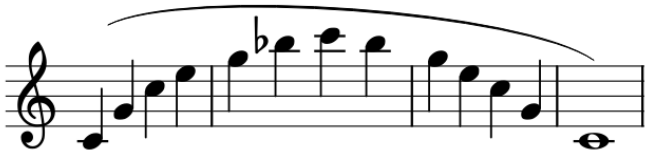
The lips tend to move without good rhythm, so lip slurs must be drilled to train the lips. Mr. Cichowicz recommended the following fingering changes to Clarke's Third Technical Study to increase the amount of lip slur practice:



Use 1-2-3 for # 53 and #58, 2-3 for #55, #60, and #1-2 for $61.

Note: The 3rd valve slide (or the 1st valve slide) needs to be extended 1 inch for the 1-2-3 combination and ½ inch for the 1-3 combination in ALL lip slur exercises. I see no reason to practice lip slurs out of tune! (The more you play out of tune, the more likely you are to accept bad intonation. We'll cover this more in Chapter 31 Intonation.)

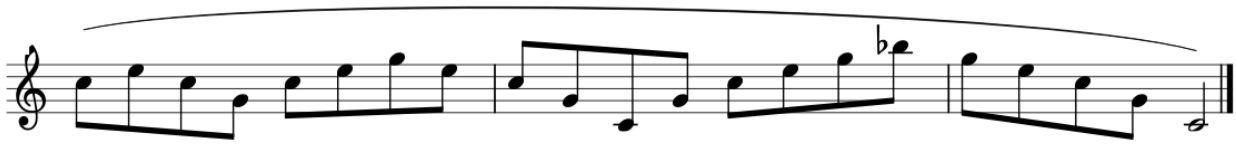
3. Up and Down the Overtone Series



If you look at the pattern of pitches, you can see it's basically a siren. Practicing mouthpiece sirens make this much easier on the instrument. The B-flat can be problematic – every trumpet player has suffered the embarrassment of hitting this note by mistake when going for the high C. As a result, they have trained themself to avoid it at all cost – learning to playing the note intentionally may take a while.

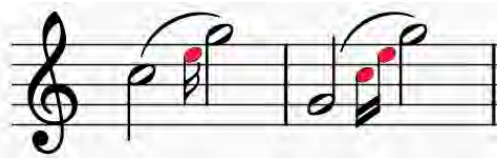
You may wonder why you should practice a note you don't EVER want to play. My answer is that when you can play it on demand, you know precisely where it is, making it easier to avoid.

4. Expanding Overtone Series

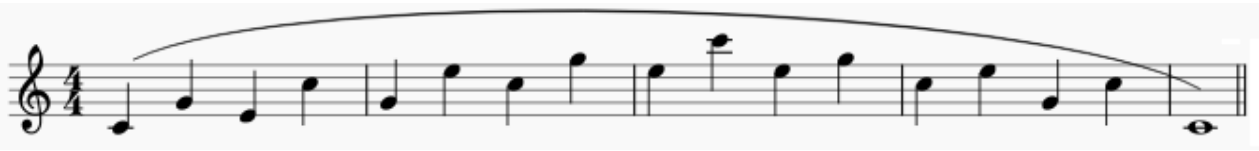


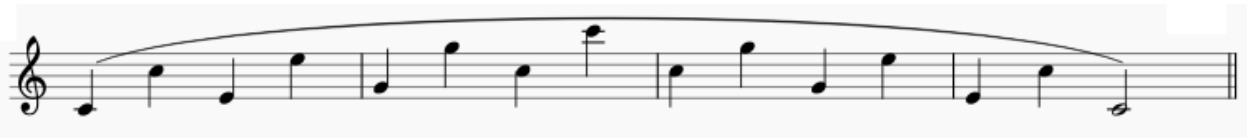
This exercise boils down to a series of sirens that gradually increase in size. It is particularly helpful in developing the upper range – see Charles Colin's *Advanced Lip Flexibilities* for extensive work in this area.

5. Skipping Overtones



Here are two exercises I made up in college to practice skipping partials cleanly:





How do you keep intermediate notes from sounding when you slur? There is a "secret" to this, too, and it has in two parts:

1. When you the slur, you must move very fast between pitches! If you move slowly, the notes in between have time to speak.

2. You must go precisely to the next pitch; the tendency is to slow the siren down as you near the desired pitch. If there is an overtone nearby, it will come out as a grace note.

"Fine. Nice theory. How in the world do I do that??" Using our old friend, the mouthpiece:

1. Buzz the interval – be sure each pitch is precisely in tune. This can happen quickly, or it can require MANY repetitions. No shortcuts!!

2. SLOW – take your time with the siren! Really bring it out – be sure that it is smooth and without skips. (This is where mouthpiece sirens really pay off!)

3. Watch that the siren doesn't slow down as you near the destination pitch.

4. LESS SLOW – repeat steps 1-3 with a slightly faster siren. IF everything is good, make the siren faster. If not, keep doing it until it's working correctly.

5. MEDIUM – more of the same.

6. SLIGHTLY FASTER – more of the same

1. ALMOST FAST – more of the same

2. FAST!!!! – more of the same

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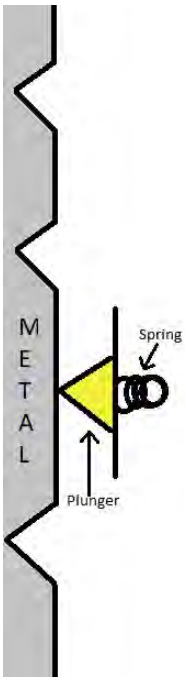
If you've ever seen the TV series *The Flash*, remember what he looks like when he moves – there is a blur between his starting and ending point. That's how sirens need to be! Fast and continuous.

When you hear grace notes, that's an excellent sign that you're almost there: the lips are playing a siren and you're blowing through the slur. You're doing the right thing…just taking too long to do it. Here's an analogy:

> Following your lesson, your next class is clear across campus. It's a 10-minute walk…minimum. If I let you out on time (I tend not to do that!), you have just enough time to get to your class. No stops on the way.
>
> If I let you out 20 minutes early (that won't happen!), you can visit with your friends, go to the restroom, and pick up a snack at the student center and still be in time for your class.

How does this relate to slurs? If you wait until the last split second to make your slur, you move so fast that the in-between notes don't have time to speak. You fly right past them! But if you move more slowly, those notes will pop out. Think of it like this: you REALLY don't want to go to your next class, but you're going…as slowly as you can. You ARE doing the right thing, but you really should pick up the pace.

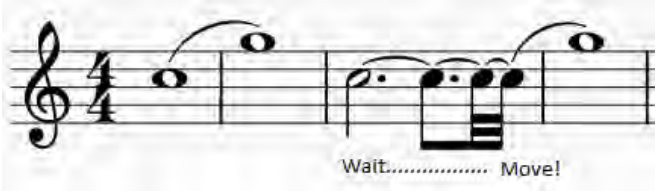
Lip Slur Spring



With the imaginary lip slur spring, a piece of metal has several V-shaped notches (representing notes of the overtone series). Moving vertically along the metal is a brass plunger with a spring pressing the plunger toward the metal. (The plunger represents your lips and the motion of the plunger along the metal is your siren.)

If the vertical motion of the plunger is slow, the plunger will plop into the V-shape notches. (If the siren is slow, you hit unwanted notes.) If the vertical motion is fast, the plunger will be past the notch before it has a chance to plop into it. (Fast sirens produce clean playing!)

I saw a clinic by Carmine Caruso, legendary brass teacher and saxophonist. He explained it this way:



During the whole note C, count 1...2...3...4.e.and – divide the final 16th note into 2 32nd notes and make the slur during the final 32nd note. Basically, it's wait…wait…wait…move fast! Same concept, different explanation.

Jacoby Hand Flip

Dr. Swift attended a clinic with trumpet soloist Don Jacoby MANY years ago. (Sadly, Don is no longer well known, but he was HUGE in his time. It was largely due to his efforts that the trumpet became a solo instrument in this country.) Don was demonstrating the two intervals at the beginning of this section. He held the trumpet in his left hand; with his right hand, he pointed his index finger and jabbed it forward at the precise moment of the slur. Whistle clean slurs!

Dr. Swift asked himself what this jabbing motion had to do with the slurs…aha! He had it! At the precise instant the jab stopped, Don made his slur. Everything happened together and at precisely the same instant – the motion of lips, tongue, jaw, blowing muscles. The jab served as a point of coordination. It worked!

Only two things wrong with it. It looks stupid! Can you imagine doing that in a recital or a concert??? And, what if you need to use the valves?? Don's system only worked with open notes. Dr. Swift came up with a solution. Instead of jabbing with the arm, snap the right-hand pinky finger down onto the finger ring. It worked perfectly – it wasn't obnoxious visually and can be done while pressing the valves.

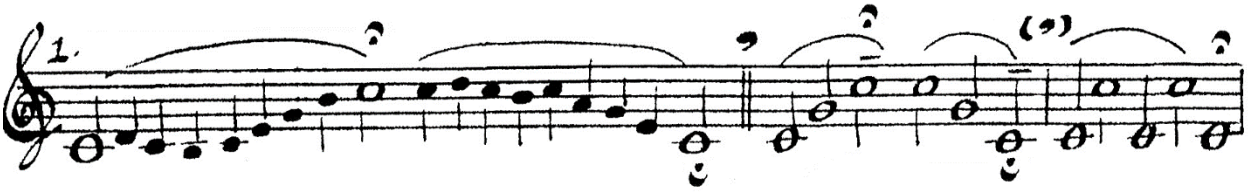
Dr. Swift taught this to me – it was the first time in my life that I omitted the "grace note" overtones. Fifty years later, I still consciously use it when I need it. It's great! (I may do it all the time unconsciously…but how would I know???)

How do you teach the Jacoby Hand Flip? Start with the perfect fifth and the right-hand jab. The student probably will need several tries before they get it. That's okay…just keep after it. Once the "jab" is mastered, switch to the pinky and the ring. It will take a little while until they get the "hang of it" or "the knack." I must tell you that it doesn't work for everyone, but I've had at least a 90% success rate with it.

(FYI, trumpeters joke about the pinky ring as the "octave key" because they use it to put more pressure on their lips for high notes. With Dr. Swift's plan, it really is an octave key!)

Jacobs Octave Slurs

Luther Didrickson showed me the method he learned from Arnold Jacobs:



This exercise is to be played throughout the range of the instrument and in every key. Mr. Didrickson said, "Of the numerous patterns devised for this purpose, the above slurs represent the most effective I have ever encountered." During one of my lessons with Mr. Jacobs, I asked him if he had written this exercise or gotten it from someone else. He replied that he had been using for such a long period of time that he couldn't remember.

FYI, I often hear low brass players practice only the first measure. It's a great tone study, but I don't think they realize they're missing the entire point of the exercise…the last measure.

Blow Through the Slur

"Blow through the slur" is a VERY old expression; it was old when I was learning to play in the 1960s! And it's a simple way to think about the air when you slur – keep the air flow constant while you move between pitches. It's that simple!

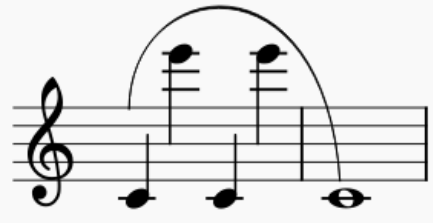
Unfortunately, the tendency is to back off the air during the precise moment of change between notes, especially when you're changing valve combinations. This does not work! If you're buzzing a mouthpiece correctly, you will hear a gliss when slurring between notes. If you're playing a large interval slur on an instrument correctly, you will hear a very fast gliss. If you don't hear them, you are NOT blowing through the slur!

FYI, adding a crescendo during the lower note adds to the musical effect and increases the air speed before the slur, making it easier.

FYI, some people "huff" the air when playing lip slurs. My experience is that this may help a student get the lip slur out, but the slur sounds rough. Encourage the student to keep a smooth air flow and move the lips rapidly between notes – the need to "huff" will soon go away.

LARGE Interval Slurs

Charles Colin's Advanced Lip Flexibilities has some LARGE slurs:



This requires SERIOUS flexibility! How in the world do you learn how to play this? Just like we did before:

Start with a smaller interval! As small as need be to produce a great slur. Only a third, if necessary. Good. Now you have a foundation to build upon. Now gradually increase the size of the slur as follows:

1. Buzz the intervals on the mouthpiece with an exaggerated, slow, connected siren between the pitches.

2. GRADUALLY, increase the speed of the siren, using less and less time to move between notes.

3. When you are RAPIDLY moving between pitches, it's time to try it on the instrument. If the gliss is fast enough, the notes will come out rather easily.

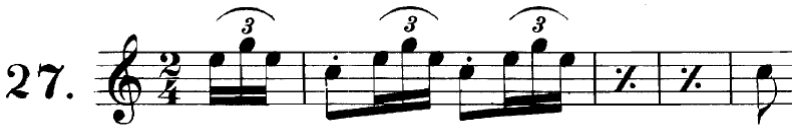
4. If you're a little slow, you'll hear lots of grace notes. If you're quite a bit too slow, the exercise will be either difficult or impossible to play. Back to the mouthpiece – make sure the slow gliss is smooth and connected and start speeding it up again.

5. Repeat until victory is attained!

6. Increase the size of the interval, repeating these six steps until you reach your goal. Better yet, go past your goal so what you must do is less difficult than what you can do.

Never, never, never overlook the importance of repetition. Mr. Cichowicz told me muscles need a longer time to learn things than our consciousness, so additional reps are required to move things into the subconscious.

6. Instant Flexibility

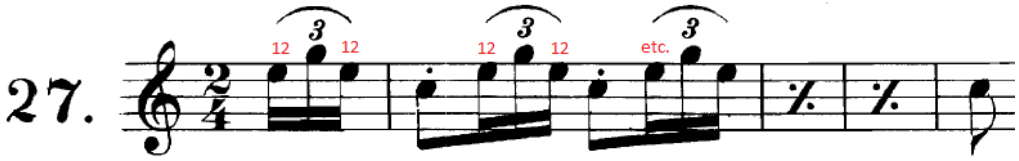


Arban *Complete Conservatory Method*

The "tricky" thing about this type of exercise is that you must instantly move. Tension makes this difficult, so stay physically AND mentally relaxed. (A tense mind creates a tense body.)

Try starting at a much slower tempo and gradually increasing to the desired speed. When that has been achieved, repeat the process but begin with a faster initial tempo. Repeat this process, starting faster and faster, until you can start at full speed. Better yet, go faster than needed so what you need to play is easy.

A different solution is to using alternate fingerings to eliminate the lip slurs as well as letting the fingers provide a stronger sense of rhythm for the lips.



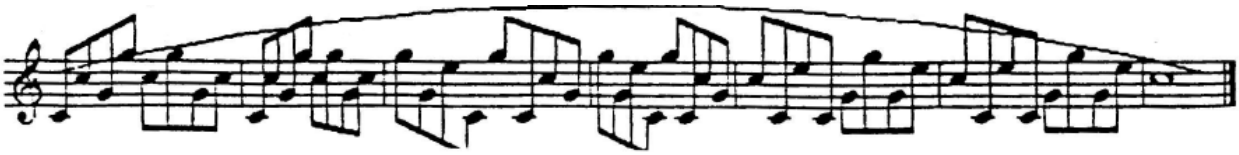
Instead of the 12 combination, 3 could be used – remember, 1 and 2 makes 3.

> **Note:** At the speed of this exercise, no one is likely to notice, but the 12 combination is sharper than open; the 3rd valve is less sharp than 12, but students rarely use this fingering so they may find it harder. (The 3rd slide designed to be a little longer to bring the 23 combination down in pitch.)

Most people think it's easier to use alternate fingerings, but the truth is that it's harder to get the fingers and lips to move together than simply moving the lips. Arban referred to this in his *Complete Method*:

> By what right, then, do certain performers substitute an upper third for the appoggiatura which ought only to be an interval of a second?...The answer is that these gentlemen find it more convenient to have recourse to a simple movement of the lips, which obviates the necessity of moving their fingers; as though it were not more natural to emit the true notes by employing the valves.
>
> Some performers pursue this evil practice still farther, and do not hesitate to execute triplet passages with the movements of the lips, instead of having recourse to the valves.
>
> Joseph Jean-Baptiste Laurent Arban, *Arban's Complete Celebrated Method for the Cornet*, revised and edited by Edwin Franko Goldman, Carl Fischer, 1893 (originally published 1859), p. 38.

7. Convoluted Patterns

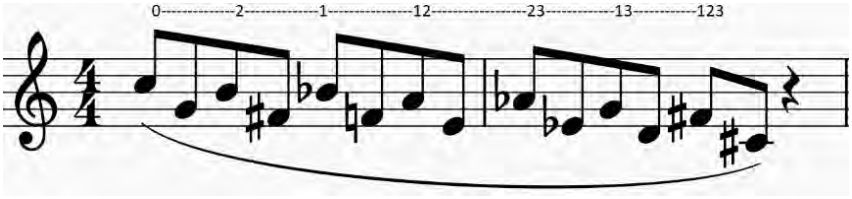


Convoluted slip slur patterns constantly change the demands on the ear and lips. The preceding exercise is the last line of the *Dirty Dozen/Terrible Twelve* written Allen Chase. They are difficult on trumpet – I can't imagine how challenging they are on the horn!

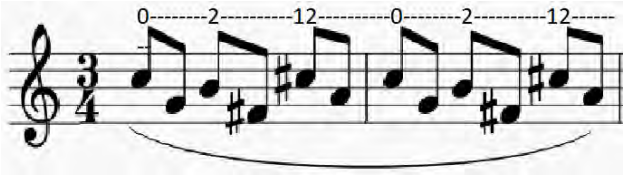
The two keys to success in playing the Dirty Dozen are ear training and repetition. By the time you're ready to take them on, you have a well-trained set of lips. Any problems you're having are NOT the lips' fault – you are not hearing the correct pitches. To guide your ears, use solfege or numbers (1 is the root, 3 is the third, and 5 is the dominant.) Start slowly! You can gradually increase speed over time but insist on accuracy. If your playing gets sloppy, back off on the tempo, re-establish accuracy, then begin moving the tempo up again.

The complete Dirty Dozen is in the Appendix.

8. Changing Valves



This type of pattern has been around for a long time; recently, patterns are becoming more interesting and challenging to the lips and the ears:

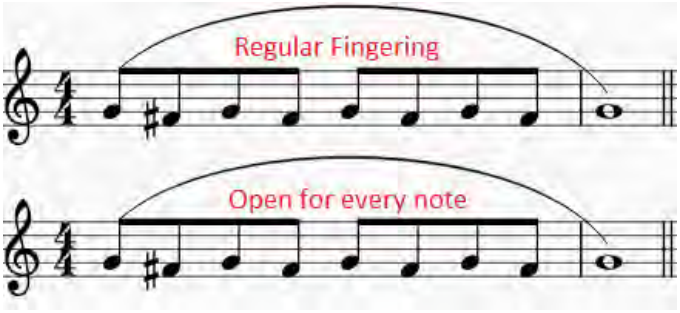


Additional Comments

Braces make lip slurs harder. After they come off, everything is better! It's a short-term loss for a long-term gain. (More on braces in Chapter 7 Matching Students to the Proper Instrument.)

Slippery Groove

Mr. Lillya talked about the "slippery groove "or "sweet spot" where flexibility is easy. To find it, he had us play the following exercise:



In other words, we had to lip the G down to F# in the second example. He called this "lip bends." (Pitch bends is another good name.)

We practiced ½-step bends starting on G, working our way down to low C. When that was mastered, we would repeat the process with G and F-natural, first with regular fingerings and then as whole-step pitch bends. This was followed by G and E and minor 3rd pitch bends.

We repeated the entire process starting on "tuning C" (which is 3rd space C), 4th line E, and top-of -the-staff G.

Most people find this VERY challenging at first, but once you get the hang of it, it's not difficult at all.

> **Note:** It is VERY difficult to bend more than halfway to the next overtone, unless you are on low C. Since it is difficult to produce the fundamental (pedal C) on the trumpet, you can bend the pitch a LONG way without problem.

Back to the slippery groove – Mr. Lillya had us play part of a piece and put a fermata on a note several measures into it. When we reached the fermata, we were to play pitch bends. If we could do that, we were in the sweet spot. If we couldn't bend the pitch, we were too tight and needed to do more pitch bends.

There is a wonderful side benefit to this – if you can bend a note a half step, you should have no trouble lipping a pitch in tune! (See "Vicious Circle" in Chapter 31 Intonation.)

Time to Cheat?

Do NOT allow your students to tongue lip slurs just because they are having trouble. Do not, Do Not, <u>DO NOT</u>!

Until about a week before the performance, that is. If they're still having trouble, instruct the student to tongue…but make sure the air is as continuous as possible. It's going to take a very good set of ears to hear the difference. However, if they stop the air between notes, the entire world will know they tongued.

"Why not tongue everything? That's how some trombonists play, and it sounds great." There is nothing wrong with this, but few trumpeters achieve the level of subtlety that hides their tonguing. I can always hear the difference and you can, too, once you start listening for it.

The biggest problem with letting students tongue lip slurs is that they never develop the ability to lip slur.

How to Practice Valve Slurs

Most of the time we play valve slurs, not lip slurs; most people find them easier to play than lip slurs for two reasons:

1. When you move the valve, there is a slight break in the air stream. To verify this, blow air through your instrument while wiggling the valves. You'll hear the interruptions to the air flow.

2. Finger motion provides a stronger rhythmic feel than the subtle motions of the lips.

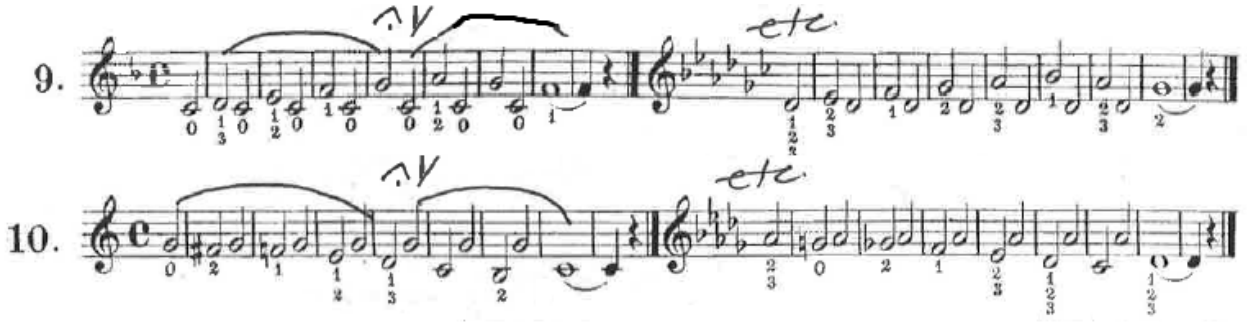
What does it mean if you can make a good valve slur but not a good lip slur? It means you're at least 90% of where you need to be for lip slurs – all that's lacking is a stronger sense of rhythm. Seriously, how much benefit can there be in a break in the air stream from the valve change? Not much!

It is important that the valves move quickly when changing notes (unless you want a gliss to sound). It may seem counterintuitive, but the time between whole notes is the same as between 64th notes. There is no difference, but the tendency is to move the fingers slower when the notes are slower. Rapid finger motion fixes blurry slurs.

FYI, Joe Neisler recommended half-valving slurs as a practice technique. Since half-valving essentially removes the limitations of the overtone series, it is possible to play a gliss between notes, ensuring that the lips are moving smoothly and that the air is constant while playing the instrument. Half-valving is stuffy, so you must blow harder than normal during the gliss, making normal playing seem even easier.

It's not true, but I tell students that the valve is either up or down; there is no in-between. The valves "click" or "pop." Doc Severinsen said, "Bang the valves! Hard!" All of these are descriptions of the same thing – the valves move fast!

Here is a particularly good study for developing extremely clean slurs. This is from the Arban *Method*:



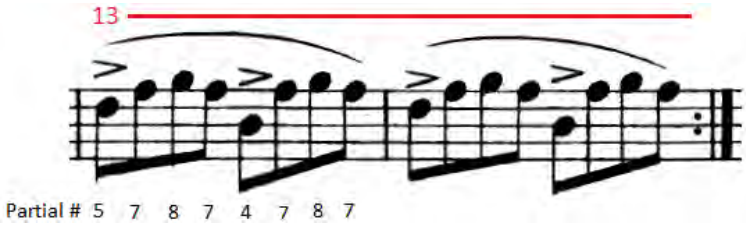
While these two exercises should be played in every key throughout the range of the instrument, the most important range is from low C to top-of-the-staff G – this is where most of our lyrical playing is found.

Pay attention to the slurs – they are not in in the original. Mr. Didrickson taught me this exercise; whether it came from him, Mr. Cichowicz, or Mr. Jacobs, I don't know, but I will tell you this – it works!

"They don't look so special. Why do they work?" Mr. Didrickson told me "The notes aren't magic, but you can work magic with them." (This is true for any exercise.) How do you work the magic? It's simple – they must be ABSOLUTELY ***PERFECT***! No flaws of ANY kind.

It won't happen instantly, and it can be VERY frustrating. The concept is so simple: perfect playing, but learning to produce perfection takes time and persistence. Remember the words attributed to Winston Churchill and you will be successful: "Never give up. Never give up. Never, never give up." (I just learned that Churchill did not say this, but it's still a great idea.)

Sometimes when I'm having trouble with valve slurs, I'm able to find alternate fingerings that eliminate the fingers, thereby forcing my lips and air to improve to make the lip slurs work. When I go back to the valve slurs, it sounds a lot better! Here's a good example from Clarke's Third Technical Study:



Lip Slur Course of Study

These are my favorite lip slur exercises:

Arban – *Complete Conservatory Method*

Jim Buckner – Lip Slurs (see Appendix)

Chase – Dirty Dozen (see Appendix)

Charles Colin – *Advanced Lip Flexibilities*

Earl Irons – *27 Groups of Exercises*

Arnold Jacobs Octave Slurs (see Appendix)

Bai Lin – *Lip Flexibilities*

John Ridgeon – *How Brass Players Do It*

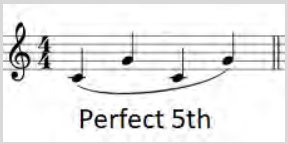
Max Schlossberg – *Daily Drills and Technical Studies*

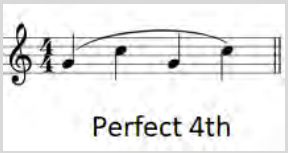
Walter M. Smith – *Lip Flexibility*

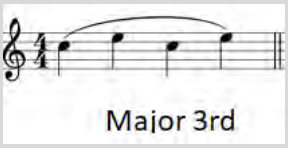
David Zauder – *Embouchure and Technique Studies*

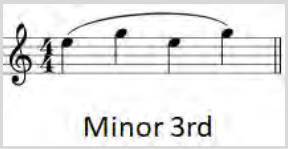
The Wisdom of Arban

There are four lip slur pairs in the low and middle registers:









Two contrasting demands are placed on us, depending where we start:

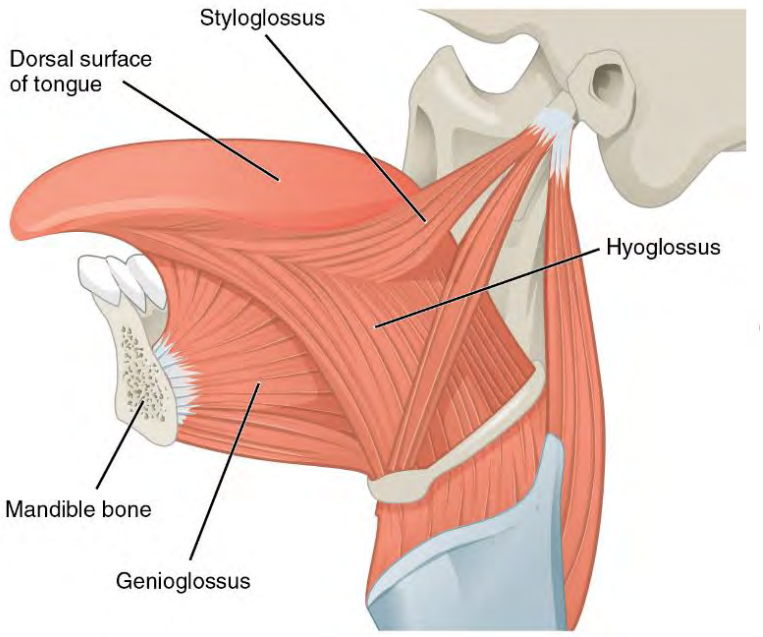
The perfect 5th and perfect 4th are lower, so lip tension is less, but the intervals are wider, requiring greater lip motion.

The major and minor 3rds are smaller; lip motion is less, but more lip tension is required.

Arban's compromise was brilliant – start with the major 3rd to minimize motion and use the valves to lower the pitches to an easier level.

Chapter 20
Articulation

Many people include tonguing as part of their warmup.



Muscles That Move the Tongue
Version 8.25 from "OpenStax Anatomy and Physiology" (2016)
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As you can see from this drawing, the tongue is complex; it is controlled not only by its internal muscles, but also the muscles surrounding it. To further complicate things, tongue placement is not the same for everyone; it depends on tongue size and shape. In spite of this, we can all speak clearly.

What we think our tongue is doing is usually TOTALLY wrong as shown by fluoroscope, X-ray, magnetic resonance imaging (RMI), and other studies.

> Mr. Jacobs described the tongue is the most complex part of the body, controlled by muscles in and around it. Because of this complexity, the only way to control the tongue is through speech/diction, not mechanics. (He studied to be an opera singer but developed nodes on his vocal cords, ending his career. This vocal training undoubtedly gave him a unique perspective on the tongue.)

Bottom line: Go for the sound you want, not the mechanical process.

Why do we tongue? To play repeated notes, ensure a clean start to notes, and determine the musical effect of a phrase. (Tongued notes sound different than slur notes and therefore communicate different emotions.)

How a note begins is more critical than we realize:

In the 1960s, tape recordings were made of long tones played by great performers and absolute beginners. This was the day of reel-to-reel tape recorders – the beginnings and endings of the long tones were literally cut out of the tape so all that remained was the tone quality of the great players and that of the young students.

The best conductors and musicians listened to the revised tape – it was almost impossible for them to tell the difference between the pros and the beginners. Inconceivable!! Why, you would know in a split second who was the pro and who's the beginner!! (This is from Acton Ostling, my first college band director.)

Exactly! That split second is the attack – its quality is one of the most critical factors separating great players from beginners.

Diction

Articulation for brass players is equivalent to diction in singing. Brass players typically use three vowels and four consonants:

Vowels

AH – drops the tongue, makes the sound bigger

OH – drops the tongue, makes the sound bigger

EE – raises the tongue, makes the sound smaller

Consonants

T – primary consonant – sharp attack

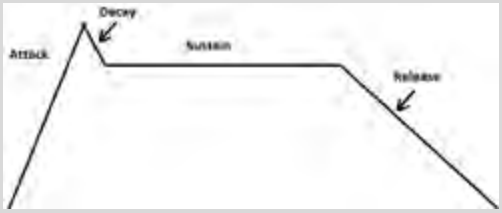
D – primary consonant – softer attack

K – secondary syllable used only in multiple tonguing – sharp attack

G – secondary syllable used only in multiple tonguing – softer attack

Vowels primarily affect tone color; many people change vowels to aid in producing the low range (AH, OW) and the upper range (EE).

ADSR Pattern



As you can see in this diagram, there are four parts to the duration of a note:

1. Atttack – the initial change from silence to the loudest part of the note.
2. Decay – the time it takes to decrease to the sustain level.
3. Sustain – the level held while the pitch is sustained.
4. Release – the time it takes to decrease from the sustain level to silence.

The ADSR pattern of every instrument is unique. It gets more complicated – the overtones change relative strength during each phase of the note.

When you differentiate between the sound of a clarinet and a trumpet, your ears are analyzing both the ADSR pattern and the changes in overtones – our ears are amazing!!

Consonants define the sharpness of the attack. Modern teachers tend to use the term "front" rather than "attack." Psychologically, "attack" implies violence and tends to make players tense; "front" does not have this implication, helping players be more relaxed.

The tongue moves more rapidly with "T" and "K" and slower with "D" and "G." Rapid tongue motion gets it out of the way faster, allowing the air to hit harder and produce sharper attacks. Slower tongue motion reduces the impact of the air, producing a softer attack.

> **Note:** In *The Art of Brass Playing*, Mr. Farkas stated that if the lips are focused on the correct pitch and the air is moving properly, any consonant will produce a good attack, even the letter "Z."

Sharp Attacks

Sharper attacks produce great clarity in the auditorium. While I was at Iowa State University, I performed in a master class for Bernie Adelstein, principal trumpeter in the Cleveland Orchestra. Mr. Adelstein was not happy with my attacks – I couldn't get them as sharp as he wanted. When he demonstrated for me, I was in shock. His attacks were extremely sharp and pointed – it made me think of a stiletto knife:

That evening, the Cleveland Orchestra performed Stravinsky's *Firebird Suite*. Mr. Adelstein was at the back of the stage and I was at the back of the auditorium under the balcony – the worst place acoustically. I waited anxiously to see what he sounded like with his incredibly sharp tongue…it was AMAZING! It was like seeing diamonds, emeralds, and rubies coming out of his bell.

In my entire life, I never heard better orchestral trumpet playing, and I've heard MANY of the best live, including Adolph Herseth (CSO), Gil Johnson (Philadelphia Orchestra), Frank Kadarabek (Philadelphia Orchestra,) Tom Stevens (Los Angeles Philharmonic), Armando Ghitalla (Boston Symphony Orchestra), Charles Schlueter (Boston Symphony Orchestra), and Susan Slaughter (St. Louis Symphony Orchestra).

Because of this, I am a strong advocate of sharp articulation – it brings clarity to live acoustics and makes the music sparkle. Should you use it all the time? Absolutely not! You use it when it's needed -it's like a policeman carrying parking tickets, a billy club, and pistol. You don't shoot someone for jaywalking, and you don't give a bank robber a ticket. Each "tool" has its use at the appropriate time. You don't use sharp attacks in lyrical pieces or when you don't want a background section to stand out.

Jazz trumpeters typically have a difficult time producing the sharp attack achieved by classical trumpeters. The contrary is also true – classical trumpeters struggle producing the style of attack used by jazz musicians. This is NOT an impossible task, but it does require PRACTICE! Barnie Pearson explained it to me this way, "If you can speak German and French, you don't have to speak French with a German accent and you don't have to speak German with a French accent." So, you can play "legit" without a jazz accent and vice versa.

Five Meanings of Staccato

Quite often, the busy teacher says "short" when asked the only meaning of a staccato dot, but there are five different meanings for the staccato dot:

1. Short – unfortunately, this is how most people interpret the dot in every situation; it has very little length.

2. Separated – even though the notes may be long, there is space between them.

3. Sharp – Mr. Chichowicz explained this to me: since there is no notation to indicate sharp attacks, composers often use a dot.

4. "Be sure you tongue this" – this is often seen in older music, especially following a slurred passage. It seems obvious that you tongue when there is no slur mark, but some composers are over cautious.

5. Light – use a lighter attack.

How do you know which meaning to use? The dot must be interpreted in context, the same way we interpret words like "lead." Here are four different contexts for "lead" – it is immediately obvious what "lead" would mean:

1. Follow me!
2. This is really heavy.
3. I must sharpen my pencil.
4. Get the lead out!

Tonguing and the Purpose of Music

The purpose of music is communicating emotions too subtle for words:

"Where words leave off, music begins."
– Heinrich Heine

"After silence, that which comes nearest to expressing the inexpressible is music."
– Aldous Huxley

How does a composer communicate emotion? Through melody, harmony, countermelody, texture, dynamics, tone color, and articulation. Any change in these elements, no matter how subtle, changes the meaning of the music.

Our role as performers is to re-create the composer's intentions to the best of our ability. For this reason, it is imperative that we follow the articulations marked in the music. There may be good reasons to change marked articulations, but it should be intentional, not accidental or careless.

Rule: Play what's on the page!

In other words, you must do a LOT of listening to every style of music so that you are able to discern the style and context of the "dot" on the music in front of you.

Fast vs. Slow Staccato

This topic is a counterintuitive – if you don't stop to think about it, fast staccato seems to imply separated notes and slow staccato implies connected notes are connected. This is incorrect!

Fast staccato is used when the notes are too fast to stop and start the air between notes. Instead, the air is continuous with the tongue creates separation by briefly interrupting the air. Mr. Cichowicz called it "the illusion of staccato" – long air but separated notes.

Slow staccato is used when there is time to stop the air between notes to create separation. Most of our playing is slow staccato.

Typically, eighth notes and slower notes are separated (slow staccato); triplets and faster need long air (fast staccato). Of course, this depends on tempo.

From the air's point of view, fast staccato is the same as slurring. Slow staccato is a physically more sophisticated concept which requires constantly starting and stopping the air. Because of this, fast staccato should be taught before slow staccato. This is NOT what beginner books teach because they are teaching students to read music, an entirely separate skill.

How to Teach Articulation

Enough theory – how do we teach articulation? The basic approach needs to be:

1. The student plays long tones without the tongue. (This emphasizes that the air makes the sound; the tongue simply ensures a clean start.)

2. The student plays long tones starting with the tongue.

3. The student plays slurs. (The air and the tongue stay the same as step #2.) Slurring should precede tonguing because it is less complex. Learn to walk before you run!

4. The tongue is gradually introduced in the context of slurring, becoming more frequent until every note is articulated (fast staccato).

5. Different articulation patterns are combined in the same exercise.

6. Notes are separated (slow staccato).

This approach comes from Mr. Cichowicz, moving from the simplest to the most complex task. He pointed out that beginner books start with step no. 5, which makes no sense pedagogically. (It makes sense in the context of learning notation, which needs to be a separate process.)

FYI, Mr. Cichowicz also told me that you don't need to follow the order in a book if a different pattern makes more sense to you. For example instead of learning exercises 1,2,3 you may want to learn them in reverse order: 3,2,1.

How do we apply this approach? As follows:

"Oh, Too"

1. Say "Oh, too." Be sure the sound is continuous between the "Oh" and the "too." Zero break between them.

2. Whisper "Oh, too." Whispering is very important because it shuts off the vocal cords. Often, you hear students grunt while they tongue. This is because they are talking while they play – it comes out as a grunt. The whisper, stops grunting.

3. Inhale in with "Oh" and blow with "too." Again, zero break between them. They must connect, eliminating setting.

4. Play a note on the instrument, breathing and blowing just like step 3. Remember, you release the air into the instrument.

5. Bonus: "Too" takes care of the tongue, greatly reducing the challenge of initial attacks. (See Chapter 21 Initial Attacks.)

1. Start without the tongue, using only the air to start the note. Begin with lips together and blow them apart; the air must immediately move fast rather than starting slowly and speeding up. With a little practice, this can sound almost as good as tonguing.

   Begin tonguing long tones using "Oh, too." We discussed this in Chapter 12 Breathing, but I've included it again in the sidebar on the previous page.

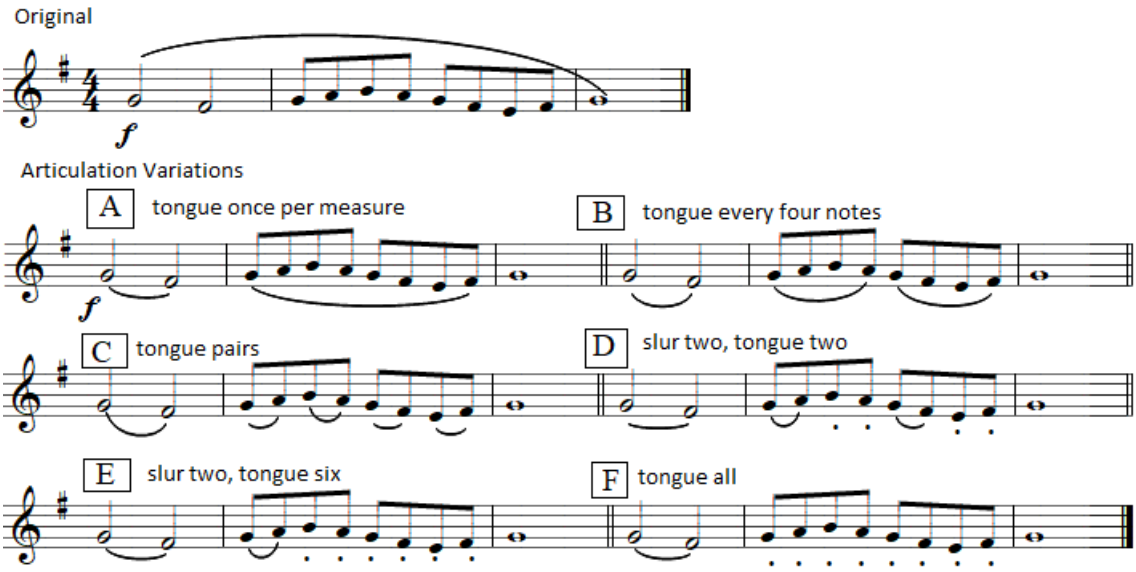
2. Slur with continuous air, beginning with whole notes in the middle register moving either a minor or a major second. Tongue only the first note after a breath – slur all notes following until the next breath.

   Be certain the student "blows through the slur" or moment of change between the notes. As the student progresses, the notes can gradually be made faster and the intervals wider, preferably NOT at the same time!

   You can easily adapt melodies in beginner books by adding slurs. Normally, I adhere strictly to the composer's intentions, but it's okay to intentionally change things for teaching purposes. Or, you can write your own with Finale, Sibelius, MuseScore, or some other software package. [Since I'm working from home, I'm using MuseScore for most examples in this text.]

4. Begin to add the tongue in by tonguing only the first note of a pattern and gradually adding additional articulation. The brain (consciousness) grasps these concepts quickly, but it is necessary to stay with each pattern for a while to let the body (subconscious) learn. (More on this in Chapter 33 Psychology.)

   For example,



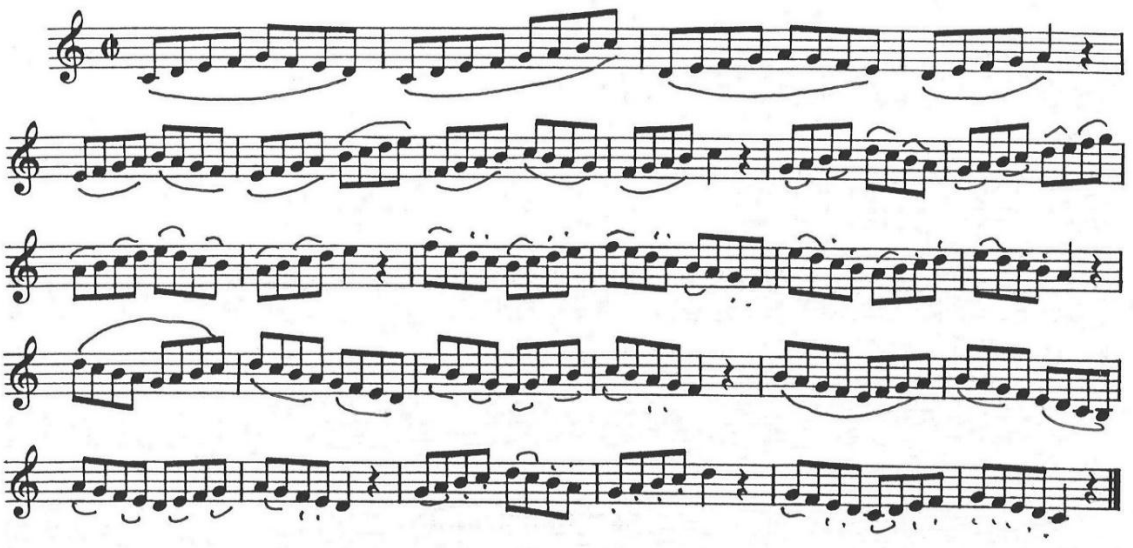
   I added the staccato marks in D, E, and F for the sole purpose of crossing them out while the student is watching. In this context, they mean "be sure you tongue." Students often "clip" the last note of a slur to make it OBVIOUS that the next note is tongued. What they're doing is

inserting slow staccato into a fast staccato context, which creates problems at faster tempos because the blowing muscles cannot reset as fast as the tongue.

The complete Breath and Range Expansion Slurs exercise is included in the Appendix.

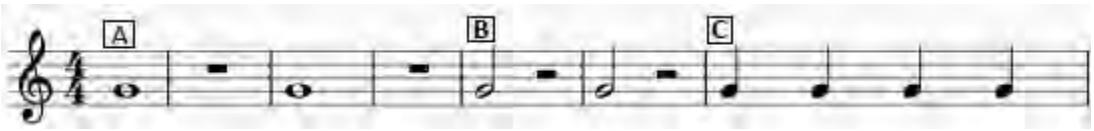
> **Note:** My junior high school piano teacher told me to "lift" after a slur. With my trumpet background, I couldn't figure how to "slur" playing piano – because it can't slur. However, "lifting" gives the impression of a slur. Brass players do not need to do this – we can slur for real! (The other thing a piano can't do is crescendo a single note. Sforzandos and forte-pianos would be hard to do, too.)

5. Integrate these patterns changes into the same exercise – begin with long patterns and gradually move to shorter and shorter patterns. The following example from the 6th Series of Ernest Williams' Method of Scales is marked to demonstrate this concept:



Once again, the staccato marks mean "tongue this note."

6. Finally, it's time to teach slow staccato. Beginner books typically start with exercises like A, follow it with B, and then move to C. Each of these exercises require stopping and restarting the air.



Scales are an excellent choice for working on tonguing because each attack is on a different pitch. If you hear a bad attack, it's much easier to observe that it was the A# in measure 4 than that it was the 27th repeated note out of 48. You get the added benefit of practicing scales at the same time you're working on tonguing. That's efficient!

Articulation Teaching Aids

You need many teaching tools: every student is different, and what works for a student on one day may not work for them the next day. Here are some "gimmicks" or aids to add to your repertoire – many of them will also help with multiple tonguing (Chapter 22):

1. The tongue should not be between the teeth. This produces a "th" attack instead of "too" and it forces the tongue to move back and forth instead of up and down. Back and forth is slower because the entire tongue must move; up and down only requires motion from the tip of the tongue. I must add that many brass players find that tonguing between the teeth helps articulation in the low range. All I can say is do what you must, but this should be a last resort.

2. The jaw should not move when tonguing – this indicates tonguing between teeth or insufficient air. If the jaw moves, the lips are moving with it, increasing the likelihood of missed pitches.

3. Quite often, a person becomes so wrapped up in thinking about the tongue that they forget to blow, with the result that the tongue stiffens.

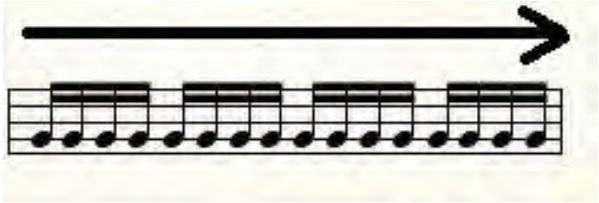
4. I have heard band directors complain that they hear "too much tongue" in the attack. This is usually caused by a lack of air.

5. Think of releasing notes – this helps prevent the inhaling muscles from fighting the blowing muscles.

6. Be sure the corners are firm, especially in low range.

7. Think of tonguing a dot – this helps keep the tongue light and free.

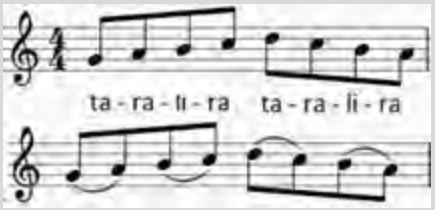
8. Drawing an arrow over notes can help the student visualize the need to blow through a passage:



Tonguing inegale

The goal for modern musicians is clarity of expression and consistency within a given musical style. This was not always true – in the Baroque period, trumpeters used "tonguing inegale," or "unequal tonguing." (See Johann Ernst Altenburg Trumpeters' and Kettledrummers' Art – 1795.) Sixteenth notes were tongued "ta-ra-li-ra," instead of "ta-ta-ta-ta." It is considerably more lyrical and less aggressive in effect and dramatically changes the sound of the music.

Note: This is quite a different skill set than that learned by modern trumpeters. For those that do not have time to develop tonguing inegale, slurring notes in pairs gives much the same effect with only minimal practice required.



9. One day during brass choir rehearsal at Iowa State, Mr. Christensen could not get us to start together. After several failed attempts, he had us play the chord with just air – no tongue. After several times, he told us to add the tongue. The result was so precise that it scared us!! Use this technique in your rehearsals!

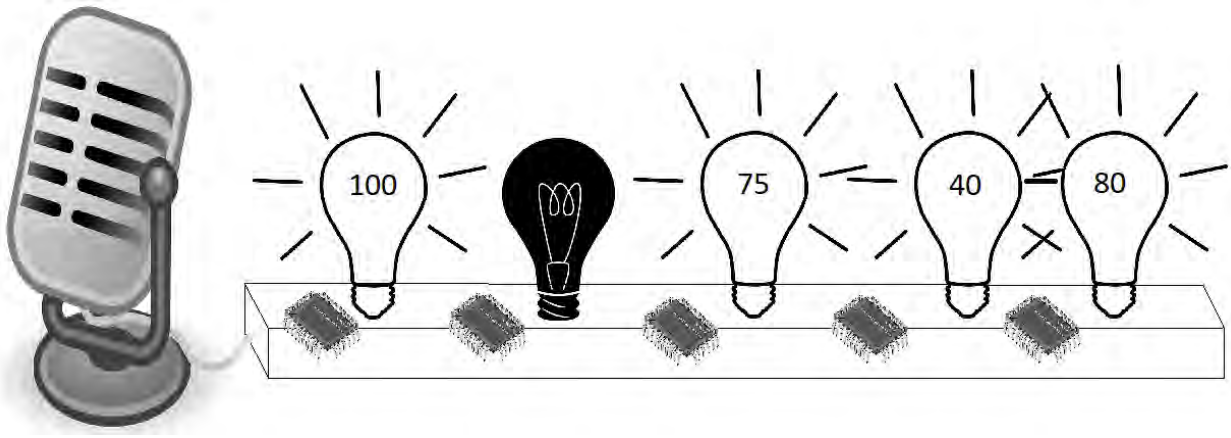
10. This is one of my favorites: Mr. Farkas said that the tongue cuts up long tones into shorter ones. As an illustration, imagine garden hose with sprinkler. The water is continuous, but the blade of the sprinkler "cuts" the stream into spurts of water. I especially like the sprinklers that double time the rate, as if it were alternating between single and multiple tongue. You can demonstrate to your students by blowing a long stream of air and move your hand across the continuous air, creating separate "notes."

Antoinette de Santis – Pixabay

9. Emphasize the vowel, not the consonant – this keeps tongue relaxed. Focusing on the consonant stiffens the tongue.

10. Short notes should be just as full as long notes – the tendency is to use less air and tongue harder. The solution? Play the note as a long tone several times; when it sounds good, play just the 1st part for of the long tone. The result is short note that sounds great!

11. Mr. Lillya created the imaginary 100-watt light bulb machine to achieve a series of good attacks. In up-to-date terms, in consists of a microphone, computer chips, and a series of LED light bulbs. The microphone transfers the attack and tone quality of each note to the computer chips which evaluates how well the note is played. If everything is good, the chip sends a signal to the 1st LED bulb to light up at 100 watts. If the 2nd note is not good, the bulb doesn't light up at all. If the 3rd note is pretty good, it will light at 75 watts. Etc.



Pixabay - lit bulb: OpenClipart-Vectors, black bulb: cican,
microphone: OpenIcons, computer chip: Clker-Free-Vector-Images

The things I like about this "machine" are:

a. It's imaginary, so it's completely portable.

b. It's inexpensive.

c. It instantly adapts to any length of phrase.

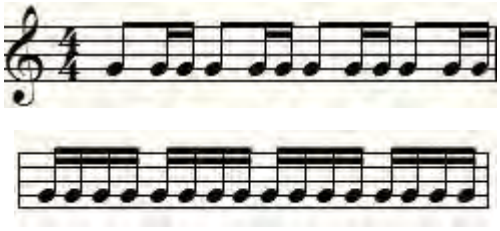
d. You are aware of each individual note.

e. You are equally aware of the melodic line.

12. When you practice at slower tempos, keep the style of the air the same as full tempo. If full tempo requires long air (fast staccato), when you practice slowly the air needs to be long. It may not sound right musically, but that's okay because you are practicing in slow motion. Keep the air long; as you increase speed, the correct style emerges, and it sounds great! (Watch someone run in slow motion – it doesn't look right…until you speed it up.)

    The problems with practicing to sound "right" at slow tempo (using slow staccato air) is that at some point you must change from slow staccato to fast staccato as you speed up; it's an unnecessary complication.

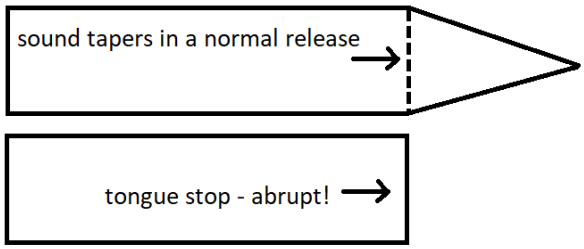
13. One of our clarinet professors told me that she used the eighth and two sixteenths rhythm to speed up single tongue tempos. The tongue learns to move fast in short spurts; when this is done, longer sixteenth note patterns are practiced to build the tongue's endurance.



Bad Habits

Students often fall into these bad habits:

The student relaxes their embouchure as they end a note. The resulting drop in pitch is not desirable and should be corrected by "freezing" the embouchure until after the note ends. Instead, the student uses the tongue to stop the tone before the pitch can drop. The result is an abrupt stop to the note instead of a quick decrescendo. This is not a musical sound:



FYI, tongue stops are sometimes used in big bands and in orchestral playing at extremely high dynamic levels. The effect is much the same as cutting the note off with an axe.

The second bad habit is sneaking into a note, particularly if it's the first note after a rest of several measures. It's equivalent to checking the water temperature with your foot at the swimming pool before you jump in. This is also an unmusical effect.

Finally, there are times when it is necessary to tongue passages that are marked with slurs. See "Time to Cheat?" in Chapter 19 Flexibility and Slurs for more information.

Anchor Tonguing

See" Anchor Tonguing" in Chapter 24 Upper Range.

Forgotten Secrets??

Over the years, I have observed a fascination about the way things were done many, many years ago. Perhaps people in the past knew things that have been forgotten over time – did great players have closely guarded secrets that have been lost???

It's possible – during the Baroque period, trumpeters played extensively in the clarino register (upper range) where the partials are close enough together to allow scale passages. During the Classical period, the trumpet was relegated to unimportant parts in the lower part of the harmonic series. Eventually, the techniques of playing in the clarino register were lost. About 75 years later, historians began rediscovering Baroque music; people were in shock at the trumpet high range demands of this music, especially Bach's *Brandenburg Concerto No. 2*. Trumpeters eventually redeveloped this skill.

Here is an example of a "secret" –

Tu, Tew, or Too?

Sooner or later, you'll read that Arban was French and when he wrote "tu," he pronounced it as "tew," not "too." Undoubtedly that's true, but "tew" was in Arban's native tongue; it's not for us. It makes more sense to work within the language you speak rather than attempting to play with a foreign accent.

Many people admire Rafael Mendez's technical prowess, particularly his rapid, immaculately clean articulation, often attributed to him speaking Spanish. With that in mind, should we use Spanish articulations? What if you want to play like a

Challenge for Trombonists

Trombonists have a unique challenge because of their slide. If the slide moves in while the pitch is ascending, you end up with a glissando. The reverse is also true – if the slide goes out while the pitch is descending, you get a gliss.

The only way to prevent the gliss is to use a very soft "D" articulation during the slide change. Trombonists must become so good at this that you can't hear the tongue.

There is no need for other brass players to develop their soft tonguing to this level –valves eliminate the gliss. Therefore, when a non-trombonist tongues, the articulation should always be heard. If you don't want to hear the articulation, slur the phrase.

FYI, there are two schools of trombone articulation:

1. Tongue everything – this is the older, traditional approach. Done correctly, it is impossible to hear the articulation.

2. Use the natural slurs when possible – this means lip slurs and slurs in the opposite direction of the slide. Tonguing must be done when the slide and pitch motion are in the same direction.

trumpet player from China? Or Sweden? How do they say “tu”?

The more I think about it, the less important it seems. The critical part is the “t” at the beginning; what follows is the vowel which impacts tone quality, not articulation. If the “t” is sharp, you will have clear articulation.

Chapter 21
Initial Attacks

Mr. Christensen said that probably half of all missed notes are the first note after a rest, so we're going to spend some time on initial attacks, whether you've not played for a few measures or many minutes. (FYI, the trumpeters in Handel's Messiah don't play a note for the first 50 minutes…and then you must come in pianissimo! The trombones don't play a note until the fourth movement of Beethoven's fifth symphony – and it's a high C for the first part! Composers ask some CRAZY things!!)

Let's review what must happen to nail the first note:

1. Hear the correct pitch before playing.

2. The air must immediately be at full speed.

3. The tongue must move quickly out of the way.

(It makes me think of what makes a gas engine needs – gas, air, and electricity. If all three are present, the engine runs. If not, the engine doesn't work.)

Therefore, the main reasons for missing pitches are:

1. No pitch or an incorrect pitch in the mind. Mentally hearing a word (like "high") or just a letter name (C) does NOT tell the lips what to do. You must hear the pitch in your mind so the muscles know exactly what to do. (Remember, the lips ARE doing what they're told, so it's NOT their fault if you miss!)

   Listening to the direction of a miss can help you know what's wrong in your mental ear: if you scoop into pitch, you're hearing too low; if you plop down onto the note, you're hearing too high. The BEST feedback is buzzing the note on the mouthpiece – you know precisely what's wrong.

2. Inadequate air flow – too often the air is not ready to go or it doesn't move fast enough.

3. The tongue moves out of the way too slowly; the air cannot reach the lips at full speed.

There's a fourth reason – insecurity, which can manifest in several ways:

1. You know you don't know the pitch, so you don't trust yourself.

2. You haven't been practicing enough, so you don't trust yourself.

3. A lack of self-confidence in general. Remember Mr. Jacobs' story and his comment, "Make it a point of pride to hit the correct pitch." (Chapter 16: Mouthpiece Buzzing)

Students sometimes come up with bad habits to deal with initial attacks:

1. Pop the first note –gives security…and sounds BAD.

2. Swell the first note – sneaking in instead of jumping in…the lesser of the two evils?

Here some practice "cures" to improve initial attacks:

1. Focus the pitch: sing it – be sure it's in tune; buzz it – be sure it's in tune; play it– be sure you come in dead center on pitch

2. Ensure the air is working – start the note without the tongue. When that works, use "Oh, too" to add the tongue.

3. The style of the breath going in sets the style of the breath going out:

    a. Inhale slowly for soft, gentle playing and low notes. A slight ritard at end of inhalation helps blowing stay relaxed. (Joe Neisler)

    b. Inhale quickly for loud, heroic playing and high notes.

4. Think of blowing sound, not placing or hitting a note.

5. Remember that a note begins with a release of air.

6. A short note is the first part of a long note, so make it a bigger target by thinking of it as longer. You may need to lengthen it for a while and gradually shorten it to the proper length. (Playing it louder may also help; once the note is played successfully, gradually reduce the volume while maintaining accuracy.)

7. If the word "attack" makes you tense, think "front" instead.

8. Remember that blowing <u>immediately</u> follows inhalation. (See "Setting and Other Bad Breathing Habits" in Chapter 12.)

9. Increase your confidence by testing yourself: pretend you are in performance – imagine the setting as vividly as possible: the auditorium, the lights in your eyes, the people around you, the conductor turning towards you to cue your solo, etc. When you're in a concert, you want to be PERFECT, so put mental pressure on yourself in the practice room to be flawless. Here comes…get ready… get ready… get ready…play!

    Did you get what you wanted? Did you pass the test? Keep repeating until you can <u>guarantee</u> the result you want.

    FYI, in a clinic at Henderson, Thomas Hooten (just before he became principal trumpet in the Los Angeles Philharmonic) told us that he felt his success at auditions was because he practiced starting excerpts, over and over and over again. He said, "Once I get going, I'm fine, so I practice getting started." Good advice for all of us!

    In another clinic, Pete Ellefson, professor of trombone at Indiana University, talked about building confidence through repeated success.

"Amateurs practice until they get it right. Professionals practice until they cannot play it wrong." Unknown How do you know you can't do it wrong? Test yourself! (See Chapter 33 Psychology, "Convincer Strategy" under *Unlimited Power* by Tony Robbins.)

Question: Who is responsible for your success? Answer: You are! Practice accordingly.

10. Here's something else I learned from Mr. Cichowicz that I call "The Power of Do It Again." You can do amazing things with it.

    Note: It could also be called "Never Settle for Less Than You Want" or "Raise Your Standards and Insist You Attain Them" or a lot of other things, but they don't sound as cool. Here's the story behind this:

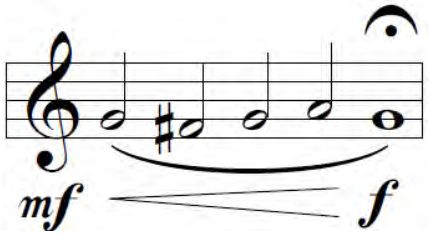
The Power of Do It Again

In 1986, I began my residency at Northwestern University for my doctorate. I was so excited to study with Mr. Chichowicz who was one of the world's greatest trumpet teachers, and I was nervous, too! Here's a man that stood toe to toe with Adolph Herseth for 23 years in the Chicago Symphony and drew students from all over the world! I was going to have only 20 lessons with him and that was it for the rest of my life – each one had to count so I could become a GREAT trumpeter!

At the beginning of the first lesson, Mr. Chichowicz asked me if I had been through "the routine," which was the standard course of study for new students. I answered that Mr. Didrickson and I had worked on it extensively during the summers of '81, '82, and '83 but I was no longer practicing it consistently.

At the end of my last lesson in 1983, Mr. Didricksen said to me, "You don't have to follow this routine – you can improvise." Unfortunately, I interpreted that as playing whatever I wanted to warmup, which is not what he meant. He was saying I could change the melodies within the routine, but I still needed to follow it.

After admitting I had stopped playing the routine, Mr. Cichowicz looked at me and said, "You know, you really should." [I took his advice seriously, practicing it faithfully from 1986-1991 or so and then I followed Mr. Didricksen's advice and changed some of the melodies. Thirty year later, I don't play it every day, but I ALWAYS go through it before a rehearsal or concert because I play better and have greater endurance.]



So, we started on the routine:

Seriously, how hard is this?? For a DOCTORAL PERFORMANCE MAJOR?? I could have played is as a beginner in 4th grade!!

I thought it went well, but Mr. Chichowicz said, "Do it again. The attack wasn't clear." I played it and he said, "Do it again." He was very calm and matter of fact; no anger or irritation, just a statement of fact.

I played it again – "do it again" – and again – "do it again" until I had played it about 10 times. Finally, he was satisfied and said, "Okay. Play the next one."

Ha! I made it! So, I played the next exercise (same melody, down a half step) – "do it again." Et cetera, et cetera. I did a little better this time – it only took 5 or 6 repetitions before he let me move on.

And that's pretty much how the rest of the lesson went. Fifty minutes of "do it again." Later that day, I was in the practice room, thinking about my lesson and how I had just spent 5% of my total lessons with Mr. Cichowicz playing beginner material. Even though he didn't say it, it was obvious that he was not going to back off. If I didn't figure this out, I had 19 hours of "do it again" in my future and was going to completely miss out on everything he had to offer.

I played the exercise – it had a bad attack. I imagined Mr. Chichowicz was in the room with me saying "do it again" and I had to repeat it until he was satisfied…and then it hit me! I could say "do it again" on my own. If Mr. Cichowicz wouldn't be satisfied, then I wouldn't be satisfied, either.

And that's how I practiced that week. "Do it again" over and over. The next lesson was much better – during the hour he only said "do it again" about 5 or 6 times. During the 3rd lesson, he only said it once or twice, and I never heard it again…because I consistently met his standards which were now my standards.

I have used "The Power of Do It Again" with many of my students over the last 34 years and will continue to do so. It works! If you're having problems with something, "do it again" and again and again until you consistently get what you want. Use The Power!!

Nervousness in Lessons

Writing this reminded my how nervous I was playing for Mr. Cichowicz – I made stupid mistakes that I hadn't made in 15 years because I was so intimidated! Once again, I was blowing my chance.

Back in the practice room, I asked myself what was going on; the answer was that I was trying to impress Mr. Chichowicz. I wanted him to say, "Wow! I've never heard trumpet playing that great!"

Right. After 23 years of sitting next to Mr. Herseth, the greatest orchestral trumpet player of all time?? With the best students in the world coming to Northwestern for lessons ?? It was NOT going to happen!

So, I asked myself why I was at Northwestern and what I wanted out of lessons. The answer was that I was there to study with Mr. Chichowicz and to learn as much as possible from him. All I could do was practice as hard as possible between lessons; during a lesson, the goal wasn't to be flawless…it was to play the best I could and find out what I needed to do to improve.

While I couldn't impress him on an absolute scale, I could impress him with the progress I was making. "Wow! That's a lot better" was something I could attain.

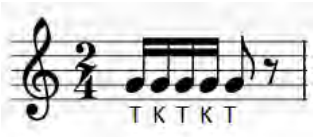
My lessons went so much better after that. I was still on edge during lessons, but I stopped making stupid mistakes and learned a great deal from a world-class teacher.

I'm telling you this because I was 34 before I became a good student. There is no reason for YOU to wait that long – profit from my mistakes!

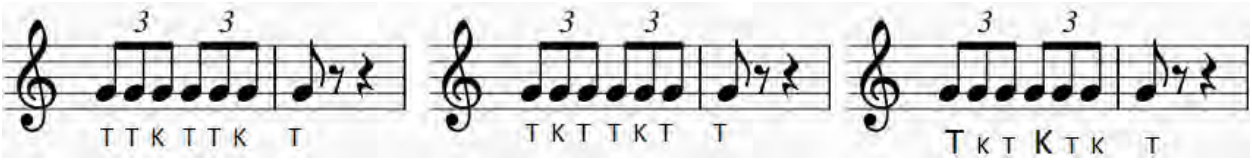
Chapter 22
Multiple Tongue

Some people "tongue like snakes" – they can articulate 16th notes at quarter = 160. Most of us can't do this or even get much past 120. The tip of the tongue needs a chance to reset, so we alternate with another consonant. This is the basic idea of multiple tonguing: "T" is alternated with "K" and "D" alternates with "G." A simple concept but it takes practice. (If you think about it, riding a bicycle is a simple concept, but try telling that to a beginner who is falling off their bike!)

If we're working with duple patterns, TK or DG work great because it's a duple articulation:



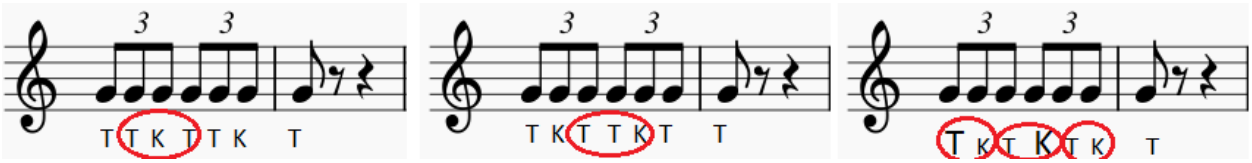
What do we use for triplets? We're stuck with T/K and D/G, so there are three basic choices:



1. TTK – "K" at the end.

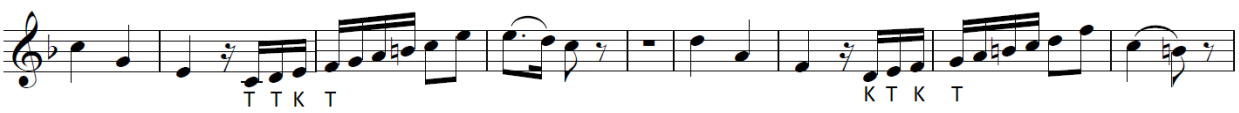
2. TKT – "K" in the middle – this is more common in the South; flutists normally prefer this, too.

3. TK repeated – note how the T and K alternate on the beats (Dr. Swift called this "fanfare tonguing.") Earl Irons provides a number of exercises to develop this pattern in his 27 Groups of Exercises.



Notice that in the first two choices, there are two "T's" in a row – the only difference is where the accent falls. The third choice is not commonly used, but it is the fastest because the "T" and "K" constantly alternate – it is the same pattern as double tonguing.

Starting with "K" is only done when necessary, as in the 3rd movement of the Hummel *Trumpet Concerto*:



There are two choices: start with the "T" (identical to a triple tongue pattern, making it easy to play the rhythm incorrectly) or start with the "K" (not the easiest thing to do). There is no right or wrong way – it's a matter of personal choice.

How to Teach Multiple Tonguing

Students are inclined to think multiple tonguing is hard, but it's not; it's just different. Remembering Arnold Jacob's statement that we control the tongue through speech, say "Here kitty, kitty, kitty." That's double tonguing –alternating "K" and "T" and it's no big deal!

Age to Start Multiple Tonguing

This brings me to an important point. Multiple tonguing should be taught as soon as students are comfortable single tonguing and they do it well. The longer you wait, the harder it will be for them:

> Sixth grader: "Wow! This is cool!"
>
> High school senior: "Whoa! This is HARD! It must be really difficult because if it was easy, they would have taught me this in sixth grade!"

The longer you wait to teach this, the more difficult it becomes in student's minds. (This is also true of many other things, like grace notes, lip trills, etc.)

Let's say that you start beginners in 6th grade and decide to start multiple tonguing with 7th graders. How many "T's" have they played in the last year? Ten thousand? Probably even more –it's going to be a LOT! And how many "K's" have they tongued in the last year? Zero! Is it any wonder that "K's" seem hard compared to "T"?

Let's wait to teach to teach multiple tonguing until they're seniors – how many "T's" have they played? MILLIONS!! How many "K's"? Still at zero. This ridiculous ratio of "T" to "K" makes it psychologically even harder to learn.

Double or Triple

Which do we teach first – double or triple? If it's triple, do we teach TTK or TKT? Start with whichever is easiest for the student. (I admit this presents a challenge in group lessons.) How do you find out which is easiest? Have the students say each pattern (Ta-Ka, Ta-Ta-Ka, and Ta-Ka-Ta) over and over – it will be obvious.

Consonants

I prefer "TK" over "DG" in most situations because of its greater clarity. Many suggest "DG" for the fastest speeds, which may be true, but it is ineffective in fanfares or other situations requiring sharp attacks.

HOWEVER, "TK" can be too harsh if the desired effect needs to be more like a marimba roll than a snare drum roll. This is often the case in Arban, Herbert L. Clarke, and other cornet solos.

Vowel

Which vowel should we use? I prefer “ah,” “oh,” and “oo” (as in “pool”) because they keep the tongue lower in the mouth, out of the way of the air. (FYI, some teachers advocate “ee” or “ih” for higher notes. More on that in Chapter 24 Upper Range.)

Learning Process

There are six steps, each of which must be mastered before going to the next one.

1. Speak the patterns – MANY repetitions. Students should be able to repeat a pattern for 10 or 15 seconds without becoming tongue tied. Remember this:

Rule: If the student can’t say a multiple tongue pattern over and over, it’s not going to miraculously start working when they pick up the instrument.

2. Whisper the pattern– this turns off the vocal cords. Too often you will encounter students who make grunting sounds when they tongue – they are trying to talk while they play! Whispering prevents this from happening.

3. Blow the pattern – a LOT of air with lips puckered, which provides resistance to the air, so you don’t run out so quickly. The tongue works much harder when you’re moving a lot of air than when you’re whispering, so give this a little time so the tongue can figure it out.

   In his brass pedagogy class, Keith Johnson taught the Three Main Rules of Multiple Tonguing:

   1. Keep the air moving

   2. Keep the air moving

   3. Keep the air moving

   Let me add supporting reasons for his insistence on the importance of continuous air:

   Non-stop air helps create clear articulations; remember the water sprinkler analogy in Chapter 20 Articulation.

   In the vast majority of our playing, we separate notes; because of this, we are highly conditioned to play “puffs” of air instead of “streams.” Unfortunately, the “K” falls where we normally back off the air, which is the worst thing we could do. “K’s” need more air, not less. Continuous air solves this problem.

   Multiple tonguing requires more molecules per second than single tonguing. For all practical purposes, the air is blowing a slur, so multiple tonging is a legato style, even though it sounds like a machine gun!

   I realized this one day during a lesson – I was “singing” a double tongue passage for a student and noticed how breathy my voice quality was. I was “leaking” extra air…and then it hit me: I was using extra air because that’s what I do when I multiple tongue. It was quite an eye opener!

4. "Kill the K" – I learned this from Susan Slaughter; we'll go into more detail in a bit.

5. Speed up – start super slow and gradually speed up only as each tempo is mastered.

   There's a plus for doing this – most people have a gap where they can't tongue because it's too fast for single tonguing and too slow for multiple tonguing. (For 16th notes, the gap is typically quarter note = 121 to 131.) If you start super slow, you will NOT have this problem because you end up with a huge tempo range where you can single or multiple tongue equally well.

   FYI, there are two opposing schools of thought when multiple tongue should be used:

   Ray Crisara said to use multiple tongue only when you cannot single tongue fast enough. If you use multiple tongue too often at slower speeds, you will lose your ability to single tongue rapidly. (Based on personal experience, I can tell you that is true!)

   Dr. Swift told me that Lloyd Geisler, who had been principal trumpet in the National Symphony Orchestra, double tongued everything, even whole notes. As a result, he had a fantastic double tongue!

   So, who's correct? I lean toward Mr. Crisara, but it's like trombonists arguing over tonguing everything vs. not tonguing natural slurs. If no one can tell the difference, does it matter?? (See "Challenge for Trombonists" in Chapter 20.)

6. Alternate single and multiple tongue – more on this later.

7. Multiple Tongue on the Move– more on this later as well.

4. Kill the K

I'm sure most of you are familiar with the concept of "sink or swim." If a kid can't swim, throw them in the deep end of a pool – they'll either sink or swim. An effective if not humane way of teaching. (But what if it doesn't work??)

We need to something similar with the "K" – play forcefully to make the tongue to figure out what it needs to do.

Which brings us to "kill the K" – there are three main forms:

$_{T}K \quad K_{T} \quad KK$

The "K" is played MUCH louder than the T. Volume is a function of air, so you must greatly increase the amount of air for the "K." The tempo must be ridiculously slow to do this. Insist that the "K" have a clean start. It won't happen the first time you try, so you keep practicing. In time, the tongue will figure it out.

The next step is to gradually increase tempo. At a certain point, you will not be able to "kill the K" as much as before – you'll have to back off the air, and that's ok. As you continue speeding up, the "K" will decrease in volume; you end up with "T" and "K" of equal volume and equal attacks (or fronts).

How long does this take? As long as it takes. If I had to guess, I'd plan on a couple weeks of daily practice. Achieving a great "K" is the HARDEST part of learning to double tongue. Once this is done, speeding up is easy…and fun! You will go from quarter note = 40 to quarter note = 160 in just another week or two.

"What if I don't want to spend two weeks on this incredibly unmusical task?" No problem – you simply won't have a good double/triple tongue.

"But I want to go FAST!!! Isn't that why we're learning this?" Let me ask you this, if you were teaching a beginning driver, would you put them in a Ferrari and tell them to floor it?? First you learn to crawl, then to walk, and then to run.

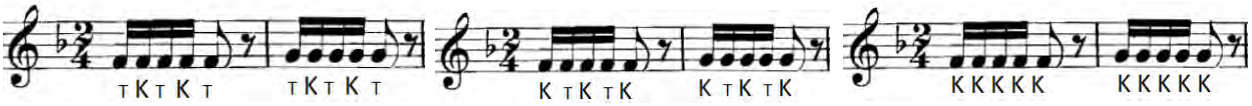
On the other hand, it doesn't hurt to try fast multiple tonguing for a minute or two. Then it's time to quit fooling around and get back to work before you undo everything you've accomplished.

Ferrari FXX K – Creative Commons Attribution-Share Alike 2.0 Generic

"What do I practice to 'kill the k'?" Arban, of course!

> FYI, too many students want to practice their band music or their solo to improve, but that's inefficient and often ineffective. Let me ask you this – if you wanted to increase your muscle mass, would you go to the gym or play football with your friends? Undoubtedly, playing football would help but not nearly effectively as working out at the gym. When it's time to improve, go to the method books – they're designed to teach you how to play. Solos and band music are designed to show off what you can do.

You need to practice all three forms as follows:



These are the first two measures of #77 from Arban's *Complete Method* –14 more measures follow.

Practice the same form of killing the "K" all the way through the exercise. You don't need to be perfect all the way through but insist that each measure is perfect before you go on to the next measure. (If someone recorded it and removed all the bad spots, you should have an amazing recording!)

Notice that in the 1st example you have only two "K's" per measure. In the 2nd example, there are 3 "K's" per bar, and there are 5 "K's" in the 3rd example. I point this out because it's good to practice KT and KK – you'll play more K's and it sometimes necessary to start on a K – remember the Hummel on the first page of this chapter?

> I think practicing all "K's" is good for you, but Mr. Cichowicz said he didn't like it – unfortunately, I didn't ask him why.)

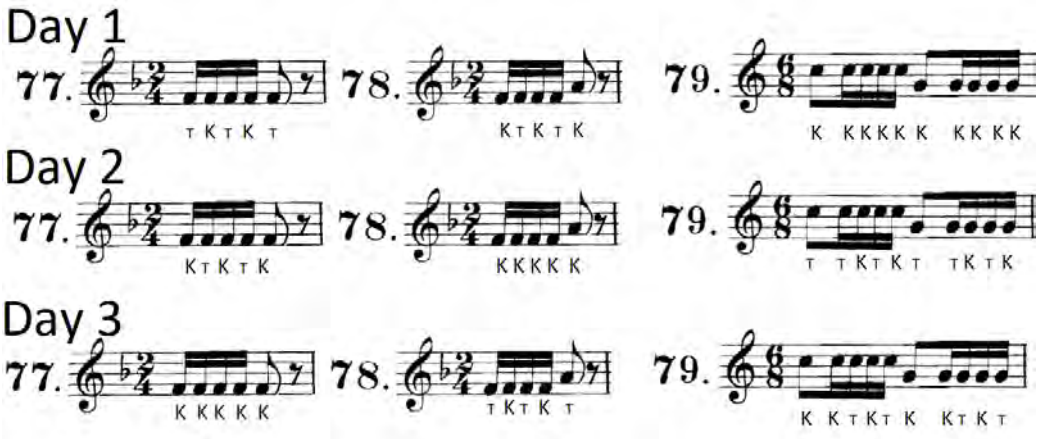
The standard is a clean attack on <u>every</u> note, not just the K's. If the attacks are not perfect, "do it again" – never, never, NEVER settle!

> Well, you may need to settle for today – after all, you can't force improvement – but that does NOT mean you have to like it! Tomorrow is another day, and you'll be back!! (Sounds like *Gone with the Wind* and *The Terminator*…do I watch too many movies??)

It's time for another "secret" – don't tell anybody, but…there are no shortcuts in learning to multiple tongue. You must practice to become good at this. Let's say it takes 100 hours (the amount varies HUGELY between individuals) – you can knock this out in about a month (if your tongue can stand it) or take 100 years. The sooner you put the time in, the sooner you enjoy the benefits of your practice.

Most people need to put in a lot of hours, so that brings up the element of B.O..R…E….D…..O…….M. Here are suggestions to help you keep practicing and delay the onset of the "B" word:

Alternate the patten you start with every day and alternate the pattern with every exercise. This is how you would apply it to the 1st page of the Arban double tongue exercises:



Transpose the pattern to different keys – besides reducing boredom, it's good for you because horn and trumpet players must be able to transpose to play in professional or semi-professional orchestras. (More about transposing in Chapter 45.)

Make up your own patterns – yes, you can write music. "But what if what I write isn't very good?" You are writing an exercise, not creating art. If you can stand to practice what you wrote for one day, it's good enough. The goal is <u>not</u> to have Beethoven roll over in his grave saying, "Why didn't I write that melody???"

You need to create variety within sameness. Yes, you're double/triple tonguing every day, but you can change the melody. Think of it like this:

> You and I decide to start walking…as I'm writing this, we'll have to wear facemasks and stay 6 feet apart (April 8, 2020). Hopefully, this is no longer be true as you read this! So, we start walking; after a few weeks, we are feeling better and have better attitudes, etc. This walking is paying off!
>
> We're creatures of habit, so we follow the same path every day. That's okay for a while, but the "B" word begins poking in its ugly head. We're talking about it and I suggest we may have to quit – I'm fed up with the same sights every day. In a moment of wild inspiration, you suggest we change the route so we can look at something different while we walk. It works! We continue walking!!
>
> If you get bored, change the scenery but keep walking! It doesn't matter WHAT you practice – only that you practice. (Okay, you also need to keep your standards high and stay focused, but none of that matters if you don't put the time in.)

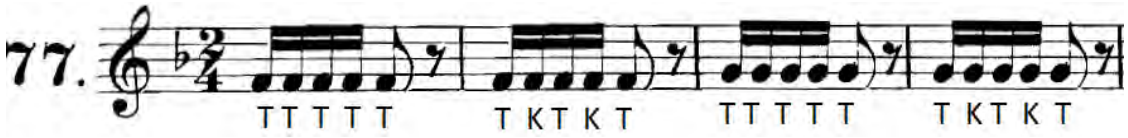
FYI, the ability to create variety within sameness is a very important life skill. For example, I have been teaching trumpet lessons for over 50 years. Hour after hour, day after day…the same thing…in a room without windows…I want to scream!!!!!!! But, it's a different student every time, and that's what I focus on. If I focused on the sameness, I would have changed careers decades ago; by focusing on the variety, I stay excited!

6. Alternate Single and Double Tongue Measures

This may be the best way to develop multiple tonguing so good that you are the only person who knows you're not single tonguing. There is one prerequisite for it to work:

> You MUST have an excellent single tongue! It is the role model and standard for judging the multiple tongue.

How does it work? Single tongue one measure and immediately repeat it double (or triple) tongued:

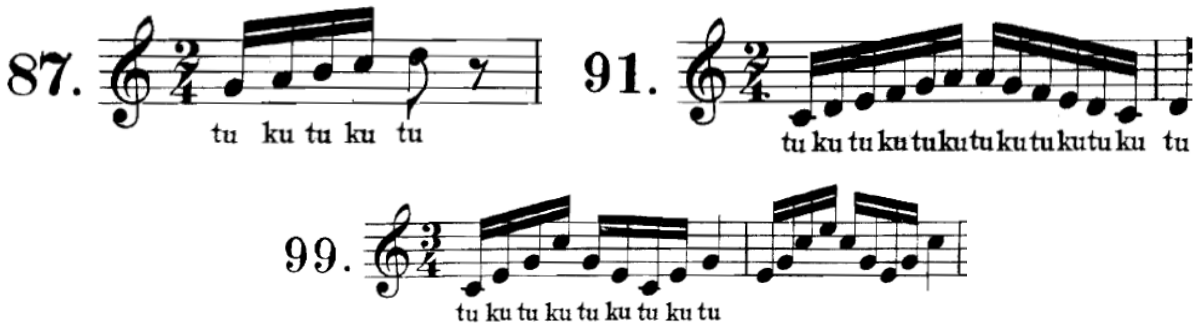


If you're like most people, at first the single tongue will "embarrass" the multiple tongue. Stay with it… soon the difference will minimize and eventually disappear. No one should be able to tell them apart! Remember: the single tongue must constantly set the bar for the multiple tongue.

One final step to mastery:

7. On the Move

However much time you've already invested in multiple tonguing, you'll probably need to match that amount before you can play scales and arpeggios well:



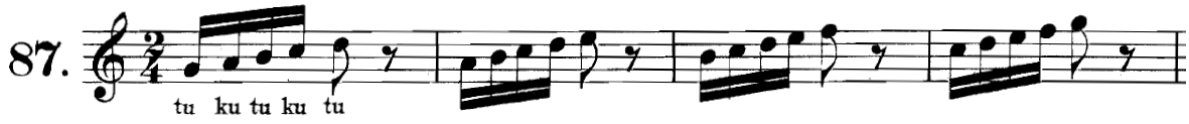
In fact, when you start these exercises, you may feel like you've completely forgotten how to play! Patience and stubbornness will win out – the more aggressively you practice them, the sooner you'll achieve mastery.

Which brings me to another story:

> In 1986, I was approached by a couple men who wanted to start a speakers bureau, bringing in a motivational speaker once a month. They needed someone to line up musicians to play while the audience entered the auditorium. No pay was involved, but the musicians could attend the lecture for free. I agreed to do this. It ended up being fun, and I enjoyed the talks.
>
> It's been much too long, so I've forgotten her name, but one of the speakers said, "Anything worth doing is worth doing poorly." I was horrified! That simply wasn't true – she should have said, "Anything worth doing is worth doing well." What was wrong with her??????
>
> Then she said, "Let me repeat that: anything worth doing is worth doing poorly…at first. If it's worth doing, it's probably difficult. When you first try it, you won't be very good at it, but it you keep at it, eventually you'll be very good. Anything worth doing is worth doing poorly…at first."

As Dr. Wes Branstine says, that was a golden nugget! You must be willing to be bad a multiple tonguing on the move so that you can become good at it. Easier said than done – who wants to sit in a room by themselves and make a bunch of bad sounds? It hurts your pride! And what about your friends in the hallway who USED to think you were a good player! But, that's exactly what practicing is…sitting in a small room and making bad sounds until they become good sounds. (Definition from Joe Neisler.)

Let me share one of Wes' golden nuggets about learning to multiple tonguing on the move. Arban presents a pattern and immediately sequences it:



Dr. Branstine taught his students to repeat the 1st measure over and over until they mastered it. Then they perfected the 2nd measure, then the 3rd, etc. When all the measures were mastered, the student played the passage as written. I have found this to be a GREAT suggestion because you focus on the tonguing, not on which note is coming up next. Try it!!

Multiple Tonguing Aids

Here are more suggestions for learning/teaching multiple tonguing – most of them work for single tonguing as well:

General

1. Keep your corners firm – things don't work well when your embouchure is less than optimal.

2. Keep the articulation light if you're having trouble going fast enough.

3. Use multiple tonguing at single tongue speeds if you need to play heavy at tempos that would otherwise require a lighter tongue.

4. Slow a passage to a single tongue tempo but continue double/triple tonguing it. The slower speed gives you more time to hear what's going on; once things are going well, use a metronome to gradually increase tempo.

5. Focus on melody line, phrasing, tone color, etc. to keep your mind on music and away from the mechanics.

Air

1. If you've ever watched *Wheel of Fortune*, it provides a great analogy for air and tongue – the wheel spins continuously (representing the air) and the flap (representing the tongue) creates the "notes." The wheel is unaffected by the flap.

2. If the air isn't continuous, slur the passage. When it sounds AWESOME, play it slurred and IMMEDIATELY play it again tongued while maintaining the same kind of air flow.

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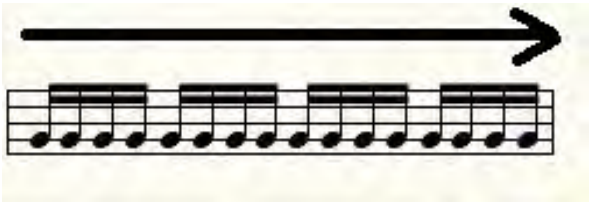
3. Draw an arrow over notes to represent blowing air through the phrase



4. Adding a crescendo also helps to keep air moving through a phrase.

Tongue

1. The tongue needs endurance, just like the embouchure and blowing muscles. If your tongue gets tired during a long passage, you need to practice even longer phrases. If you were running and got tired in a block, then work your way up to half a mile – at that point, there's nothing to running just a block.

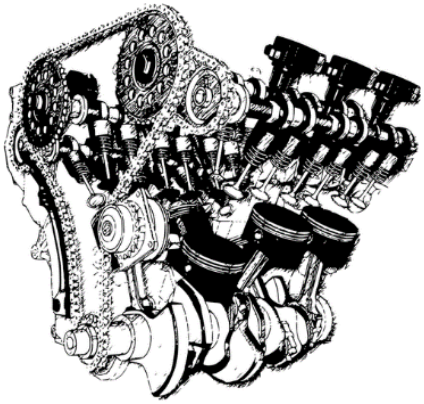
Mohamed Hassan – Pixabay

2. Just because you've added a "K" syllable doesn't mean the "T" syllable needs to go downhill. If you're double tonguing, 50% of the notes are "T's." There is no reason for them to sound bad!

3. Emphasize the vowel (ah or oo) to keep tongue relaxed.

4. Use tip of tongue; keep the middle and back relaxed.

5. When you're driving, the engine increases in speed and then downshifts. The new gear ratio allows the engine to run more slowly while maintaining the speed of the car. Switching to multiple tonguing does the same thing – your tongue doesn't need to work as hard.



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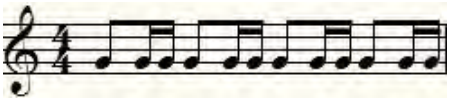
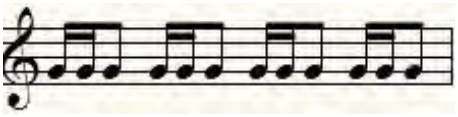
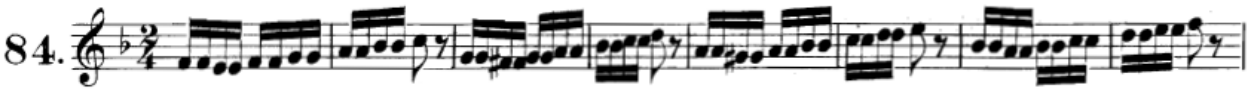
More Practice Suggestions

1. In addition to straight 16th notes, practice an 8th and two 16th's and two 16th 's and an 8th. This helps prevent boredom as well practicing common musical figures:





2. If you're having problem with a continuous 16th note passage where the pitch changes every two notes, practice it with both of these rhythms – be sure the air is absolutely continuous through the 16th's into the following 8th note. When this is mastered, play the passage as written and blow constantly!! It may be just a mental gimmick, but I have found this to be very successful.



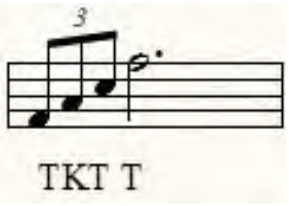
Arban *Complete Conservatory Method*

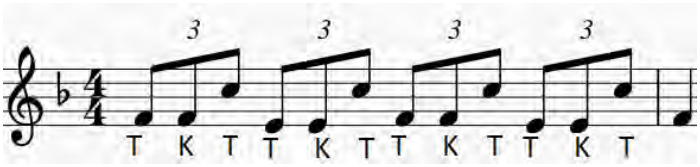
"K" in the Middle vs "K" at the End

There's a time and a place for each, so it's best to learn both patterns:

"K" in the Middle is Best

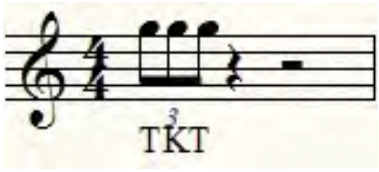
"K" in the middle is best on ascending arpeggios because the "K" is on a lower note:



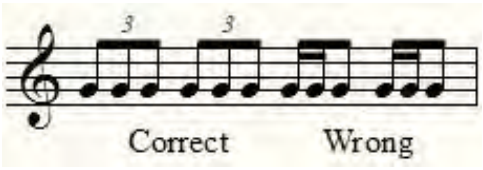


Some cornet theme and variations solos embellish the melody with a triple tongue pedal point. If the skip occurs between the first 2nd and 3rd notes, it easier to play with TKT.

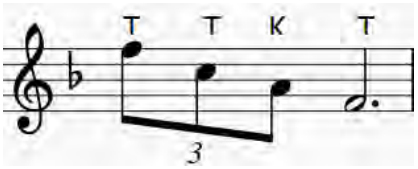
If a triple tongue figure precedes a rest, it easier to stop on a "T" than with a "K."



If the K is in the middle on triple tongue, be sure triplets are played and not two 16th's and an 8th note. This problem rarely happens with the "K" on the end.

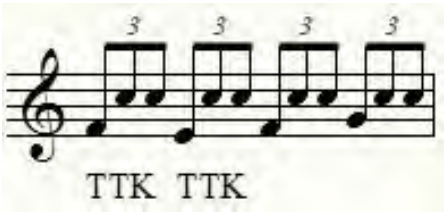


"K" at the End Is Best



"K" at the end is best in descending arpeggios because the "K" is on a lower note:

More often, cornet theme and variations solos embellish the melody with a triple tongue pedal point with the skip between the first two notes; this is easier to play with TTK.



Chapter 23
Flutter Tongue

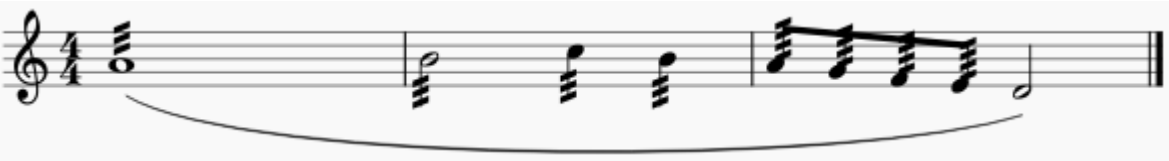
This will probably be your favorite chapter –it's the shortest!

The ability to flutter tongue is determined entirely by heredity. Either you can or you can't – it cannot be taught. (We tried to teach a friend in college – the closest he ever got was "dadder, dadder, dadder.")

What do you do if you have to flutter tongue and can't? Use a throat gargle. It distorts the tone , which is the entire point of flutter tonguing, so it's more than adequate.

Sometimes people who can flutter tongue have a hard time getting it started. Try starting with an "F" instead of a "T." (Thanks to Mr. Chichowicz for this tip!)

Flutter tonguing is often notated as a percussion roll:



This notation is usually accompanied with one of the following:

English – flutter tongue, flutter, or f.t.

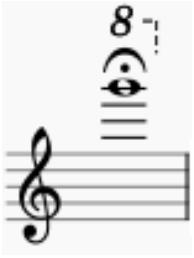
German – flatterzungue, or flz or flt

Italian – frullato, or frull

(More terms at Wikipedia Flutter-tonguing

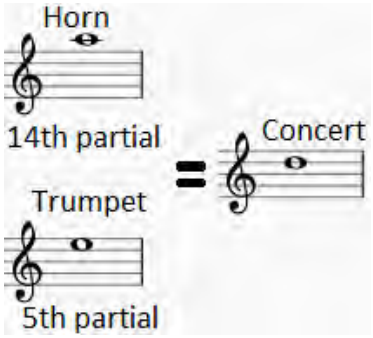
Chapter 24
Upper Range

Range expansion is part seven of the warmup.



Yes, there are trumpeters that can play this high! Here's one of my favorite videos to prove it: Wayne Bergeron**.** And here's a short youtube video that ends a fourth higher on triple high C. People are fascinated by trumpet high notes; there's a "wow" factor when a trumpeter hits a high note that just doesn't happen with flute, violin, or piano.

FYI, Bergeron played 1st trumpet in The Incredibles – I think one of the lines in the movie explains the fascination with trumpet high notes: "And when everyone's super, no one will be." Translated, "If everyone can play high notes on trumpet…who cares???" The fact that very few musicians can play these notes is a big part of the reason people are impressed.



There's even more to it – the tone quality a brass instrument high in the overtone series generates a special level of excitement. Not convinced? The "wow" same reaction occurs when people hear notes in the upper range of the horn…even though they aren't high! An A above the staff on horn is MUCH more exciting that a fourth line D on trumpet, even though they're the same pitch:

The horn sounds like it's screaming but the trumpet just sounds pretty.

Range and endurance are closely related: as a person tires, their range diminishes. (See Chapter 28 Endurance.) It is important to understand that both develop naturally with proper practice ***IF*** the air and embouchure are correct. This is why it is so critical to start students correctly and ensure they continue correctly as they get older.

Both upper and lower ranges should be extensions of the middle range and need to be approached musically with great emphasis on tone quality. (We'll discuss low range in the next chapter.)

In evaluating a piece for range demands, three areas must be considered:

1. What is the highest note? Is it higher than you (or your students) can play?

2. What is the overall tessitura of the piece? A piece that is totally in the staff except for a single eighth-note high "F" is not nearly as demanding as a piece that includes 32 straight measures of high "C."

3. Where does the note occur in the concert? Near the beginning when your fresh or near the end when you're worn out? Lead trumpet Mike Vax asks, "What's your range after 4 hours? Don't tell people you can play a high F unless you can play it at the end of the gig."

Requirements

This next statement should be obvious, but it is amazing how many people don't realize that:

> Rule: If you want to play "X," you must practice "X." Replace "X" with high, low, long, loud, soft, fast, clean, etc.

In a lesson, Mr. Jacobs told me, "Pitch is a variable." I thought that was rather obvious and was puzzled why he said it. I played again and he repeated, "Pitch is a variable." This happened several times in a row…I began to wonder why he was doing this, so I asked myself, "What is he trying to tell me?" and then I understood…if pitch is a variable, so are the things that create pitch. Let's begin by listing the factors required for a good upper register and then we'll discuss them one at a time:

- Lips/embouchure/teeth
- Inhalation/exhalation
- Psychology
- Correct combination of factors
- Sufficient proper practice

Lips/Embouchure/Teeth

The lips produce the pitch, so their importance is obvious. What you may not realize is that the lips must be correct in two areas:

Strength – The lips must be able to produce the lip tension required and withstand the amount of air being blown. Although strength increases with proper practice, the starting point varies considerably between individuals.

You may have heard the phrase, "Who said life was fair?" This is especially true in the high range: some people naturally have strong face muscles; most don't. That shouldn't come as a surprise – there are many people who are gifted with big, strong muscles even if they don't work out. You cannot tell who has strong face muscles by looking, but you can by the way the talk: "It's all about air. Just blow fast air and the high notes will come out. Sure, you have to practice, but it's all about air."

These people don't have a clue – they've always had strong facial muscles and assume everyone else does, which is not true. No amount of air in the world will produce high notes without strong face muscles.

I asked Mr. Jacobs if it was easier for some people to play higher than others. He replied, "Absolutely." Without taking a breath, he went on, "But anyone can do it if the musical motivation is strong enough." You have to understand how Mr. Jacobs spoke – when he said motivation, he didn't mean "Oh, I wish I could play high" or "I'd give anything to play double high C." Those are spoken desires; "musical motivation" to Mr. Jacobs meant hearing the pitch and tone in full CD quality in your mind so the lip and blowing muscles can receive precise instructions.

We'll discuss mouthpiece pressure on the lips in Chapter 29, but for now it is important to know that it is a poor replacement for embouchure strength that frequently leads to injury; reduces endurance, tone, and flexibility; and leads to playing sharp.

Imagine crushing your lip between your teeth and the mouthpiece – the result is a much firmer piece of tissue, helping high notes while denying blood flow to the lips and hindering their ability to move. When you firm the lips properly with isometric tension, you get the "benefits" of pressure without any of the negative side effects; and when you get tired, you recover more quickly.

Placement – the lips must be in the correct place with a forward focus to the embouchure. (Remember "leak and seal" from Chapter 15 Embouchure.) If the "smile" muscles win, the tone thins out, the pitch goes sharp, and the chance of injury from excessive pressure skyrockets.

The aperture in the lips must be the correct size and shape, reacting to the pitch in the brain. This is handled by the subconscious and is learned solely through trial and error.

The lips must also be able to vibrate at the frequency ordered by the brain. How easily they vibrate is an inherited attribute, explaining why some people can play higher easier than others.

Teeth

The teeth can be too close together, blocking the air. Try this - breathe deeply and blow fast with your teeth apart. Nothing to it! Do the same thing but with your teeth closed – it's hard to get the air out! Duke Ellington's lead trumpet player, Cat Anderson, said he played with his teeth closed. My students at Truman State tried it – it worked for only one student and it was inconsistent.

Remember that in Chapter 7 we learned upstream players tend to have an easier time playing high. Several of the great high note trumpeters have had a gap between their two front teeth; some believe that

Range Envy

Most trumpet players adhere to the slogan "Higher, Louder, Faster!"

Sadly, many end up with "range envy" – in their minds, the best trumpeter is the one who can hit the highest notes. Factors like musicianship, intonation, accuracy, etc. are irrelevant – range is EVERYTHING!

Except that it's not. Yes, you need enough range to play the music in front of you, but you cannot define yourself only by the highest note you can squeak out.

FYI, Doc Severinsen said 90% of his playing is below high C and he's a high note specialist!

Mr. Lillya pointed out that vocalists do not share this obsession with range – how many altos run around wishing they were coloraturas? Not too many! He suggested trumpeters make a game out of increasing the upper range to reduce their obsession.

As a teacher, you need to help your trumpet students see the light: it's music, not athletic competition.

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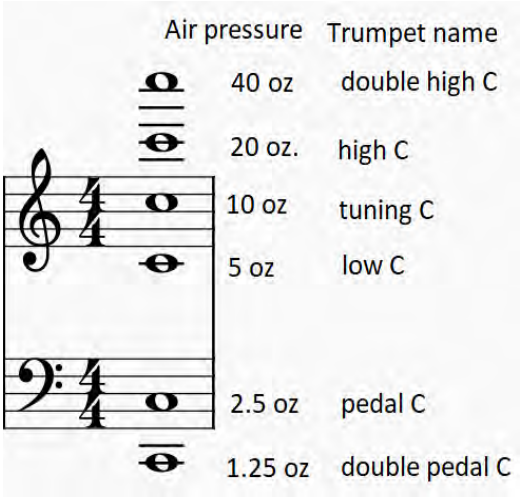
this contributes to their success in the high range. A few have even filed their teeth to produce a gap! I HIGHLY do NOT recommend this!! It simply isn't true – here's proof. Maynard Ferguson was THE high note player, perhaps of all time…and he had a gap between his teeth. Aha! That's his secret! Nope! Maynard got braces and closed the gap. No effect on his range whatsoever! Myth disproved!

Inhalation/Exhalation

Although we can't change our vital lung capacity, we can exercise a great deal of control and must produce air pressure properly. This requires background information from Arnold Jacobs:

In his research, Mr. Jacobs learned that the same concert pitch requires the same amount of air pressure no matter what instrument is playing it. He determined that middle C on the piano requires 5 ounces of air pressure and that the pressure doubles for every octave higher and drops by half for every octave lower. This gives us the chart to the right:



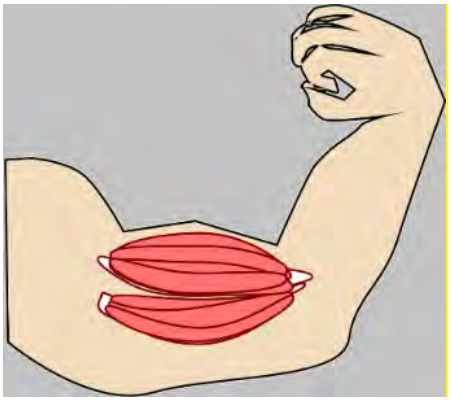
> **Note:** These are concert pitches, so B-flat trumpet pitches would be a whole step lower with a corresponding reduction in air pressure. (In one of Mr. Jacobs' master classes, he stated that middle C requires 6 ounces of pressure; perhaps 5 ounces is required for low C on the B-flat trumpet and 6 ounces is needed for low C on the C trumpet.)

Think about this – the lowest notes on the trumpet take around 5 ounces of air pressure and highest notes on the tuba take 5 ounces; it's no wonder tuba players don't tire as fast as trumpeters – they aren't working as hard!

Another point that's easy to miss – the key to a good upper register is an easy middle range because of the doubling principle. If the middle range is too tight, your upper range will be twice too tight! (This comes from Arnold Jacobs – who else??!!)

Mr. Jacobs stated that the subconscious will not allow us to exceed 48 ounces of air pressure; more than that could kill us! To prevent it, the breathing muscles automatically activate against the blowing muscles, blocking higher internal pressure through isometric tension.

> There are recordings of trumpeters playing triple high C which theoretically requires 80 ounces of pressure, significantly higher than Mr. Jacobs' stated maximum. I do not know how to reconcile this discrepancy – I constantly wish I'd asked him when I had the chance.


Anthony HALIMI – Pixabay

Just to remind you, Isometric tension is muscle vs. muscle. If you want to show someone your biceps, you contract biceps and triceps in opposition to each other. The muscles tense, but there is no motion:

Effort Required

Let's put this air pressure in perspective –bottles of water and soft drinks often weigh 20 ounces, the amount of air pressure required for high C. That's not much! Mr. Jacobs stated that our breathing muscles are very strong – any adult can lie on the floor and support someone 125-150 pounds in weight standing on their stomach. If you could bench press 150 pounds, how hard would it be to handle 20 ounces?? Our blowing muscles are MUCH stronger than we need to play high; therefore, we shouldn't work hard when we do.

Since we can generate 48 ounces of pressure and high C is only 20, we're not using even half of what we can do. Another reason not to work hard to play high.

Mr. Jacobs said if you take a very large breath and hold it, the pressure you feel is enough to play high C, so this another way to experience 20 ounces of pressure.

Remember, the workload is spread over the entire torso, so there is no need to be tight. It is the same principle as a lot of people pushing a car instead of one.

There can be only one conclusion - it takes very little effort to play a high C…when done properly.

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"Then, why do I get so tired playing?" From sheer repetition of movement. Imagine dropping 1,000 pencils on the floor and having to pick them up one at a time. The first pencil would be easy; by the last pencil you would be exhausted, and that last pencil might seem very heavy. Is it really heavier? Of course not. The reason you're tired is from bending over and moving your arm 1,000 times.

When we're doing things correctly, our blowing muscles get tired before our lips. How often does that happen??!! Maynard Ferguson said his body always got tired before his lips. Why? Because he did things correctly! (Mr. Cichowicz called Maynard the brass player of the 20th century because of what he was able to do and for the number of decades he was able to do it. Many high note trumpeters do not last that long – Dr. Swift told me that Pete Candoli burned his chops out once a year and had to hole up in a hotel for two weeks while he nursed them back into shape.)

Proper Creation of Air Pressure

> **Note:** Before starting this section, you might wish to review "How to Blow – Blowing vs. Squeezing" in Chapter 12 Breathing and "Leak and Seal" in Chapter 15 Embouchure.

Mr. Jacobs taught that our lungs are a bellows system requiring motion and shape change to move air and create air pressure. If you don't move the bellows, nothing comes out.

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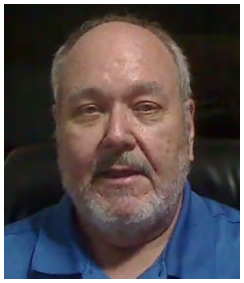
Let's start with the wrong way to create air pressure: isometric tension – inhaling muscles fighting blowing muscles. Does that make ANY sense?? Why would you want to INHALE while you're BLOWING??? Imagine taking a balloon full of air and covering it with plaster wrap. When the plaster dries, does the air pressure in the balloon increase? Only if the plaster shrinks, otherwise, there is no change in pressure.

Without motion and shape change, there can be no increase in air pressure. Locking in opposition, the battle between inhaling and exhaling muscles is doomed to failure; we expend a LOT of effort for no purpose.

Yet that is what most people do. Besides getting red in the face, playing sharp, tiring quickly, and playing with a bad sound, there is a definite risk of passing out. How does this happen? Inhaling and blowing muscles fighting each other restrict the blood flow to the brain. As soon as you stop blowing, the blood flow is restored, you get a head rush, and down you go!

This only happens to trumpet players – seriously, have you EVER heard of anyone passing out from playing a high note on a piano??!! Why does it happen to trumpeters? Remember Tom Stein's comment from Chapter 12: trumpet players tend to stiffen against the resistance caused by the slow flow rate in the upper register. Often called "back pressure," it does nothing to create the air pressure needed to play high.

Blacking out NEVER happens when you're playing correctly: when it's time to blow, inhaling muscles shut off. You could say that blowing and inhaling muscles take turns; it's one or the other, never both at the same time.



How do we learn to do this? By combining leak and seal (Chapter 15 Embouchure) with Exercise No. 10 of Arnold Jacob's breathing exercises (Chapter 13): when your lips seal, keep blowing, even faster. With everything sealed, air pressure increases; the harder you blow, the higher the pressure. Once you're blowing hard, pop the mouthpiece away – you'll hear the sound of air pressure releasing, proof that you are doing things correctly. (Jacobs finger pop w/ leak and seal – HBM video)

This trains the body in two very important ways:

1. The lips have a forward focus, maintaining the proper embouchure and keeping more "meat" under the mouthpiece to protect against excessive mouthpiece pressure. (More on pressure in Chapter 29.)

2. The inhaling muscles do not engage as the pressure increases.

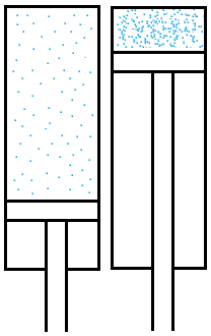
The result is correct production of air pressure while maintaining a correct embouchure. I must admit, doing this exercise looks and sounds a bit stupid, but it works!

Air is compressed in one of two ways:

1. The amount of air is constant, but the container is reduced in size:

   When we blow, the ribs rotate down and inward, reducing the size of the lungs. At the same

time, muscles in the lower abdomen pull inward, returning the diaphragm to its original position, further reducing the size of the lungs, and increasing air pressure.



In one of my lessons, Mr. Jacobs said, "I want you to increase your intrathoracic pressure by raising your diaphragm." (Hmm. Sounds a lot like a piston in an automobile engine…)

He explained that this technique is very helpful to trumpet players and is done by pulling the stomach in at the instant you start to play (not before you play). This produces an increase in air pressure with little effort and no isometric tension.

"Pull my stomach in?? How do I do that?" If you've ever tried to put on a pair of pants that are too small, you know exactly how to do it. An older way of explaining it was "Make your belly button touch your spine." Different words, same motion.

2. The size of the container is fixed, and additional air is pumped in:

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Imagine the mouthpiece cup as the air tank and your lungs as the air pump. The throat (opening at the bottom of the mouthpiece cup) can accept only a certain number of air molecules per second. Let's pick an absurdly low number to keep our discussion simple: 100 molecules/second. If we blow 100 molecules/ second or less, all the molecules go right through the mouthpiece.

However, if we increase to 200 molecules/second, only 100 of them can go through the throat. The other 100 are stuck in the mouthpiece cup. During the next second, another 200 molecules come in and 100 go through the throat, a net gain of 100. We now have 200 molecules in the cup. Et cetera, et cetera. The pressure is going up!

From a psychological point of view, it makes sense to imagine that we're the compressor and the mouthpiece is the air tank. Many players say increasing air speed makes high notes easier. Others say high notes are farther way – imagine blowing out a birthday candle right in front of you. Go ahead…now blow it out. I bet you used almost no air. Now, hold it at arm's length and blow it out. You used a LOT more air and blew faster, too! "Faster air" and "farther away" are in complete agreement. (See "Confession" at the end of this chapter for reasons I believe this to be correct.)

Air pressure increases inside your lungs, matching the pressure in the mouthpiece. However, this should not be your focus; if you concentrate on internal air pressure, you are more likely to engage the inhaling muscles while you blow, blocking the desired pressure increase.

Potential Bad Side Effect

When blowing and inhaling muscles lock, the throat automatically closes as part of the body's defense mechanism to stiffen the thorax, reducing injury if you're in a fist fight. (Trust me…no need to test this!) Do this instead – grunt. Your blowing muscles automatically lock as your throat closes. Or does the throat close because the blowing muscles lock? It's a chicken and egg situation. Question: how do you get air into the horn if your throat is closed. Answer: you don't.

Psychology

The proper attitude is even more important than muscle strength. Unfortunately, we talk about "high" notes, opening the door to acrophobia, the fear of heights. "High" C is not high – it's 932 Hz (cycles per second). "High" notes are simply fast lip vibrations.

Why would anyone be afraid of fast lip vibrations?? Because we call them "high" notes. A reasonable fear of heights is a good thing and most people have it – it keeps them from doing something foolish. Try this – stand on a chair in the middle of your room. Now stand on one leg and lean as far as you dare. Does your heart start pounding? Does your breathing get rapid and your palms sweaty? I doubt it!

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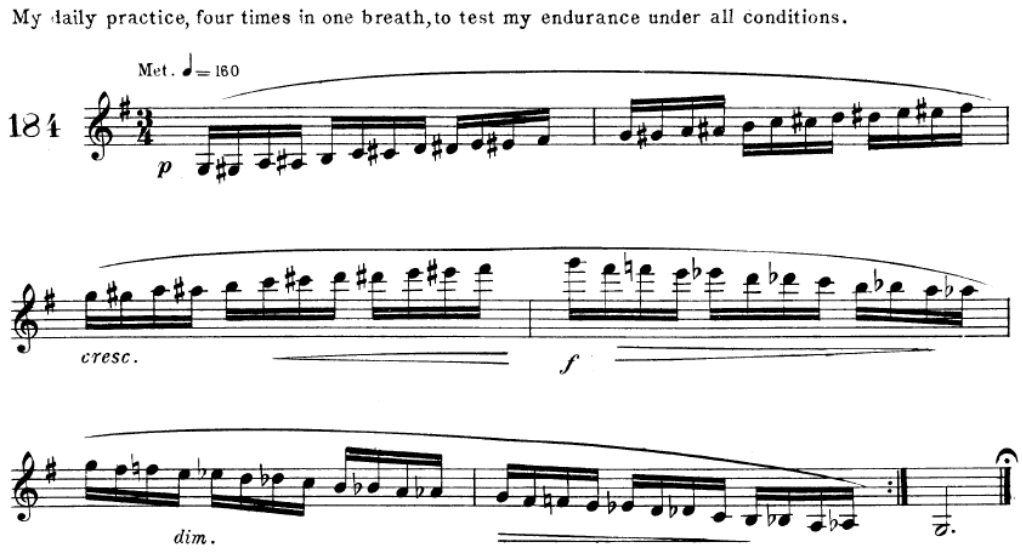
Now use your imagination – you're the little yellow person on the chair that is now on top of the antenna of the Empire State Building in New York City. It's a lovely day – the sun is out and there is no wind. Are you mentally "there"? Focus!! Okay, now that you're 1,454 feet up in the air, stand on the chair on one leg and lean over as far as you dare. If you have a strong imagination, you will have a physical reaction! (More photos.)

So, is "high" C actually high?? Nope.

When I was an undergrad, we stopped calling it "high C" – it was just "C" so we would stop being afraid. In fact, we dropped "high" entirely – "double high C" was "double C." More on psychology, word choice, etc. in Chapter 33.

Before Maynard Ferguson started playing trumpet, he played violin. Do you know ANYONE who is afraid to play high notes on a violin??? All you do is move your finger closer to the bridge and the pitch goes up.

Sounds like a great mindset for brass – just put your lips in the right place and blow. I am certain this background helped Maynard's approach to high pitches. Herbert L. Clarke began on viola, and he could play "high" G's. Coincidence they were both string players? Seems unlikely.



Clarke Technical Studies

Let's talk about the right attitude:

1. You must hear the pitch in your mind– remember, you can only play as high as you can mentally hear because that's how the muscles get their instructions. It helps to do a LOT of listening to upper range playing so you can get those sounds in your ear and internalize them in your mind.

2. Barbara Butler said keep "high" notes at eye level; they don't seem as high. The same is true for low notes.

3. In a lesson, Mr. Jacobs told me that the trumpet's upper range begins at "high" C. The vast majority of our playing is in the middle range…and who's afraid of that??

4. Most musicians are perfectionists. Unless you play "C" (remember, that's "high C") really loud with a wide-open tone, it doesn't count. I took a five-day master class with Dale Clevenger, CSO principal horn. He said, "Don't worry about the tone – first get the note and then start working on tone." It's like a weightlifter barely able to raise the bar – it's going to shake at first. Common sense.

5. Let's use a football analogy – how many times have you watched an incredibly bad play where someone manages to catch a horrible pass and somehow score a touchdown? Or my favorite – the ball is right next to the goal line, the quarterback leaps in the air, goes over the goal line, and is pushed back by the defense. It's a touchdown because the ball went over the goal line for an instant. The musical equivalent would be hitting a "C" for split second and then falling off. Can you imagine a musician playing that badly and having the crowd go wild???

But that is the attitude we need WHEN working on upper range – celebrate any success. And then think like a weightlifter: "Maybe a can hold the note for two seconds next time. Pretty soon I'll hold it for 4 measures! And then I'll move on to the next half step!"

6. You must expect progress. Two of my trumpet-playing friends in college were not music majors. The older brother had an "A" that could demolish small buildings; the younger brother could play "double G" (the note at the beginning of this chapter) – AFTER a two-hour rehearsal! Genetics may have played a part (since they were brothers), but I think their attitude was the key. No matter the note, they knew they were going to be able to play it – maybe not today or next week or even next month, but it WAS going to happen. Be confident in your ultimate success!

7. Any given note should become easier and easier as you get stronger and stronger, taking a smaller and smaller percentage of your increased strength. You should constantly reevaluate how much perceived effort is required, or you can get stuck using more effort than is needed. This extra tension limits your range and adversely affects all other areas of your playing. Here are two stories to help explain this:

   One of his students heard the great horn player, teacher, and composer Verne Reynolds warming up. Mr. Reynolds played an arpeggio, missed the top note, and then repeated the arpeggio, nailing the top note. Odd – Mr. Reynolds rarely missed…. Playing another arpeggio, the same thing happened, and it kept happening repeatedly. Missed the top note the first time, nailed it the second. Finally, the student asked Mr. Reynolds why he kept missing the note the first time. Mr. Reynolds replied, "I'm trying to see how little effort I can use."

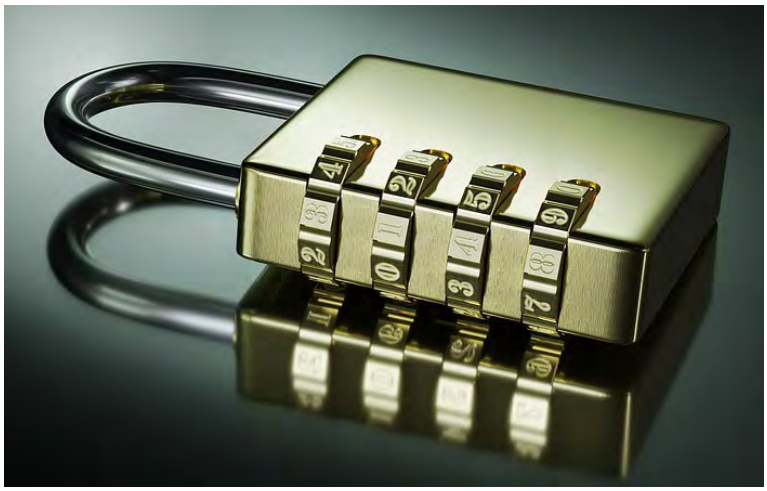
   When I was teaching at Western Carolina University, I taught two students that were having range problems – they could play "A" just above the staff and that was it. Bob (not his real name) was a freshman; after graduating high school, George (nope, not his real name, either) worked in auto parts store for 10 years and then decided to go to college to become a band director.

   I asked them when they were first able to play the "A" – both said they could play it in junior high, so Bob had been stuck for 6 years and George had been stuck for 16 years!! I puzzled over this for some time – it made no sense: how could they not have gotten stronger in all that time? I realized that they had been getting stronger, but they thought it took everything they could do to play the "A" – after all, that's what it took when they were in 7th grade. Six (or sixteen) years later, they were still using all their strength. Once they understood that "A" no longer required 100% effort, their range began to progress normally.

   Another way you could think about this: you just started your teaching career and are bringing home $2,000 per month. You bought a home with payments of $600 a month, which is 30% of your income. You really like your job, so you stay there many years, eventually becoming the head band director. Your salary has tripled - $6,000 a month take home, making your house payments only 10% of your income – but you are convinced you still need to pay 30% ($1,800) a month.

That's crazy! Unless you're in a hurry to pay your house off quickly, you would continue payments at $600/month. As you become a stronger player, the notes don't increase in "price" – they stay the same, so they get easier and easier for you.

Correct Combination of Factors



MasterTux – Pixabay

He may have started on horn, but the first note Wayne Bergeron ever played on trumpet was a double C. He said, "I got lucky and found the combination the first time." All the factors we have discussed have to align exactly right to have exceptional upper range. How often does that happen. Hmm..how many Wayne Bergeron's are there? One. It must be a RARE occurrence!

What about the rest of us? It's a matter of self-discovery through trial and error. We are so unique and varied that each of us must find their own combination – no single method will work for everyone, and there are a LOT of them. Each of them works for some people, but the book that works for most people has yet to be written.

The high note trumpet teacher Kurt Thompson says he uses many approaches in teaching the extreme upper register: not all approaches work for everyone, but if you try all of them, you'll find the approaches that work for you.

Sufficient Proper Practice

None of this matters if you don't practice playing high often enough. There are times when I work on my range and it improves. When I quit working on it, I lose ground, which brings me to another important point:

Rule: Use it or lose it.

This rule applies to everything you do that does not come naturally. Natural gifts tend to maintain themselves with little work; acquired abilities degrade quickly without maintenance. It's like a battle – if you capture ground and then walk away, the enemy will take it back. If you build to a new high note and neglect it, you lose it. What a waste of time and effort!

> One of my former students, Ruth (not her name), shared this great example of a natural gift: Ruth's mother offered to buy her a new trumpet on the condition that the mother got the Ruth's old trumpet. Talk about a no brainer! The new trumpet arrived, and the mother got the old trumpet. She hadn't touched a trumpet in 30 years! THIRTY YEARS!!! And she still had a high C! It's not fair…and that's the way it is.

It's more than a matter of just putting time in on the trumpet or horn, you must practice correctly:

1. ALWAYS have a great sound, proving that you are doing things right. (This doesn't apply to a new note that you're barely getting. Remember the comment from Clevenger at the beginning of this chapter.)

2. Rest as needed – most brass players advocate playing and resting in equal amounts; this is particularly true in the upper register.

3. Avoid excessive pressure on the lips which can injure them (see Chapter 29) – if you hurt yourself, you must heal before you can make progress again.

Disagreements

As you would expect, brass players don't always agree –

How Large Should the Breath Be When Playing High?

Very Large Breath – Higher pitches require air pressure. It is easiest to generate the needed compression when the lungs are full because the body is already expanded and wanting to contract, generating enough air pressure for high C, and giving you a head start. By contrast, when you run low on air the body wants to expand and take air in, requiring not only the effort to generate the required air pressure, but also the effort of overcoming the body's natural desire to expand to its relaxed state.

Not the Largest Breath – Higher pitches require air pressure. It is easiest to generate the needed compression when the lungs are not completely full because it is more difficult to compress the lungs when they are completely full.

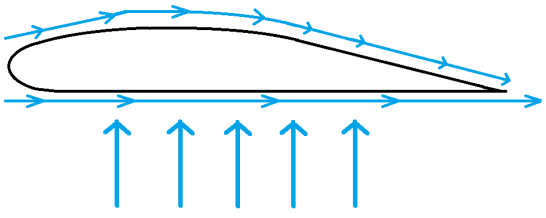
So, where's the truth? I believe it depends on the individual. Try both ways and see which works best for you. Have your students try both ways as well.

> **Note:** This only concerns the upper range. The air pressure in the normal playing range is not great enough to be a factor.

Tongue Position

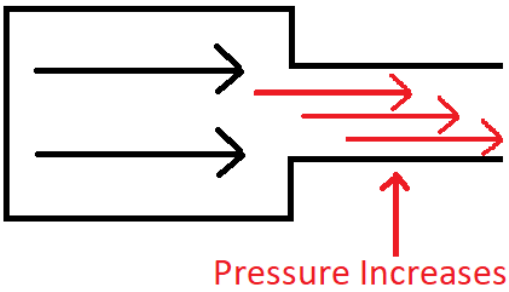
Mr. Jacobs also used the word "keyhole" to develop an awareness of the tongue's position and to help it stay down and out of the way. Say "key" and then say "hole." Notice how high the tongue is in the mouth on "key" and how low it is on "hole." Now say "keyhole" – you'll feel the tongue dropping out of the way.

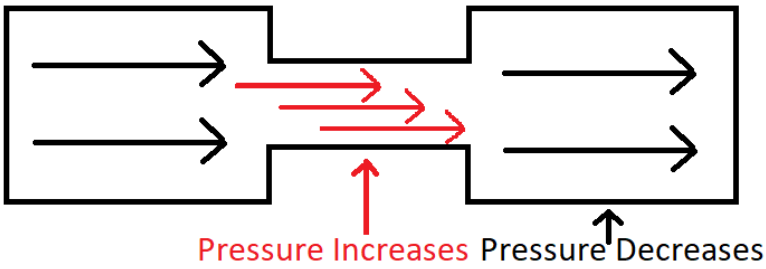
Many books advocate arching the tongue ("key") for high notes, and many great high note trumpeters say this is how they play. Proponents of this system cite the Bernoulli principle as evidence.



This principle is important to anyone who flies:
Air going over the top of an airplane wing has further to go than the air on the bottom because of the curved surface. The faster air on top reduces air pressure, so the air under the wing presses upward, creating lift. (No, this has nothing to do with brass playing, but it IS interesting.)

Another application of the Bernoulli principal involves fluids or gases moving from a large pipe to a small pipe, and this does apply to brass playing. When the fluid or gas reaches the narrower tubing, the pressure increases. The application to brass playing is when the tongue is in an "EE" position, it is arched, reducing the space available and therefore increasing the air pressure going into the horn. Makes sense!





The only problem… that's not the entire picture. Sure enough, the pressure increases with the arched tongue, but what happens after the air gets past the tongue? The pressure drops back to where it started.

For whatever reason raising the tongue may help, it's not because of the Bernoulli principle. My belief is that moving the tongue raises the jaw and that is what helps the upper range. Try this: play a very low note and then a high note. I'm certain you'll find the jaw is more open on the low note and less open on the high pitch.

You may run across phrases like "the tongue-controlled embouchure." If I'm right, it is more accurate to call it the "jaw-controlled embouchure," but it's unimportant: you run the controls, not the machine:

> When you're driving and step on the accelerator, you may believe that a gate raises, and a dog chases a cat on a treadmill to move the car. Or you may think that the brake pedal causes an anchor to come out of the back of the car, dragging you to a stop. You're absolutely wrong, but you achieve the desired result.
>
> > **Note:** It's not worth getting into an argument with someone over the terminology they use or what they think is happening in their body. It's okay to intellectually discuss it and argue your point, but do not allow it to become emotional.

Another bit of information from Arnold Jacobs –if a player is not blowing enough air, the tongue automatically raises to <u>try</u> to create the required air pressure. (Notice that he said "<u>try</u>.") This statement calls the tongue arch theory into question. He also stated that the tongue can easily go too high, blocking air flow. I know this to be a fact because I have done it 10^{26} times. It does NOT work!

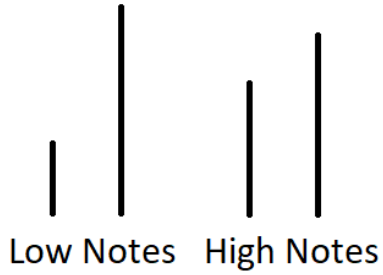
Thin Air vs. Thick Air

Mr. Jacobs frequently talked about "thin air" and "thick air." Put the back of your hand in front of your mouth and blow with an "ssss" sound. That's "thin air" – the tongue is arched very high and you don't feel much air on your hand. Do it again and blow really hard! More air hits your hand, but there is also more resistance and you're probably getting red in the face.

Now for "thick air" – put the back in front of your mouth and blow with an "O" sound. MUCH more air! Again, blow really hard – the air flow increases much more than "thin air" and there is little or no back pressure.

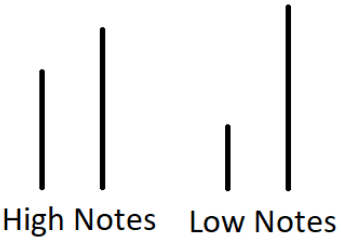
During my lessons, Mr. Jacobs frequently drew two lines on my music – the shorter line represented air pressure and the longer line represented air quantity. He stated that they were in constant flux, changing length with range. (Remember his statement "Pitch is a variable" and that the things that produce pitch are variables.)

One thing must never, never happen – air pressure should <u>never</u> exceed air quantity. That is when things go wrong, like the throat closing and even passing out.



This image shows the change in pressure and flow between playing low and playing high:

> Air pressure line (left) increases with high pitches; air quantity line (right) decreases at the same time.



Another extremely important point – when you return to the low range, the pressure needs to drop and the quantity increase.

One final point to consider – the great trumpeter Vince DiMartino stated that trumpeters should consistently use a higher tongue position than a tuba player, making the high range more accessible. Believe me, he has a <u>superb</u> high range! Notice he used the term "higher," which is a relative term, as opposed to "high," which is more specific.

> Arnold Jacobs started on trumpet and became a professional tuba player. When his glaucoma became so bad that he could no longer read music, he switched back to trumpet and could play double C! When he mentioned his trumpet playing to his ophthalmologist (medical eye doctor), the doctor told him to quit – the pressure of blowing the trumpet combined with glaucoma would make him go blind. That ended Mr. Jacob's trumpet career.

How I would have loved to hear a debate between Mr. Jacobs and those who advocate a high tongue position! I'm afraid we're not likely to ever know the truth behind this apparent contradiction.

Anchor Tonguing

Related to the high tongue position, we must discuss "anchor tonguing" where the tip of the tongue is placed behind the bottom teeth. Articulation is done further back on the tongue. Advocates claim that this is what great players use to play high. Honestly, I don't know if they do or not, but anchoring the tongue cannot contribute to rapid articulation. If you don't believe me, try talking with your tongue anchored – the result is muddled speech, so anchor tonguing also hinders clear articulation as well. (This may be part of the reason most jazz trumpet players don't play classical music well.)

Arnold Jacobs said tongues come in different lengths and widths, so perhaps anchoring tongue helps with a long tongue? I read that Herbert Clarke could anchor tongue or use regular tonguing with equal

success. Since he was the greatest cornet player of his day, it's no surprise that he could do things that most people can't.

> In my opinion, spending time on this technique would be better spent improving what a player has always done.

If you would like to read about an historical precedent to anchor tonguing, you may be interested in 50 Exercises sur le Coup de Langue Ternaire by Felix Ligner. A brief review is available on the Wayback Machine. I should point out that this refers to triple tonguing, not upper range.

How to Teach/Practice Techniques

Prelude: One of the saddest moments of my college career occurred in the library at Iowa State. Thanks to Dr. Swift, ISU had a subscription to *Brass Bulletin*, a monthly publication in English, French, and German. One day I ran across an article that dashed my hopes.

> It probably was John Harding, "The lead trumpet player: training, practice and equipment," *Brass Bulletin* No. 4, 1973, pp. 29-51. It's not available online and the closest copy is at The University of Memphis, almost 200 miles away, so I can't check. Sorry!)

The author asked many of the finest lead trumpet players in the Los Angeles area (a hot bed of jazz recording) if the high range can be taught. Every one of them said, no, it cannot be taught. I was crushed! I wanted to be like Bud Brisbois, and this dashed my hopes.

> **Note**: My mistake was missing the word "taught" – they did not say a person couldn't discover it, just that it cannot be taught. Remember Arnold Jacobs' statement "But anyone can do it if the musical motivation is strong enough."

So, that's where we start: you cannot teach high range…and neither can I. However, we can help students figure it out for themselves by providing the right opportunities to learn.

Learning to Play High

Where to begin…with listening to people play well in the upper range. If you don't know what to sound like, how can your produce the correct tone?

> Imagine you've grown up on a small island – there is no transportation; everyone walks…period. One day a box floats to shore. The excited islanders open it up and there's this weird thing inside. What is it? What's it for? After much discussion, someone figures out there's a place for your hands and then another one realizes there's a place for your feet, so that small area in the middle…why, you must sit on it in order to put your hands and feet in the right place. It's a chair!!
>
> Another islander objects to this conclusion: "How can it be a chair? The things that hold it up move too easily. You would constantly fall down." Someone else notices that when you wiggle the feet things, it makes one of the supports move… This goes on and on until they finally determine that it's a mode of transportation, but they still must figure out how to operate it. Weeks later they manage to ride a…bicycle.
>
> But you didn't grow up on a small island – you would have known in a heartbeat what it was. Even if you hadn't learned to ride, you've seen other people ride and know what you're supposed to do. It's

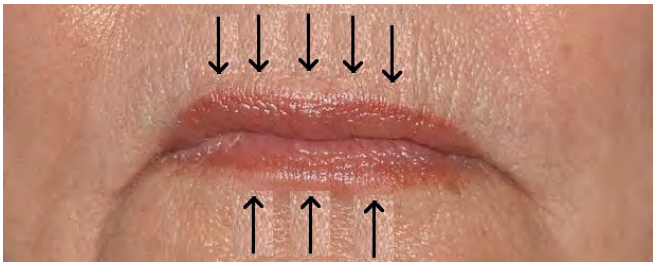
the same with high range…with one important difference. It's your ears, not your eyes that help you know what to do.

One of my former colleagues told me that when we watch something, we vicariously experience the activity and begin to develop an idea of how to do it ourselves (which is why athletes watch videos). Having watched someone ride a bike gives you a HUGE advantage over those poor islanders! In the same manner, I believe that information is subconsciously gathered during the listening process, perhaps even clues to the physical processes involved. (See my comments below about listening to Maurice André with headphones on.)

Almost time for specific techniques, but you must be certain you are doing them correctly. How do you know?

1. Tone, tone, tone – always, always, always this is your best clue. If you sound great, you're doing things right. If you don't sound good, you're not.

2. A thin sound is caused by a lack of air or by pinching the lips together vertically instead of using the correct leak and seal approach. It can also be caused by stretching the corners (prevented by leak and seal).



Lesion – CCA - Share Alike 3.0 Unported.

3. Intonation – consistently playing sharp is caused by pinched lips and/or stretched corners. Underlying these problems is frequently a lack of air. (Notice I said a lack of air, not a lack of effort. Excessive effort results in tightness, causing a lack of air.)

   Isometric tension in the blowing muscles also causes sharp playing as well as a reduction in tone quality.

   Weak, flabby corners lead to playing flat in the upper register. Inadequate air also contributes. Why? If the embouchure isn't up to pitch, additional air helps raise the pitch; without it, you'll be flat.

4. Visual – Excessive tension in the blowing muscles causes redness in the face. However, genetics is also a factor. Mr. Herseth frequently was red in the face; Mr. Jacobs attributed this to his Scandinavian heritage.

   It is possible to see pinching the lips, although it may not be obvious. Pinching is frequently accompanied by the chin collapsing upwards instead of arching downward.

Basic Approaches to Learning to Play in the Upper Range

1. How much do you practice? No more than ten percent of your practice time should be spent extending your range for two reasons: 1) there is a tendency to neglect the rest of your technique and 2) there is a strong potential for injury from using excessive pressure. (See Chapter 29.)

Why would you neglect everything else? Because you can "measure" range progress, so it's more rewarding –

"I just hit a high Q! I've never done that before!" or "Wow! My range is a minor third higher than it was last month!"

FYI, you can also measure lip slur speed, tonguing speed, and endurance, but how do you measure tone quality and musicianship? "My sound is 14% better this week!" or "The emotional quality of my playing is now a B-plus!" Some things cannot be quantified.

Opinion: A big part of the fascination with sports comes from the scores. Numbers make it easy to judge a team's ability by who they beat and by how much, how many yards rushed or runs batted in (RBI), etc. The same applies to marching and DCI competitions. Competition is a GREAT motivator, but we must remember that music first and foremost is an art form that communicates emotion.

2. Just like baseball, 3 strikes and you're out. When you're trying to play a note that is just out of reach, you get three chances and that's it for the day. THE ENTIRE DAY??? Yes, the entire day. The reason for this is that you probably don't have the lip strength you need (or you would already have the note), so you're using excessive pressure on the lips to create the needed firmness. By quitting after 3 failures, you minimize the chance of injury. More on this in Chapter 29 Mouthpiece Pressure.

3. The way to a great upper range is a relaxed middle range (remember the doubling principle). There's no point in working in the high range before you've achieved that. How do you know your middle range is relaxed? Tone!

4. How much range do you need? I recommend a minor 3rd above the highest note you must perform. (Kurt Thompson recommends a perfect 5th higher.) Even on a bad day, you'll still be able to play the piece well.

   With this safety margin, your self-confidence is much stronger. Think about having to play a note that you can only hit on your best days, maybe 3-4 times per year. The odds of you being able to hit that note on a specific date are 1 in a 100, pretty much guaranteeing you'll be a nervous wreck the day of the concert…and you'll probably miss the note.

5. Let's talk about good and bad days for a minute. EVERYONE has bad days, but along with bad days, you occasionally have good days when everything works better than normal. I like to think of those good days as forecasts; if you keep practicing, in time that will become your normal level of playing. Good days are encouraging!

   Note: Quite often you will overdo it on good days, making the next day a bad day which seems even worse because the day before was so good!

   Rafael Mendez got tired of having bad days, so he decided to get rid of them by strictly regimenting his life, including when he went to bed and when he got up, what he ate and when, etc. Fortunately, it didn't work – despite this, he still had bad days. "Fortunately?

Why do you say that??" Because if it worked, all of us would have to regiment our lives to play well. (This is from Acton Ostling, my first college band director.)

There are some things that you CAN control:

Bad days are caused by breathing poorly, something you can easily fix! (Arnold Jacobs, Chapter 12)

Mental fatigue is sure fire way to have a bad day. So is physical fatigue. Taking care of yourself reduces the number of bad days and increases the level of your regular days.

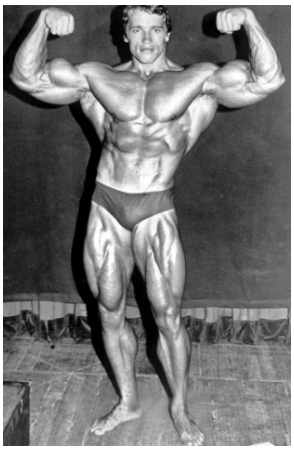
Bad days don't last for long, rarely over 24 hours, so there's no reason to get upset. The next time you truly have a bad day, use that as motivation to raise your overall level of playing so you're amazing even on bad days! And when you have a good day…LOOK OUT! It will be awesome!

So, bad days can occur for no reason…or because you're ill or getting ill. Dr. Swift told me our lips give us a heads up when we're getting sick: out of nowhere, you're having a bad day. You ask yourself if you've let up on your practicing or if you've practiced a lot more than usual. No, nothing out of the ordinary.

And three days later, you're sick. He told me about this in 1970; since then, it has proven to be true MANY times. But there's something else – if you realize you could be getting sick, you have three days to do something about it: eat better, get more sleep, reduce your stress. This has helped me many, many times over the years.

In a weight-training manual, Joe Weider stated that you have good days and bad days; on good days, you should increase the weights and on bad days, you need to decrease them. I think the same is true of range. Take advantage of good days (but don't overdo it or you WILL have a bad day the next day) and don't try to play as high on bad days. Another reason to have more range than the bare minimum.

FYI, Weider trained Arnold Schwarzenegger to when Arnold first came to the United States.



Arnold Schwarzenegger
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6. Many trumpet players advocate working on the upper range every other day. This approach come from weightlifters – many years ago, someone observed that butchers were much more muscular than most men. A study of butchers revealed that a day of dealing with hundreds of pounds of animal carcasses was followed by a light day of cutting and wrapping the meat. This process was continually repeated and was the secret of their strength gains – work out hard one day and rest the next.

Practicing too much can cause a decline in ability. It is important to understand that muscles do

not build DURING the workout, they build AFTER the workout when they are resting. If you tear down 3 units and build back 4 units, you have a net gain of 1 unit. It you tear down 3 units for 2 days in a row and rest the next day, you have a net loss – 2 days of working out = 6 units torn down; 1 day of rest = 4 units gained; net loss of 2 units.

If your tear down 6 units in one day and build 4 rest the following day, you have a net loss of 2 units – overdoing it even for one day can contribute to a decline in ability. FYI, Maurice André often skipped a day after several heavy days of recording piccolo trumpet solos.

> I asked Mr. Didrickson about this approach; his answer was pragmatic: "Try it. See if it works." This is great advice for working in the upper range.

Specific Approaches to Developing the Upper Range

1. Long tones strengthen the embouchure, particularly notes higher in pitch. Unfortunately, long tones can be mind-numbing – unless you are paying careful attention to tone quality (which monitors air flow and relaxation) and avoid excessive pressure on the lips, they may cause as much harm as they do good.

2. Incremental increases – learn a melody in a register where you are relaxed and have a great sound of every note. When you can handle this, take it up a half step. Stay at this level until you sound great on every note. Guess what's next – you're right, keep going until you reach your desired range.

   > Rule: This cannot be rushed. You may add a half step in a day, or it may take weeks.

   > Rule: Doing things wrong creates bad habits that slow or even eliminate progress.

   The melody could be a scale or a Clarke Study or a "real" melody. It doesn't matter.

   Think about this process – it's exactly like weightlifting: small, incremental steps as you gain strength. (Yes, I'm harping on this – but you can seriously hurt your mouth if your ambitions exceed your ability. Much more on this in Chapter 29 Mouthpiece Pressure.)

   This approach was used by Maynard Ferguson, although he went up by thirds, not half steps. Maynard started playing trumpet when he was 13. Only a year later, he was playing double C. This works!

   Problem – "I can play this in the key of C, but I can't play in C-sharp!" My answer is, "Get busy and learn to play in C-sharp. It's not that hard." Consider this: if you started out in C-sharp as a beginner you would the same problem remembering all those naturals that you currently do remembering all those sharps.

   Problem – "I can't transpose." Then use Finale, Sibelius, MuseScore, whatever. No more excuses. How bad do you want to increase your range?? Besides, orchestral trumpet and players and horn players MUST be able to transpose. It's challenging when you first start, but it gets easier the more you do it.

3. If the passage is too high, play it down an octave and then take it back up. Be careful how you do this – an octave is TWELVE times more than up a half step! When you're down the octave, insist on a beautiful sound, staying relaxed, and making sure the air flows freely. Clearly hear each pitch – the upper range demands much greater mental and embouchure accuracy. When you go back up the octave, focus on tone, relaxation, and air flow.

   Mr. Jacobs would say, "Let the low notes teach the high notes." I've used that many times – it works!

4. Lou Soloff said that if he had trouble with a high passage, he would take it down an octave, master it, play it on the piccolo trumpet in the original octave, and then play it on the regular B-flat trumpet in the original octave. (Of course, you must own a piccolo trumpet!) The idea is much the same as the last two, so the advantage of this approach is the greater accuracy of the piccolo trumpet. When you play the melody in the original octave on the piccolo trumpet, you tend to be more relaxed; strive to maintain this relaxation when you switch to the regular trumpet.

5. David Laubach (Henderson alum and former adjunct trumpet professor at Henderson State) used an approach that draws in some of the benefits of pedal tones (more below). He started with playing the melody down an octave; when that was mastered, he took it down another octave, and then took it up two octaves. The advantage of this approach is the increased air flow and relaxation required to play it down the additional octave; again, maintain these when you play it two octaves higher.

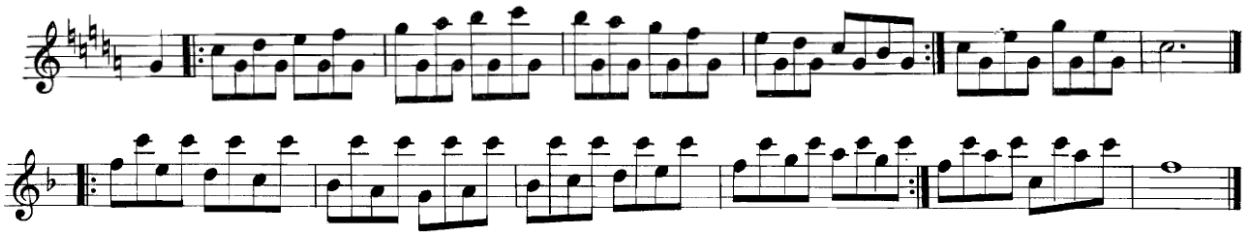
6. It is not possible to play lip slurs well if you use too much pressure which pins the lips in place and prevents them from moving. Therefore, you must use the embouchure muscles properly, strengthening them in the process. As the lip slurs move progressively higher, the lips develop additional strength.

   A subset of lip slurs is lip trills, which are utilized in several upper range method books. These also require use of the embouchure muscles rather than pressure. They are particularly valuable in playing Baroque and Classical trills and jazz.

7. Some players advocate "rips" up the overtone series – start on a note around tuning C and suddenly increase the air flow drastically to go up an octave. This creates both an increase in air pressure and in lip tension since the lips respond to the amount of air blown. Because the change is sudden, there is no time for muscles to tense, fighting each other. As strength and success are achieved, gradually increase the starting pitch.

   Another technique is to "rip" up and back down immediately, several times in a row; it's basically mouthpiece sirens on the instrument. It is important to get all the partials to speak in both directions, ensuring embouchure flexibility and overall relaxation.

8. Arban's method book has an extensive section on expanding intervals, such as:

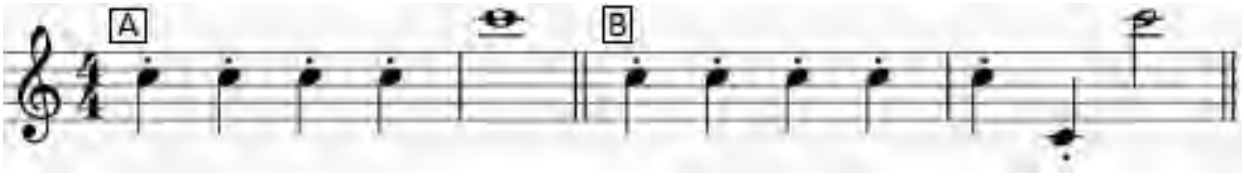


He suggested slurring the entire passage and slurring in pairs as well as tonguing everything.

In addition to developing embouchure flexibility and accuracy, the blowing muscles must be flexible. The difference from the "rips" of no. 8 is that these require an instantaneous adjustment of air and lips. The Charles Colin *Advanced Lip Flexibilities* require jumps of two octaves and a major third.

I'm sure you can see the greater endurance demands of the 2nd example – half of the exercise is "high" C.

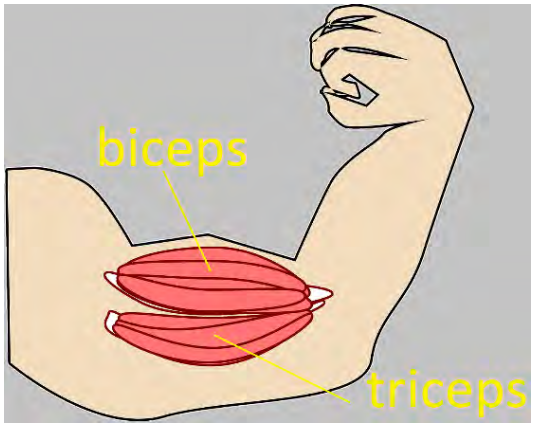
9. I think this is my own invention, although I'm not sure – it's a variation of using rips. Play something in the mid-range several times and then take it up an octave before you have time to think about it or to tense, as seen in A. Example B shows this concept combined with Mr. Laubach's idea (Item No. 6).



Observe the slight separation indicated by the staccato marks but do not breathe between notes.

10. Pedal tones. Technically speaking, pedal tones are the fundamental (or 1st partial) of the overtone series. In trumpet jargon, however, pedal tone refers to any pitch played by lipping a "real" note lower than normal. (We discussed this with lip bends in "Slippery Grove" in Chapter 19 Flexibility and Lip Slurs.) Many trumpeters advocate the practice of pedal tones to improve range. The reason for this is relaxation and air flow, not lip strength.

Remember from Chapter 15 Embouchure, there are two sets of insert muscles – protractors which enable high notes and retractors that produce low notes. Pedal tone practice develops the retractors, not "high note" muscles. Yes, you're building muscles – low note muscles!



Anthony HALIMI – Pixabay

Note: Just so there's no confusion, if you're trying to build your biceps, you do curls, moving the wrist toward the shoulder; if you

wish to build your triceps, you perform reverse curls, which involve straightening the arm.

Do all high note trumpeters practice pedal tones? Bud Brisbois said he didn't feel they were necessary, and his range was an octave above double C. I don't remember Maynard Ferguson discussing them, either.

Pedal tones help many people with the high range because the lower you play, the faster the air moves – you can't fight yourself while moving a large quantity of air. What's the best wind supply for high notes? Fast air with minimal effort. I've heard Wayne Bergeron playing pedal tones – wow! They were loud! I'd like to say they were beautiful, but they weren't – pedal tones on the trumpet do NOT sound good!

Here's a great example of minimal effort – I have been told that if Adolph Herseth was playing a high C and you pressed on his belly, the pitch would go up to D from the increase in air pressure. There was no isometric tension between the blowing and inhaling muscles preventing this change in air pressure. (FYI, the same CANNOT be said of me…you'd probably hurt your finger from pushing and the pitch wouldn't change at all!)

The flugelhorn is another story – Sergei Nakariakov has such a beautiful tone in the pedal register that you are unaware of how low he is playing. FYI, he uses a four-valve flugelhorn, eliminating the gap between low F# and pedal C. (Listen to him playing the Haydn Cello Concerto in the correct octave.)

While it's easy to play pedal tones on the flugelhorn with its large bell throat, playing pedal tones on the trumpet is challenging because of the small bell throat. The piccolo trumpet bell throat is even tighter. Renold Schilke stated that the only way to play the fundamental on a piccolo trumpet was with a straight mute in the bell to distort the instrument's acoustics.

Bell throat between yellow lines
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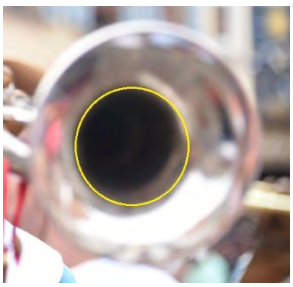

Yellow circle = bell throat
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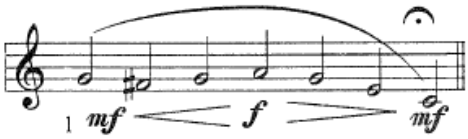
11. Range Expansion Slurs – I've saved these for almost the very end because they my favorite method of developing range. Mr. Chichowicz wrote these studies which are now used worldwide. The heart of their effectiveness is treating them as tone studies.

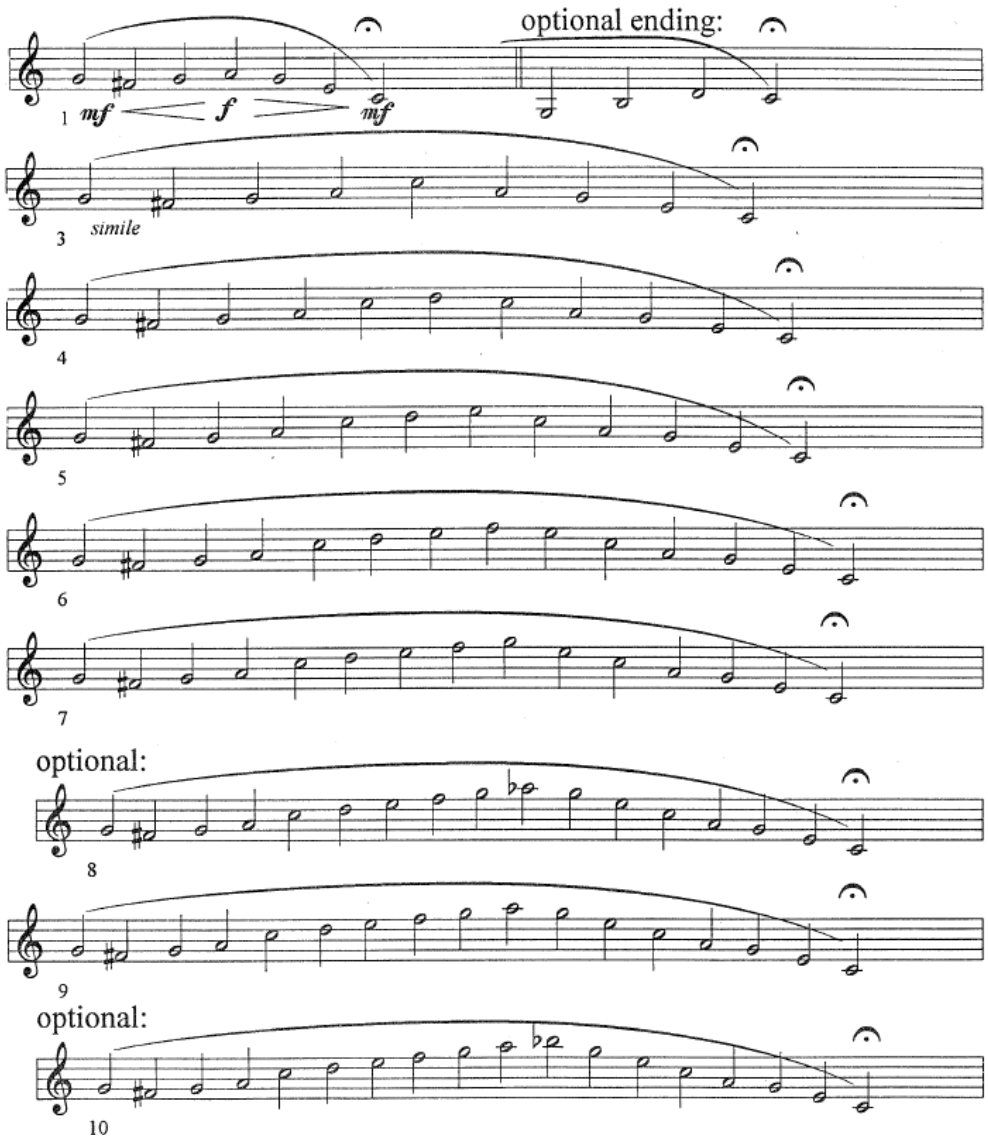
    Let's look at the 1st measure –it looks like a tone study, and that's what it is.



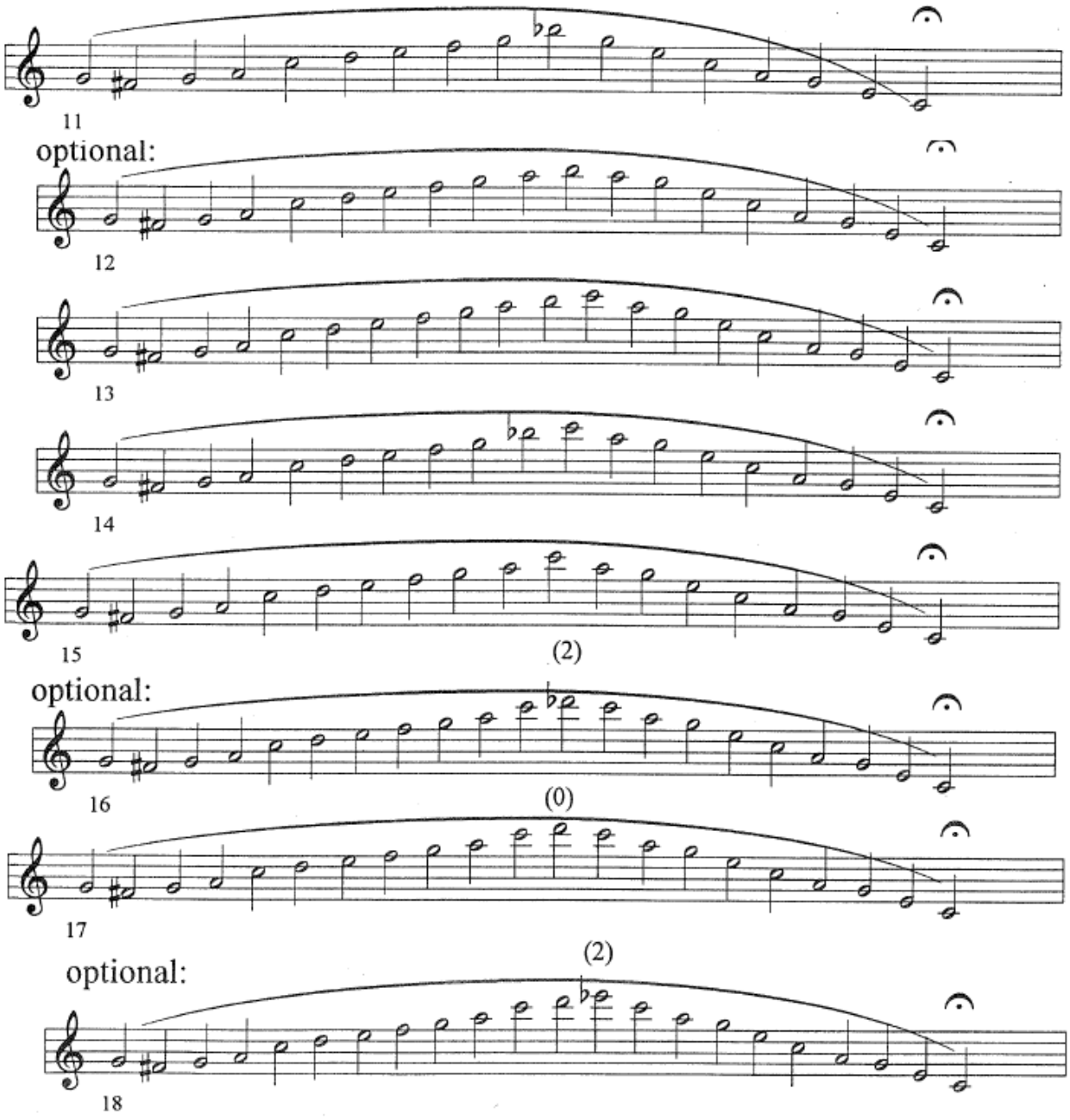
    Measure 2 is an optional low range ending which can be added to the end of each line.

    Measure 3 is the same as measure 1, but with a 3rd space C added in the middle. Each line progressively goes higher, but they always start the same way.

Range Expansion Slurs – Vincent Cichowicz



You'll notice that some of the lines are indented and say "optional" – they are not part of the original. Many students begin to have problems when they move above the staff, so I added these measures to provide more gradual strength demands, the same way you do at the gym. If 10 pounds is too much to add, you add 5 pounds, gain strength and then add another 5 pounds. The final line shows how you can extend these studies even higher.



How do you practice range expansion slurs? Do you remember Mr. Jacobs stating, "Let the low notes teach the high notes"? That is the entire point of this exercise. (Mr. Cichowicz studied with Mr. Jacobs, so it's not surprising he used this approach.)

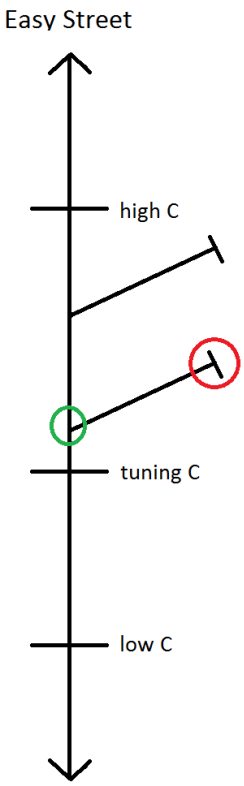
First, you always begin with first exercise which is in intentionally easy to establish relaxation, air flow, tone quality, and confidence – no skipping ahead to the range you where you want to work.

Second, you must always finish the line – no quitting before the last note. Yes, this requires that you take a large breath, but that's not the reason – some people distort their embouchure going into the upper range and cannot descend. By playing these exercises as written, you guarantee that you are approaching the upper range correctly. FYI, as the exercises get longer, you will need to increase tempo –do not to play the top note without adequate air.

You must pay the closest attention to tone quality as you play or there is no point in playing this study; listen for the first deviation in tone, no matter how subtle. When this happens, you will also notice that your volume has begun to drop. The top note of each phrase must be the loudest to ensure you are blowing correctly; musically, it is the highpoint of the phrase, so it needs to be the loudest.

Why do must you pay such close attention to the tone?

If you sound great, you're doing things properly. If the tone distorts even a little, you are playing incorrectly – inhaling and blowing muscles are beginning to fight each other, causing your throat to begin closing. This is not the road you want to be on, which brings me to Easy Street:



Easy Street is an American slang term referring to a carefree lifestyle where finances are of no concern. (Hard to imagine, isn't it!!). In my "confession" at the end of this chapter, I talk about Arturo Sandoval who does "pitch is a variable" better than anyone. When you do things right, brass playing is easy – Arturo lives on Easy Street; in fact, he owns it.

In the image to the left, the vertical arrow refers to pitch, from low C and below to high C and beyond. I think of this as an interstate which, of course, has off-ramps. Once you take an off-ramp, you cannot return to the interstate.

When you are playing, you remain on Easy Street until you begin to play incorrectly, i.e., a distortion in tone and a loss of volume. Oops! You just took an exit ramp. You can continue on the exit ramp, still increasing in range even as your playing becomes more and more incorrect. Finally, you hit a dead end – you are playing so badly that you cannot go higher.

Note: Each line of the range expansion study is a potential off-ramp.

Okay, here's the critical part – where did you first go wrong? At the beginning of the off-ramp, not at the dead end.

How do you know you took the exit? You heard your tone change and the volume drop. What should you do? Played the exercise again and again until you get a great tone on the top note. Only when that happens do you move on to the next line.

What do most people do instead?? Practice at the dead end. Oh, that's going to work really well…you're reinforcing bad playing…which leads to more bad playing. Not a good idea!

Notice the green and red circles in the drawing – green represents where you need to practice and red shows you where not to practice. Yes, the red circle is higher in pitch, but it's in spite of playing wrong, not because of doing things right.

After you master the entire study in the key of C, you need to learn the it down a half step in the key of B. Continue going down by half steps until you start on C#, playing in the key of F#. Yes, it will make your brain hurt, and yes, you need to do this.

Now you can learn the final stage, which goes like this: play the first exercise in C, the second in the key of B, the third in Bb, etc. When you reach the 7th exercise (line 8 – we're skipping the optional lines), the top note will be D#. You begin the process again, starting on line 4 where the top note is E. Continue this process until you have reached your full range.

Two things happen during the final stage:

a. It takes twice as long to reach the highest notes because you are drop a half step every time you move to the next higher exercise. This produces a more gradual approach to the upper range.

b. And…more importantly…IT'S MORE INTERESTING! I started these exercises in 1981 and practiced them daily for MANY years and still play them occasionally. There is no way I could have done this much time in the key of C!!!

Rule: When you get tired of practicing something, you usually quit practicing it. Even if you continue playing it, you lose your focus and the benefit decreases.

12. Isometrics – The ability of the lips to contract to a small aperture while resisting a great amount of air is critical. There are several ways to build these muscles away from the instrument:

    a. Firm the embouchure as tight as possible for 6 seconds, rest briefly, repeat 5 more times. Mr. Christensen advocated this exercise, but only after we were done playing for the day. (I'm not sure why this was necessary since no injury could come to the lips. It is NOT a good idea right before a big performance!)

    b. Mr. Jacobs advocated something similar – buzz the highest pitch you can for 6 seconds, rest briefly, repeat 5 more times. (Mr. Jacobs said this will cause the muscles to "hypertrophy." You and I would say "build." That should give you some indication of his intellect!)

There is a problem with this technique on the trumpet mouthpiece – because of its acoustics, it is difficult to buzz higher than high C. The cornet mouthpiece is slightly shorter, so you can buzz up to about high D. If you have an old mouthpiece, saw the shank off; the mouthpiece cup does not have acoustical properties, so this removes the range restriction. You can also saw off the rim and buzz on it.

If you don't have a mouthpiece to sacrifice, partially cover the end of the mouthpiece or make a fist around the shank; these also change the acoustics of the mouthpiece and make it easier to buzz high.

Two important points:

i. Strong players do not run into these mouthpiece range limitations.

ii. Be careful that you use your lips to play the high notes – it is easy to press the mouthpiece too hard against your lips, potentially bruising them. Remember, we're trying to build the face muscles, not the arm muscles!

c. Hold a penny or a pencil with your lips so that they are straight out from your face. It won't take long before you'll feel the burn! (Be sure to keep your chin down - — it tends to bunch up.)

d. Bud Brisbois built his chops by bending over so his torso was parallel with the floor and holding a mouthpiece with just his lip muscles. He started with a horn mouthpiece, moved on to a trumpet mouthpiece, and then a trombone mouthpiece. He unsuccessfully worked at using a tuba mouthpiece – it was just too heavy.

If this isn't the equivalent of weightlifting for the lips, I don't know what is! It develops the lips' ability and strength to contract toward the center from all directions.

e. You can develop the lips' ability to focus toward a small opening by squeezing a plastic coffee stirrer with your lips from all sides, like pulling a drawstring bag tight.

f. P.E.T.E. – Personal Embouchure Training Exerciser from Warburton Music Products. This device is practiced in two ways:

i. Put the small end between the lips (the end at the top of the photo). Press the lips toward the center, just as e. above, training the lips to make a small opening.

ii. Place the larger end between the lips (the end at the bottom of the photo). Grasp the small end and attempt to pull the P.E.T.E. from between the lips while resisting with

Original P.E.T.E. (left), Pro model (right) warburton-usa.com

the lips. This strengthens the lips to resist the force of high note air blowing the lips apart.

Link to P.E.T.E. instructions

Thirty-Three High Range Method Books

Although learning to play is highly individual and no single method works for everyone, you should know what's available. I'm certain this list is incomplete, but it's a good place to start. If you add internet resources, the list would be considerably longer – a quick search will provide an OVERWHELMING amount of information!

Cat Anderson – The Cat Anderson Method – famous for its 20-minute long tones.

Eric Bolvin - The BeBop Range Book – its goal is "developing a large playable range" through "Range Arcs, which are musical phrases that cover a large range."

Bud Brisbois – Trumpet Today – lip slurs, scales, incremental increase.

Randy Brooks – Special Studies in High Register – lip slurs, expanding intervals.

Irving Bush - Advanced Range Technique – "a systematic set of progressive exercises that take you from the middle register to the upper register in a variety of different ways."

Herbert L. Clarke – Technical Studies (Fifth and Ninth Studies) – incremental increases.

Allan Colin - Range With Relaxation – "comfortably increase your range by alternating ascending (range building) exercises with descending (relaxation) exercises."

Charles Colin – Advanced Lip Flexibilities – lip slurs, lip trills, expanding intervals.

Charles Colin – Breath Control (Range and Endurance Developed Through Chromatic Technique) – "the correct use of scale studies and exercises to focus on proper breathing [and fingering] technique"

Charles Colin - Range Development for Trumpet – uses scales to develop range

Maury Deutsch - The Extended Trumpet Range – "all areas of study surrounding range including theoretical basis of playing, warmups, modes, isometric drills, pedal tones, and so much more."

Walter Eby - Scientific Method for Trumpet – complete method (more than 400 pages), including the extreme upper register.

Matt Fronke – Release the Beast!, Book 4 – pedal tones, "Range Extender Flex Exercises, Interval Accuracy Range Exercises…Tonguing Into the Upper Register (Tri-tone Triad Pairs), Sustained Upper Register Flexibility Drill," etc.

Mac Gollehon - Extending the Trumpet Range – focus on "efficiency and reducing tension" through a wide variety of exercises

Claude Gordon – Systematic approach to Daily Practice – ""A fifty-two week course designed to develop a register from the second C below low C to C above high C." Develops range through pedal tones.

John Haynie - How to Play High Notes and Low Notes – "systematic approach for preservation of technical abilities."

Clyde Hunt – Sail the Seven C's – based upon many other range development books.

Keith Johnson – Progressive Studies for the High Register –primarily range expansion studies.

Walt Johnson - Double High C in Ten Minutes – "the basic understanding of how to improve your upper register can be taught in no time, and a program can be laid out for you to progressively improve… includes a full writeup on Walt's unique technique for upper register playing."

Bill Knevitt - Building Power in the Upper Register – "the routines in this book will not only increase your range, but more than that, they will open up your sound."

Bill Knevitt - Developing 21st Century Range – "just about everything you need to acquire the strength, endurance, and technique to be able to consistently play double G and beyond."

Bill Knevitt - Knevitt-Cimera Method for Developing the Upper Register – "Bill Knevitt has taken the [Cimera] method, refined it, updated it to meet modern demands, and field tested it with students."

Bill Knevitt - The Truth About How to Play Double High C – "contains the four necessary ingredients to playing double high C on trumpet."

Bill Knevitt - You Can Scream with Endurance to Spare – "the most complete book of upper register studies for trumpet ever written. Why? Because it contains not only the exercises you will need to build your range as high as you wish to go, but it also contains musical excerpts."

Jacques Mazas/Eric Veldkamp - 10 Range & Endurance Studies – "take your technique, fingering, flexibility, range, and endurance for a test."

Leon Merian – Trumpet Isometrics – includes isometric exercises to develop lip strength.

Charles S. Peters - Total Range – lip slurs, arpeggios, scales, pedal tones.

August Schaefer – The Stratosphere of Cornet or Trumpet Playing – intervals, scales, chords, lip trills.

Walter Smith – Top Tones –develops range using scales; many upper range etudes.

Roger Spaulding – Double High C in 37 Weeks –pedal tones; play only this book on alternate days.

Allen Vizzutti – High Notes for Trumpet – small aperture and use of the tongue.

Ernest S. Williams – Trumpet High Tones – scales, lip slurs, expanding intervals by half steps.

Jay Zorn - Exploring the Trumpet's Upper Register – lip slurs and exercises by half steps.

(Most of the quotations come from qpress.ca.)

Rate of Progress

The first thing I need to tell you is that you cannot legislate progress – "Cool! I added a half step last week, so in 12 weeks I'll add another octave!" That rate of increase is not going to continue, certainly for more than a few weeks, any more than you can force progress at the gym – "All right! Last week I added 5 pounds to my bench press exercise, so by this time next year I'll have added 260 pounds." Beautiful dream…not reality.

Besides muscles growing at the rate they choose, another factor is involved – percentages. Let's arbitrarily assign a strength level of 10 to low C. Remember, you must double the strength to go an octave higher, which yields:

Low C = 10
Tuning C = 20
High C = 40
Double C = 80

To keep the math simple, we'll make the somewhat inaccurate assumption that you must increase 10% in strength to go up a half step. This results in:

Half step above low C – requires 10 percent of 10, which is 1.

Half step above middle C – requires 10 percent of 20, which is 2.

Half step above high C – requires 10 percent of 40, which is 4.

Half step above double high C – requires 10 percent of 80, which is 8.

In other words, going from double C to double C-sharp requires an increase 8 times larger than the increase needed to go from from low C to low C-sharp. Instead of taking a week to add a half step, it can take 2-3 months or longer in the high register….and that's assuming everything is working perfectly, which is unlikely.

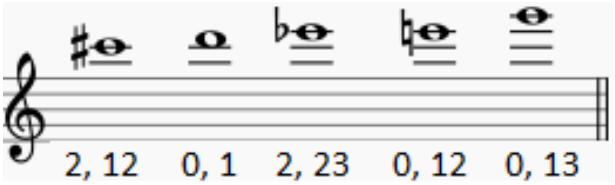
Note: There is a strong parallel with your overall improvement as a musician. Let's say that a beginner starts with a 0 and every day improves by 1. Watch the percentage of improvement as time goes on:

Day	Start	End	Progress (End minus Start)	Percentage (Progress divided by Start)
1	0	1	1-0 = 1	Infinite (division by 0)
2	1	2	2-1 = 1	100%
3	2	3	3-2 = 1	50%
4	3	4	4-3 -= 1	33%
101	100	101	101-100 = 1	1%
1,000	1,000	1,001	1,001-1,000 = 1	0.1%
10,000	10,000	10,001	10,001- 10,000 = 1	0.01

The same amount of daily progress is made, but the percentage of improvement rapidly decreases. This may be a reason that beginners lose interest – they can't see the steady progress they're making.

Increased Resistance

I was taught to use the shortest valve combination possible. Some trumpeters, however, find that upper range notes are easier with longer valve combinations. (I'm sure this is because of the increased resistance.) For example (short fingering listed first):



Myths Dispelled

The Locked Abdomen – False!

We need to do away the myth of the locked abdomen, which I fell victim to three times:

The first time I was in high school. Our student teacher (teacher intern) placed us against a wall and placed his fist in our stomach and pressed in, telling us to resist his pushing. This is how we should play high notes.

WRONG!

The second time was during my undergraduate study at Iowa State. I was taught in voice class that we had to firm up our diaphragm area as we ascended. When we descended, we had to maintain this diaphragm tension, or our larynx would "collapse" (whatever that meant). I figured that I should do this on trumpet as well.

WRONG!

Did I discuss this with Dr. Swift? Of course not. This completely violates "pitch is a variable." Maybe this is true for singers, but brass players need to decrease pressure and increase flow as they descend; this can't happen if diaphragm tension is maintained.

The third time was when I was working on my masters at the University of Michigan: a friend and I bought 2x4's about 2 feet long. We placed one end of the 2x4 on a door, just above the knob. We put the other end of the wood against our stomach and leaned against it, resisting by tightening our stomach muscles. (My friend had heard vocalists did this to develop diaphragm support.)

WRONG!

Did we discuss this with Mr. Lillya? Of course not. Perhaps it's a valid vocal technique, but the air flow rate for vocalist is MUCH slower than that of brass players, so it's not good for brass players even if it does help vocalists.

How did this myth start?

In the late 1950s and early 1960s, brass players began to take an analytical approach to teaching brass

instruments. (Remember Sputnik from Chapter 6?), asking questions like, “What happens with the blowing muscles when people play high?”

Few of brass players had access to medical equipment like Arnold Jacobs used at the University of Chicago School of Medicine, so they poked each other’s abdomens while they were playing high to learn what was going on. Wow! It felt hard as a rock! To play high, you must really lock the stomach muscles!!

Poked? During this time period, men were especially wary of touching other men, so they poked instead of placing their hands on the torso for the duration of a phrase, which would have revealed motion in the blowing muscles. (FYI, this is what I observed Mr. Jacobs do. He was quite clinical when he touched people, so there were no issues.)

Here’s a simple analogy – you just got off work; when you get to your car, you hear a hissing sound from one of your tires. You poke the tire and it feels firm, but you KNOW the tire is going flat even though you can’t see or feel the motion.

Maynard’s Posture Theory – False!!

Pinterest

Time to discuss Maynard Ferguson’s posture theory, which I believe I read about in The Instrumentalist magazine in the mid-1970s. In the article, Maynard said body posture must be altered when playing:

To play low notes when you’re standing, you lean forward (even more than in this picture.)

To play high notes, you lean backward while arching your back, tightening the abdominal muscles. (Many trumpeters do this on high notes.)

I experimented with this without success, but who was I to question Maynard? The fault must be mine.

youtube.com

Not long after this, I saw Maynard perform live. At one point, he held a high G for many measures – while doing this, he alternated between the leaning back posture (for high notes) and the leaning forward position (for low notes). If his theory was correct, he should have been making 3 octave slurs, but there was no pitch change at all. Theory disproved!

This brings up an important point – many great musicians do not have a CLUE about how they play. Even if they do, they may not be able to put into words. The next obstacle is you – do you REALLY understand what they’re saying? If you do understand, are you actually doing what you think you’re doing?

This is the reason Mr. Jacobs never wrote a book, even though many people encouraged him. He said these things cannot be put into writing. (I'm trying…it's HARD!!) When I took lessons from him, shortly before he died, Mr. Jacobs said he was considering writing a book; sadly, it never happened.

FYI, Keith Johnson has done a masterful job of writing the unwritable in *The Art of Trumpet Playing* and *Brass Performance and Pedagogy*. Another excellent resource is *Arnold Jacobs: Song and Wind* by Brian Frederiksen.

Confession

Early in this chapter, I promised you a confession. Here it is:

For YEARS, I thought that my lungs functioned as an air tank; the desired goal was creating high pressure in them and then bleeding it off into the trumpet. Wrong!! Error!! This does not compute!! Two things convinced me of the error of my ways: Maurice André and Marvin the Martian paying a visit to Arturo Sandoval.

Maurice André worked in a coal mine in France as a young man, crediting this as the reason he was able to play high. Therefore, physical strength enabled Maurice to play piccolo trumpet so well. One day in the mid-1970s, I listened to a recording of him while wearing earphones and with my eyes tightly closed, trying to understand what it felt like to be Maurice when he played. I just knew that a great deal of effort was involved but his strength made it seem easy.

Listening intently, in just a minute or two I realized that Maurice was NOT working hard – quite the opposite was true. Wrong!! Error!! This does not compute!! I focused on being more relaxed on the piccolo trumpet – it helped!

In 1981, Mr. Didrickson got a tape of Arturo performing at the Chicago Blues Festival and called a bunch of his students into his office to hear it. (Yes, a tape -- it was a LONG time ago!) Arturo started playing – at first, he sounded like a lot of other jazz trumpeters, but as he continued our jaws began to drop: he played for about 8 or 10 minutes non-stop, constantly ascending in range. Not possible!! He should be wiped out – we were in awe!

ataelw - Creative Commons Attribution 2.0 Generic

dlpng.com

About 10 years later, I was puzzling over Arturo – how did he do the impossible?? Again, I tried to imagine what it must be like while he played. I imagined "Arturo, the Incredible Human Compressed Air Tank" bleeding air into the mouthpiece. For some strange reason, Marvin the Martian popped into my head. He fired his ray gun at Arturo's trumpet and disintegrated it. If I were correct, when the trumpet disappeared the air would continue to bleed from Arturo, like an air tank with the valve cranked open.

That image was at odds with what I was hearing. The only way Arturo could produce the sound he did was by blowing air into the mouthpiece, not by bottling it up inside himself. When Marvin disintegrated the trumpet, it would instantly release the air inside Arturo, like a tire blowing out!

> And that's when I finally understood what is supposed to be happening with the air – blowing muscles unopposed by inhaling muscles. Any effort you use goes directly into the sound, not into fighting yourself.

Which reminds me a of a previous revelation in the mid-1980s listening to a CD of Doc Severinsen and the Tonight Show Band. My friend had his sound system CRANKED – it was like standing in front of Doc and the band! Listening to Doc's wide-open playing, I realized that all his energy went directly into the sound. Unfortunately, it took another 6 years and Marvin the Martian before I saw the light.

Chapter 25
Low Range

Although the low range is the opposite of the high range, in many ways it's quite similar. The most important principle is that you must practice low to play low.

To get you started, in the Appendix I've included the Low Range Development exercises I used in college. Since then, I've realized it's not what you play in the low range…it's that you play in the low range. My daily routine includes transposing tone studies down until they start on low F-sharp.

Lips/Embouchure/Teeth

To my knowledge, all brass players advocate dropping the jaw and the tongue when playing low – use "aw" or "oh."

Lips/Embouchure

It is important to understand that you do not relax the lips to play low – without some firmness, there is no embouchure and vibration will not happen. Rather than relaxing the lips, think of low notes as requiring a different lip position.

> **Note:** The low range surprisingly requires more strength than the middle range, which is why tone studies start in the middle range and work down rather than the reverse. See "Tone Studies" in the Appendix for examples.

Enric Fontvila
CCA Share Alike 4.0
International

The analogy I like to use is a rubber band. If you hold it by one end, it will not vibrate, but if you hold it by both ends and stretch it a bit, you can pluck it and get a vibration. (Remember, brass players create tension by firming the lips, not by stretching them.)

Several issues indicate corners that are not properly firm:

1. Flabby tone – words are always inadequate to describe tone; dull, lifeless, without resonance could also be used.

2. Flat – playing under pitch. This contributes to the dull, lifeless tone quality.

3. Can't slur out of low range – I had this problem for MANY years. Vince DiMartino said in a clinic that this was caused by loose corners. I experimented with firm corners in the low range and voila! The problem disappeared.

   Remember that without firmness, you do not have an embouchure, so relaxed corners in the low range means no embouchure. Slurring into the middle range requires an embouchure, so you must create an embouchure on the fly as you slur – it's too hard to do. But, with firm

corners in the low range, you have an embouchure in place, and it is relatively easy to make the slur.

4. Hard to tongue clearly – articulation does not work well without an embouchure.

Although some teachers advocate rolling the lips out for low notes, I believe this best left to the subconscious.

Horn players need to be aware of the term 'einsetzen,' where the mouthpiece sits on the red of the lower lip. Developed in Germany, this is only for the extreme low register and requires that a horn player learn to slip the lower lip in and out of the mouthpiece. It is discussed in Phillip Farkas' *The Art of Brass Playing* and also at wilktone.com.

FYI, I unfortunately fell into this technique during my junior year of high school – it was a total disaster and took two years to overcome it. (I'm sure it could be corrected more quickly, but that's how long it took me.) In college, a trumpet-playing friend also used einsetzen…until he started lessons with Dr. Swift who corrected his embouchure.

You will recall that many trumpeters practice pedal tones to help their high range; some of them advocate einsetzen to play extremely low pedal tones but not in any other register.

Teeth

Dr. Swift taught me to drop my jaw and pivot the trumpet by tilting the bell slightly upwards, similar to the way upstream trumpeters play. I have seen Doc Severinsen do this on many occasions; Dr. Swift pointed out that Doc does not do that when rapidly moving in and out of the low range, so he does not need to do this.

seelymusic.com

You may run across the Pivot System taught by Doc Reinhardt. I have not read his *Encyclopedia of the Pivot System*, but my understanding was that Reinhardt said you must pivot the horn, changing the angle of the leadpipe relative to the face. This is incorrect; in the late 1970s I worked briefly with Dick Shearer (lead trombonist for Stan Kenton) who had studied with Reinhardt. Dick explained that Reinhardt did not require you to pivot, only that you should allow a pivot IF you need it. FYI, Dick told me he used two pivots – one into the low range and a different pivot into the high range.

Many brass players say they tongue between their teeth in the low range, particularly for the first note. I'm personally not in favor of this because it's a "th" articulation, not "t." It may be a quick fix, but I believe firm corners, lots of air, and practice will do the same thing, resulting in better articulation.

Inhalation/exhalation

Nothing new here – just remember that the flow rate increases the lower you play, so a large breath becomes even more important. Also, remember that air pressure drops the lower you go.

Incidentally, some musicians talk about using "warmer" air for low notes and "colder" air for high pitches. If you think about it, this relates to air speed – "warm" air is slower, and the mouth is more

open. Hmm…sounds like a good recipe for low notes. "Cold" air is faster, and the lips are more closed, ingredients for high notes. (I must be getting hungry!) Remember to relax if moving from high range; if you don't, your sound in the low range will be is small, and you'll probably be sharp.

Psychology

Most people do not have bathophobia (the fear of depths), so low notes do not have the psychological baggage associated with high notes.

Trumpeters tend to neglect the low range – it's not used that often in band music and even less in jazz. (It's common in orchestra music where the trumpets are frequently scored in octaves, especially during the Classical period.)

There is no glory in low notes for trumpeters – "Wow! Did you hear him take that down an octave??!!" does not happen. No trumpeter in the world will drive 100 miles to hear someone play low notes, but they certainly will to hear high note trumpeters. On the other hand, tuba and bass trombone players get very excited about taking something down an octave, so they very well might drive 100 miles to hear it.

By the way, lead trumpeters and bass trombonists seem to be kindred spirits – lead trumpet players frequently cut off after the rest of the band so that the audience can admire how high they're playing. (It's that trumpet ego again.) Bass trombonists often hold over as well so the audience can hear their low note. Opposite end of the spectrum, same attitude.

I'd start listing the great high note trumpet players, but if I did that, I would never finish this book. There are a LOT of them! Great low note trumpeters? Seymour Rosenfeld. I heard him perform with the Philadelphia Orchestra in May 1971 – he had the most beautiful low range I've ever heard from a trumpeter, more like a great euphonium player than a trumpeter in the low range.

safranovic –Pixabay

Trumpets in unison in the low range are very impressive, as are trumpets in octaves. In octaves, the lower trumpets must be louder than the upper – intonation is better, and the louder low notes provide psychological security for the upper part.

In the last chapter, we discussed keeping high notes at eye level; this is equally true for low notes. They are not somewhere way down there; they are specific pitches – meet them head on.

Correct Combination of Factors

This is not much of an issue for trumpet players whose low range is only half an octave (low C to low F#) –it just isn't all that hard to learn.


MasterTux – Pixabay

Although a fine trumpeter has a three-octave range (low F-sharp to high G), a fine horn player has a FOUR octave range – the extra octave is on the bottom, not the top. More on this later.

Sufficient Proper Practice

Practice in the low range is just as important as the high range.
The retractors must be worked; if you neglect them, they will be weak. The easiest way to maintain the ability to play low notes is to include them in your warmup. More on this in the next chapter.

There is one important difference between the high and low ranges – you cannot force low notes. After a layoff, you will have lost strength – in the high range, you can make up for some of this by using mouthpiece pressure. This does NOT work in the low range! You must be in shape – there is no way to cheat!

How to Teach/Practice Techniques

Basic Approaches to Learning to Play in the Low Range

First and foremost, ALWAYS insist on a great tone!

Trumpet – For trumpet players, the most important thing is practicing low notes, focusing on low C and below. Time in this register is much more important than what you practice. Here are five suggestions:

1. Lip slurs – Stay in the low range; alternating pairs are best.

2. Long tones – Tone quality, tone quality, tone quality –you get good at what you do the most.

3. Arpeggios – Clarke *Technical Studies* Third Study, #46-#52.

4. Scales – Clarke *Technical Studies* Fifth Study, numbers #87-#93.

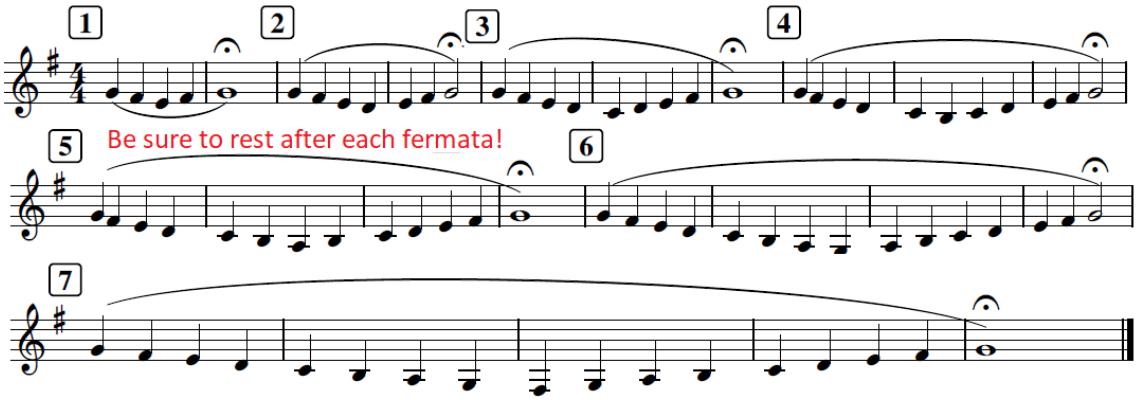
5. Melodies – Clarke *Technical Studies* Fourth Study, numbers #66-#72. Not the greatest melody, but effective. Any melody that stays in the low range works.

Horn - As mentioned above, horn players face the added challenge of the lowest octave. This shouldn't be surprising – the horn is 12 feet long, the same length as the F tuba! Since the bore of the horn is considerably narrower than that of the F tuba, playing low on horn is a greater challenge.

We discussed sink or swim as the guiding principle for horn players learning the lowest octave in Chapter 22 Multiple Tonguing. Mr. Farkas advocated blasting low notes to force the embouchure to learn to produce them. Once they can get these notes loudly, horn players learn to play them more softly.

Low Range Expansion

Range expansion into the upper range works, so does range expansion into the low range. There are no official low range expansion studies, but would be simple to create them, starting in the middle range, progressively descending lower and lower, and always returning to the starting note to ensure there is no deviation from using a correct embouchure. Here's a SIMPLE exercise derived from the G major scale:



Lacking an official study, you can write your own: start on a comfortable middle range note and slowly descend chromatically, listening carefully for the first deviation in tone quality – that is where you need to begin. Play anything you wish but be certain that it includes this note. This note will soon improve – it takes little embouchure strength to play low. When this note sounds good, add the next half step down; etc., etc. – you get the idea.

"Hooray! I'm done!" No, not quite. The best way to have a great high C is to have a strong high D. The best way to have a wonderful low F# is to work on low F and low E. "How do I do that? Bend the pitch down from low F#?" You can do that, but it does not encourage good tone quality. Here's another way:

Play low F with the 123 combination but with the 1st and 3rd valve slides extended as much as possible. Some trumpet 3rd valve slides will be long enough; many aren't. If your 3rd slide is too short, you'll have to lip the pitch the rest of the way down with a corresponding loss of tone quality. If you have a Bach Strad, you can extend the part of the 3rd slide used to remove "spit" (actually, it's only water) as well as throwing the slide out to the end of the stop rod. Combined with a fully extended 1st valve slide, you can play an in-tune low F with good tone quality.

> **Note:** The "extra-long" 3rd valve slide lowers the open pitch by a major third. This means E-flat is now played 3, D is fingered 2-3, and C-sharp is 1-3 plus extending the 1st valve slide enough to be in tune.

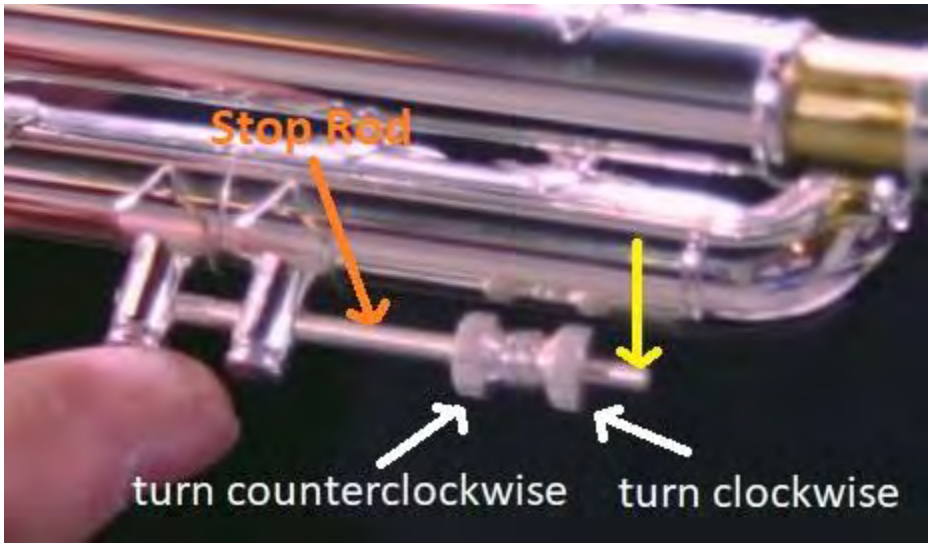
You can also buy an extended stop rod which allows the 3rd slide to be thrown farther, eliminating the need to extend the "spit" slide.

kesslermusic.com

While we're talking about it, it is easy to lose the stop rod nuts.

Amazon.com

The cure is to twist them TIGHTLY into each other; the resulting tension prevents them from coming off. If your fingers don't hurt when you're done, it's not tight enough. This works – I've only lost one nut in the last 45 years. Important: once you lose one nut, the second won't be far behind, followed by the 3rd valve slide hitting the floor and getting dented. An ounce of prevention is worth a pound of cure – keep them tightly fastened!

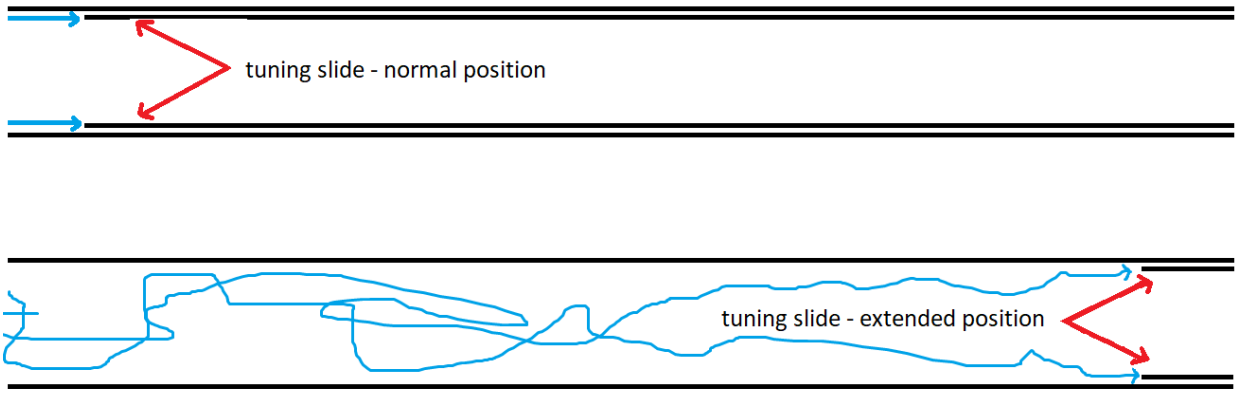


youtube.com

The stop rod nuts in this photo are not close enough to the end; they should be where the yellow arrow is with the end of the stop rod barely sticking beyond the nut. In the position in this photo, you cannot throw the 3rd valve far enough to play low C# in tune.

"What about that low E?" Easy – pull your tuning slide out until the pitch drops a half step, changing the trumpet from B-flat to the key of A. You can use a tuner to check this or simply play 2nd line G and then F#. Pull your tuning slide out until you get the same F# pitch but using the open valve combination.

There are two benefits to practicing this way – the 1st is that you are practicing lower than you normally play and the 2nd is that the trumpet gets "squirrelly" with the slides pulled that far. Here's why:

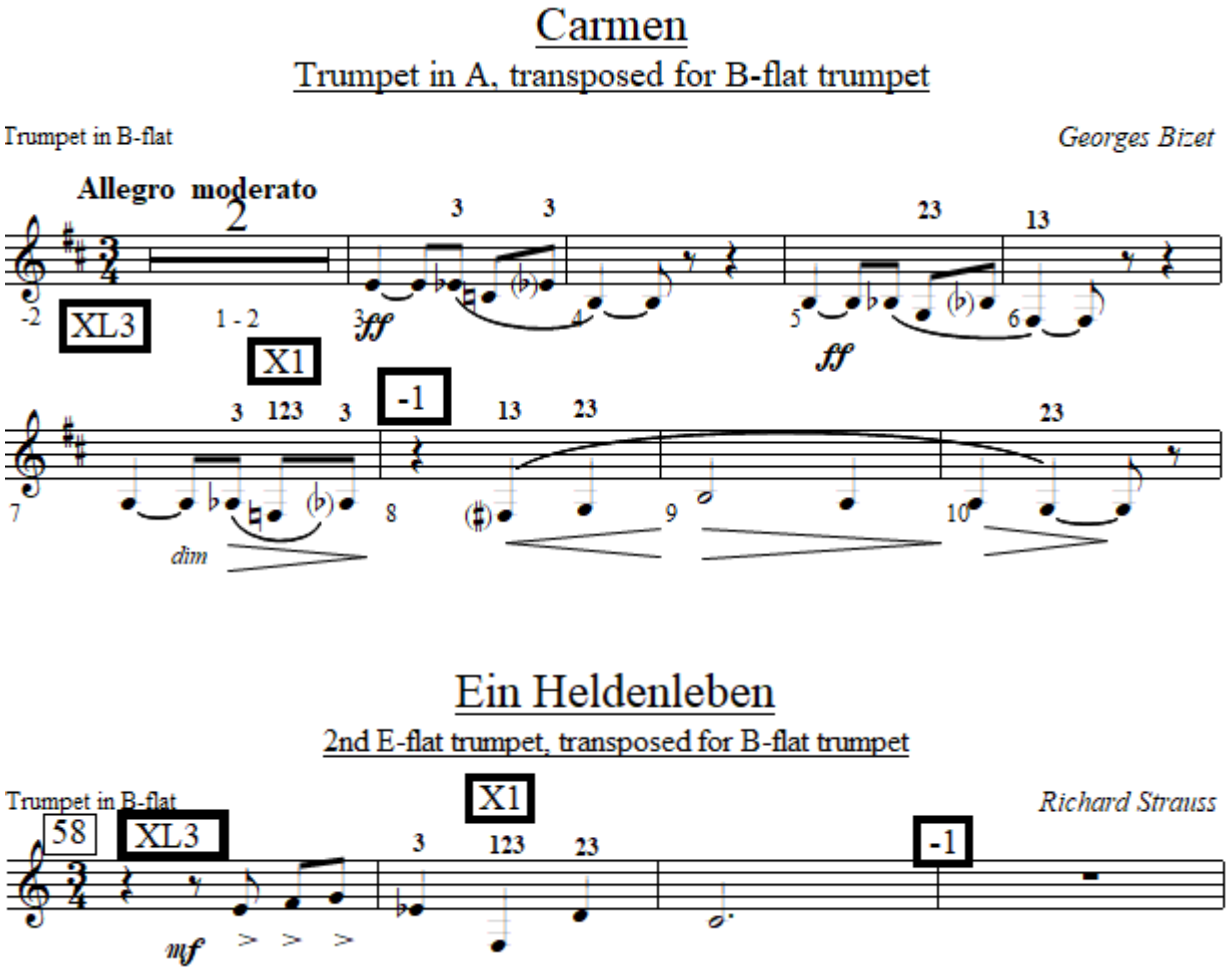


In the top drawing, the tuning slide is in its normal position: pulled out about ½ inch. You can see the air has little distance to travel before it enters the tuning slide. In the second drawing, the tuning slide is pulled much farther out, giving the air a chance to develop turbulence before entering the tuning slide. By the time you extend all the slides, the trumpet plays "squirrelly." After practicing low F's and E's, low F# is not nearly as low physically or mentally…and the trumpet plays so much better!!

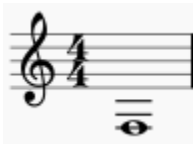
"Why did you say 'normally'? Isn't F-sharp the lowest note?" It is (for three-valve trumpets), but not everything was written for B-flat trumpet. Two examples are on the next page – the first is from Bizet's *Carmen*. This particularly passage is written for Trumpet in A and goes down to written low F#. When the part is transposed to B-flat trumpet, you go down to low F. Fingerings using the extra-long 3rd valve slide are marked XL3. The 1st slide must be extended when playing the low F (X1) and pushed back in immediately afterwards (-1).

The second example is from Richard Strauss' *Ein Heldenleben*, which included three B-flat trumpets and two lower trumpets in E-flat. The E-flat trumpet part only goes to written low B-flat but transposing it for B-flat trumpet results in low F; three more low F's follow before the piece ends. Note the use of 3 to play E-flat and 2-3 to play D.

The complete excerpts are in the Appendix.



Rate of Progress



Trumpeters should need no more than a few weeks to work down to low F#. Not being a horn player, I don't know how long it will take to develop the lowest octave, but I suspect it's considerably longer. Fortunately for school musicians, horn parts rarely go below the F below the treble staff. The lowest octave is primarily found in orchestral music.

Low Range Method Books

There are few, if any, method books for trumpet in the low range other than *Low Etudes for Trumpet* by Phil Snedecor. It is easy enough to take things down an octave to create more practice material.

I am not aware of any horn methods focusing on the extreme low range.

Chapter 26
Warmup Routines

A warmup should not test a player's limitations, but the practice session should push the player to their limits. ("The Aging Trumpeter," Donald U. Robertson and Kevin E. Eisensmith, *ITG Journal*, October 2020)

Before we talk about warming up, we need to discuss practicing.

Practicing

As musicians, we have two daily tasks – maintaining our abilities (not losing ground) and improving them (gaining ground). How do we make sure this happens??

It's easy – practice. There is no substitute for maintaining your skills, strength, and endurance.

"But I don't want to practice!" Trust me, after 59 years of playing, I totally understand. On the other hand, Doc Severinsen said, "Practice, practice, and practice some more. And love what you do!" The man is 93 years old and is STILL practicing! Gordon Mathie was a highly respected trumpet teacher – he played trumpet until the week before he passed away at the age of 95.

For the last 50 years, I've been studying great trumpet players to learn what's different about them from the rest of us. The biggest reasons people become superstars is that they LOVE practicing, improving, and performing. How many superstars are there? Not that many, but I bet there are a LOT of people who COULD be superstars…IF they wanted it bad enough.

> Brief pause for psychology – in I'm OK – You're OK by Thomas Harris, I learned about the Parent, the Child, and the Adult inside each of us. In a nutshell, the Parent is all the things you learned while young – wash your hands after you go to the bathroom, look both ways before crossing the street, brush your teeth; etc.
>
> The Child is your raw emotions, and they are VERY important to musicians – this is the creative part of you. Without them, our music wouldn't be worth listening to. Perhaps we intuitively know this – we PLAY our instruments; we don't WORK them. Practicing certainly is work, but its sole purpose is to improve so we can PLAY better.
>
> The Adult is the part that really begins to emerge while you're in college – you CHOOSE to act on what is important. You DECIDE if what you're Parent is saying inside you is correct in your present situation and you DECIDE if you are going to follow through on what your Child wants.

So, who's going to rule your life? Your Parent, your Child, or your Adult? I'm certain you're going to say the Adult. Okay, when you don't want to practice, that's an emotional reaction – it's the Child talking. If you follow through on that voice, your acting as a Child. On the other hand, if you practice only because your Parent says so, YOU really aren't making the decision.

The Adult part of you needs to understand that we practice to become a better musician and that a LOT of practice is required to play REALLY well and develop our talent to its full potential. To improve, you must act as an Adult. Tell your Child that you understand that you don't want to practice, but it is

necessary to become the musician you were meant to be. It doesn't matter how you feel, you ARE going to practice.

Here's the secret that eliminates ALL internal arguments…practice EVERY day! If you practice EVERY day, there is no question IF you're going to practice…the only debate is WHEN. There's plenty of room for the Adult to decide when, and you can even let the Child talk you into postponing until later but skipping is NOT an alternative!

"Is it really so bad to skip a day?" No, in fact, sometimes a day off helps you mentally; if you've been playing hard, a day off gives the muscles a chance to recover as well. The danger is that one day off easily becomes two days off, etc., and suddenly you've not touched your horn for three months. (An easy way to prevent this is to NEVER miss more than one day in a row. (Check out 3 Simple Things You Can Do Right Now to Build Better Habits by James Clear. More on him later.)

(FYI, the two best times to practice are Christmas break and the summer – most people lose ground during this time, so your progress is magnified. Think of it as a rowboat race on a river – if you keep rowing while others take a break, you are still moving upstream while they're going downstream. The gap between you increases much faster.)

You must change your self-image – all it takes is saying, "I practice every day – it's what I do." More on this is Chapter 33 Psychology.

What about days when you REALLY don't want to practice? Remember this: your muscles only know two things – you worked them, or you didn't. If you worked them, they'll get stronger or at least stay the same; if you miss, they WILL get weaker. And remember this: the audience doesn't know or care if you had a good reason to miss; they will assume that whatever comes out your bell is the BEST you can do, true or not. At a minimum, you should warm up. If you sincerely don't want to practice, you've at least given yourself a chance and you have maintained the basics of correct playing.

If you REALLY, REALLY, REALLY don't want to practice, just play something fun – try to play a movie theme by ear or switch the positions of your hands or play your favorite solo or band piece, even if you haven't played it in years. The muscles will still get a workout and you have kept your practice streak intact.

David Laubach described this in the professional world – "you're only as good as your last performance." That's another reason superstars are so good – they want to impress the world and are afraid of hurting their image. Tony Robbins (author of Unlimited Power) says the strongest motivation is when you're running toward something you want (improvement) and away from something you fear (embarrassment).

One final piece of advice – sooner or later, you will have a layoff. It happens, whether for a "good" reason like an illness, surgery, etc. or just plain laziness. When you start your "comeback," the last thing you need to do is try to get back where you were. Instead, come back as if you were Wynton Marsalis or Doc Severinsen (or whoever your hero is) making a comeback. "But I don't know how to do that." Tony Robbins would say "act as if" – act as if you were Wynton, pretend you're him. When you do this, you will be surprised how much creativity you have inside you.

Warming Up

In a sense, we start from scratch each day and must relearn how to play. Therefore, the most important aspect of a warmup is reviewing the basics to ensure correct playing. Here are additional reasons in case your Adult needs to override any Childish objections:

Short-Term Benefits

1. Prepare to play physically – Why do athletes warm up? The primary reason is to play well. Since brass players are either athletic musicians or musical athletes, we need to follow suit. FYI, I think trumpeters are the later because of the physical demands of the instrument.

   The muscles literally get hotter by a few degrees during the warmup, causing chemical reactions in the muscles to work better. Think of it like butter sitting on a counter – just a few degrees change in temperature transforms it from hard to soft.

2. Prepare to play mentally – An athlete must mentally be in the game to play well; so do we. You need to focus your attention, zero in your thoughts, and forget about everything else so you can concentrate on what you're playing. Keith Johnson said it best in his brass pedagogy course: "Your playing is a direct reflection of your thoughts." If you're thinking about an upcoming test, relationship problem, whatever, your muscles are getting little to no information. How can they possibly do a good job?

   Think about it – when you are really focused, you play very well. When your mind wanders, you miss notes, make stupid mistakes, and generally don't sound that great. Music is not about muscles, although they are vital to what we do; it's about the mind! I ask my students "What plays the trumpet?" The response usually is "the lips" or "the air." Then I tell them the correct answer: the mind. Your mind tells the lips, blowing muscles, fingers, tongue, etc. what to do and those muscles do EXACTLY what they're told. It's not the muscles' fault if you don't sound good!

3. You must remember (relearn) how to play every day. Some days it happens in a split second and some days it never happens. I'm not talking about the level of conscious thinking we're using to discuss topics in this book; I'm talking about the complete connection of the brain to the muscles and remembering PRECISELY what you want to sound like.

   What causes us to forget how to play? I think it happens while we sleep; maybe there is a mental reset, but when we wake up, we must reestablish correct playing.

4. Prevent injury – If you've ever watched a baseball game, you've probably seen the relief pitcher constantly throwing a ball in the bullpen. Because they could be put in the game at any moment, they must stay warmed up and ready during the entire game. When you're throwing a baseball at 90-100 miles per hour, you are at great risk for injury unless your muscles are loose and warmed up.
   Can a brass player get hurt? Absolutely. Although it's a rare occurrence, I've seen it happen: in the 1990s one of my trumpet students was late to marching band practice, so he started playing without warming up. Not being one to let the group down, he joined in at full volume. I don't

know precisely what happened, but he injured himself badly. Before that, he could play high D on a regular basis. After he was injured, he couldn't get past A…for two years. TWO YEARS! Before he became my student, one of our horn players injured himself in marching band – he got off easy; it only took him six months to recover.

What are the odds of this happening? Considering everything, it's not likely. "Aha! So, I CAN get away with skipping the warmup for my band!" If there was a severe lighting storm, would you tell your flag line to grab their metal poles and go stand on the press box holding the poles over their heads?? Seriously, what are the odds lightning would strike them? It's probably not going to happen

Keli Black - Pixabay

"That would be crazy! It's not worth the risk!" I total agree, and it's not worth the risk of skipping the warmup, either.

5. Increase endurance – I've experimented with playing at home without warming up; I always eased into it, NEVER jumping in and play hard. My observation is that I have better endurance when I warm up. Any time I'm at a rehearsal or concert, I ALWAYS do a complete warmup so that I don't run out of gas.

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6. Warm the instrument up to playing pitch – Although this is the least important part of warming up, the air in your instrument needs to be at body temperature, not room temperature, before tuning. If you tune when the instrument is cold, you will go sharp as you play. (Cold = flat, hot = sharp.)

   This can be done simply by blowing air through the instrument until you feel warm air coming out the bell. I usually leave the valves up until I feel warm air and then depress the valves to finish the job. It only takes a few seconds for the valve slides to warm up.

   When you sit for a long period of time, the instrument goes flat, so you need to warm it up to pitch before you play.

   I have noticed low brass players rarely do this, and I don't know why. Perhaps it is too difficult to warm up the large brass instruments?

Long-Term Benefits

Warming up is more than just preparing to play and injury prevention. You should also maintain and improve skills. If you don't maintain your car, you'll run into problems; you need to periodically scan your computer to keep viruses and hackers away; and you must take care of your playing.

1. Skill maintenance – Review fundamentals and any skills you aren't practicing or playing elsewhere – if you're doing a lot of loud playing, be sure you warm up softly; if most of your music moves in small intervals, include large intervals in your warmup, etc. Remember:

Rule: Use it or lose it!

2. Improvement – If you need to work on something, put it in your warmup – this ensures you work on it daily instead of only when you remember or get around to it.

3. If you hurt yourself, you must heal before you can improve. Warming up allows you to continue to make progress.

When to Warm Up

You (and your students) need to do a complete warmup the first time you play each day. You need to warm up again each time you play later in the day, although it does not need to be as extensive.

How long should you warm up? The muscles need at least 5 minutes to warm up to operating temperature. Every brass player I've heard says practice and rest in equal amounts, so you should allow at least 10 minutes for the initial warmup. Fifteen minutes is even better because you have time to "do it again" as needed. Subsequent warmups rarely need more than 5 minutes.

Douglas Rahden

One of the best parts of my doctorate at Northwestern University was hearing the Chicago Symphony. There are no words to describe the experience – I'll just say it was incredible. Since I didn't have a car, I'd ride the Chicago "L" subway downtown. My arrival at Symphony Hall was dictated by the subway timetable; quite often I would get there 40 minutes before the concert. Onstage would be a couple string players, a woodwind or two, and three trumpeters, busy warming up. Did they really NEED 40 minutes to warmup?

The answer is no; they didn't need that long – anything over 10 minutes is practicing. HOWEVER, if you THINK you need 40 minutes, then you NEED 40 minutes! It's like baseball players who "can't" play well without their lucky socks (or whatever). It may be *just* psychological, but it has become their reality.

cso.org

Note: Let's expand this concept – the broad statement is, "If you think you can, or you think you can't, you're right!

Ensemble

When you become a band director, you simply must include the warmup in your rehearsal plans. "But I can't take the time – we have so much to do!!" Can you afford not to??? Can you risk your students injuring themselves??? Remember this – it's not going to be your bad players who hurt themselves; they simply don't try hard enough. Your best players are at risk – how well can your band compete without them??

Why not kill two birds with one stone? What else can you accomplish during the warmup that improves your students' musicianship? How about intonation, balance, and blend? How about learning to play scales in the "hard" keys? What about rhythmic integrity? How good is your students' posture? Are they relaxed?

Most directors spend time on marching fundamentals – how is that different or more important than working on playing fundamentals?

Warming up is a short-term loss of rehearsal time that nets a long-term gain in the performing abilities of your students. It's worth it!

Note: I believe warming up is a personal thing. You cannot create a warmup that works for everyone, so go with what works for the majority. I hate to say it, but some people simply need to get there early and do their own routine before you begin the ensemble warmup. That is NOT going to happen without your encouragement. Perhaps you can point out that this is what professional musicians do and that warming up on your own is a step toward independence and assuming responsibility for yourself as an adult.

Individual

Warming up takes very little time, so be sure to get arrive early enough to warm up BEFORE the rehearsal begins. (This is especially true for concerts – running late may eliminate your warmup and likely will add stress that carries into the concert).

My motto is "The only thing different from a rehearsal and a concert is what you wear." Of course, that's not literally true – you undoubtedly will encounter a lot of stops and starts in rehearsal; that won't happen in a concert unless something REALLY goes wrong!

And, honestly, how much pressure is there to play well in a rehearsal? You can always do it again.

Which is the problem – if most of your playing time is accepting whatever happens to come out the bell, you will be stressed in a concert when you're suddenly trying to be perfect. On the other hand, if you're constantly doing the very best you can, how does that change in a concert situation? Not much! Adolph Herseth said it this way: "Never practice, always perform."

Your habits begin with your warmup; especially during this time you need to strive for perfection. Never settle for less than you want. If you don't get it today, go after it again tomorrow and the next day, and

the next…until you get what you want. That's another reason people become superstars – they NEVER settle!

Routine

> "Routines aren't a sign of boring, regimented people. Routines are a sign of people who have goals and have found the best way--for them--to actually accomplish their goals." – Belle Beth Cooper in 10 Scientifically Proven Ways to Be Incredibly Productive

"Routine" has several meanings: regular, repetitive, boring, etc. We need a warmup routine that regularly covers all aspects of our playing. By its very nature, it is repetitive and has potential to become boring. Boredom is dangerous in a routine – one of two things will happen: we quit paying attention, just going through the motions, or we stop doing it.

How do you minimize boredom? Change rhythms and/or slurs from what's on the page or even substitute new melodies that are similar in character. Be sure to keep the same goals and follow the sequence listed below. Specific notes and rhythms don't matter – it's the process that counts and the standards you're striving to achieve.

Hopefully, you and your students will be playing for decades – we need motivation to persevere, which means we need to understand the benefits of a warmup routine:

1. The warmup sets the direction of our playing for the rest of the day. I think of it as hiking across the Sahara Desert. (I know you should walk at night because of the heat, but for this story we're going to walk in the day.) So, we get up in the morning and are surrounded by sand dunes in all directions. We're trying to get to the Brass Heaven Oasis, and we know that we need to head east southeast (halfway between east and southeast. Since we need to head in this precise direction, we get out a compass, find east southeast, and head that direction all day long. Every day we repeat the process until we arrive at the oasis. The warmup routine is the compass we follow each day. If we don't use a compass, we run the risk of getting totally lost.

2. Devise your warmup routine – decide what you will play and the order you will follow. Yes, this takes time, but once it's done, you no longer need to plan your warmup every day; a routine saves time in the long run. You're not stuck with it – you can change it to prevent boredom or address new performance demands. It will evolve over time as you find different ways of meeting your goals.

3. Every day you work on what you've decided is important; no more forgetting to do something for weeks on end. Your consistency will result in greater progress.

4. When you first start practicing your routine, you will decide exactly how you want to sound during each part of the warmup. From that point forward, you will move in that direction every day, constantly improving.

5. Practicing the same things every day makes it easy to evaluate today's success or failure in meeting your standards.

6. Warmup routines increase consistency and accuracy. Notes and rhythms are no longer an issue, allowing you to focus on how well you play.

Bad Days and Bad Habits

Practice routines firmly establish your normal level of playing and self-expectations. Any deviation from this is immediately apparent, alerting you to do something about it. Remember, most bad days are caused by playing incorrectly and can be turned into good days simply by insisting that you play at your normal level. Remember this, too: Mr. Jacobs said bad chop days are the result of bad breathing. Fix your breathing and your embouchure is good to go!

Your routine is an insurance policy against developing bad habits – since a bad day means you're doing something wrong, you certainly don't want to continue in that direction! Restore your playing level, and you're back on course.

Never settle. Whatever level you accept is how you will perform. If you aren't playing your best, it's your mind's fault – remember precisely how you're supposed to sound; your body won't be far behind.

> I admit, some days it just won't happen, but you'll be surprised how many "bad" days can be turned around.

Use your routine to improve – imagine how your favorite superstar would sound and start closing the gap! Here's the opposite scenario – if you mindlessly go through your routine, the odds are you'll start losing ground. At a bare minimum, maintain where you're at!

More on bad days in #5 under "Basic Approaches to Learning to Play in the Upper Range" in Chapter 24.

Performances

Warmup routines improve our performances:

1. Routines guide our mind into the moment, helping us focus more and more deeply and forgetting everything else.

2. If you're about to perform, the deep breathing in your routine helps calm your nerves. FYI, nervousness tends to increase isometric tension, reducing diaphragm and rib motion, which means you tend to take smaller breaths under pressure. The stronger your correct breathing habits are, the more likely they will hold up under stress.

Warmup Routine Components

Following are the components of a good routine in what I consider the best order. Overall, it does not matter what melodies you use during your routine, so change them as needed to keep your attention focused.

1. Put on the attitude! (See Chapter 9 Attitude.)

   Time required: 2 seconds

2. Establish correct posture. (See Chapter 10 Posture.)

   Time required: 2 seconds

3. Breathe like a tuba player! Ensure you're using your full lung capacity by taking three full breaths in a row and getting slightly dizzy. (See "Test for All Ages" sidebar in Chapter 12 Breathing.)

   Time required: 12 seconds

4. Make sure your embouchure is correct by doing three "leak and seals." (See "Leak and Seal" in Chapter 15 Embouchure.)

   Time required: 12 seconds

   Be certain you are blowing correctly when you encounter resistance by blowing hard against the seal and getting the sound of air pressure releasing when you pull the mouthpiece away. (Plus, you get 3 more big breaths in while you do this. (See "Proper Creation of Air Pressure" in Chapter 24 Upper Range.)

   Time required: 12 seconds

5. Buzz sirens and melodies on the mouthpiece. Be sure sirens are smooth and the melodies are in tune. Listen for good response on all articulations and sirens when you slur. Remember to start with small sirens if your lips are stiff or sore and slowly enlarge the size of the siren. I think of it like a baseball pitcher working his shoulder to loosen it up after a hard day pitching. (See Chapter 16 Mouthpiece Buzzing.)

Time required: 60 seconds (More, if you wish.)

Total time so far: 1 minute 40 seconds.

6. Time for the instrument! Begin with tone studies, listening to each attack, the tone of each note, and how you sound moving between notes. Strive for PERFECTION using "Oh, too" and the "Power of Do It Again" and never, never settle. Remember, to know what perfect sounds like, you MUST listen to great players! This is a great time to work on low range – transpose the tone studies all the way to the bottom of your range. (See "Tone Studies" in Chapter 17 Concept of Sound, "Oh, Too" in Chapter 12 Breathing, and "The Power of Do It Again" in Chapter 21 Initial Attacks.)

   Time required: 5 minutes to ensures that your muscles are warmed up before you move into the upper range. (More, if you wish.)

   Notes: Remember, long tones end to numb the mind; melodies emphasize interpretation, phrasing, dynamics, etc. Horn and trombone players often start with lip slurs, which means starting with bigger intervals rather than starting small and easing into larger skips.

   Group warmups are a wonderful time to help students focus on their tone. Pick the student who has the best tone to play a tone study for the section and have the section play it back. When you start the next tone study, pick your second-best student to lead off. This call and response technique will make the "solo" student EXTREMELY aware of their sound! To keep students from getting too comfortable with their demo, on the second day of the week start with the number two student, on the third day, number three leads off, etc.

   Added bonus: players should play and rest in equal amounts during the warmup. Call and response automatically provides this balance.

7. Range Expansion Tone Studies. Be incredibly aware of any deviation in tone quality or volume as you ascend. Insist on great attacks and moving smoothly between pitches. Before you get carried away, remember that no more than 10% of your total practice should be spent expanding the upper range. (See Chapter 24 Upper Range.)

   Time required: 5 minutes (you can do more, if you wish)

   Total time for routine: 11 minutes 40 seconds

The routine should be memorized as soon as possible so you can focus on listening intently to your playing rather than hitting the notes. Bonus: memorization allows you to warmup even if you forget or lose your music.

Note: For me, once I've warmed up into the upper register, I'm ready to go. Many people like to play lip slurs and or tonguing before they feel ready to play. As they say, mileage may vary.

Moving into the Practice Routine

If you're warming up for a rehearsal or a concert and have a little time, you'll probably want to go over the music in front of you. If you're warming up to practice, this is the perfect time to work on skill maintenance and improvement. Here are some possibilities:

1. Flow studies – Any exercise is potentially a flow study. To turn something into a flow study, tongue only the first note after each breath. This allows you to focus on air flow, connection between notes, pitch and intonation accuracy, and fingers. (After these are established, it is relatively simple to add the original articulations back in.)

   The primary difference from tone studies is that tone studies tend to have a more limited range, only use smaller intervals, and notes durations are usually the same.

   Here are several excellent candidates to use as flow studies: Herbert L. Clarke *Technical Studies*, Robert Getchell *First and Second Books of Practical Studies*, the vocal works of Giuseppe Concone, and Marco Bordogni's *Melodious Etudes*.

2. Lip slurs – all patterns

3. Single and multiple tonguing – include scales; you might as well kill two birds with one stone!

4. Musical vocabulary – it's hard to play something if you have never practiced it, and it's hard to read a book if you must look up most of the words. BUT, if you know all the words, reading that book is easy. Scales and chords are our vocabulary, so learn them in every key and mode and inversion. (Yes, there are a LOT of them, but it's not an infinite number. Start with something easy; when you master it, pick something new. Before you know it, you'll have learned them all.) When your vocabulary is that big, you won't have much trouble learning a piece of music.

Warm Down

I must admit that I've never been much for warming down unless what I've just finished was particularly exhausting. Other brass players find warming down critical; if they don't do it, they have difficulty the following day.

"So, what is a warm down?" Essentially, it's a warmup in reverse. You gradually reduce range, volume, and technical demands until you're playing easy tone studies with a great sound. The idea is to restore a quick and easy response by making sure the air is flowing freely and the embouchure is no tighter than necessary.

Patience Required

You may have seen a "friendship rock" which has a hole in it created by water dripping on it for a LONG time. It's hard to believe – I've had my hand beneath a faucet many times and it's never worn a hole in my hand. At the rock is SO much tougher! Imagine a single drop of water hitting a rock – nothing happens…except that it must do something at the molecular level. Multiply that single drop by thousands of years and you end up with a hole.

pinterest.com

This is how you should think about practicing the basics. Only rarely will you see progress in a single day, but consistent drops of water, I mean practice, will produce great changes. I have often been surprised in how much progress a student makes in just a week or two. Trust the process and invest in yourself!

And practice every day. The hole in the rock did not enlarge during a drought. As James Clear says, **"**Rome wasn't built in a day, but they were laying bricks every hour.**"** (FYI, James Clear has a blog which is tremendously helpful in creating good habits. He spends a LOT of time researching so you don't have to – jamesclear.com)

S. Hermann & F. Richter – Pixabay

It is important to remember that we're not all the same; there are early and late bloomers. Think about a beautiful flower bed in full bloom – there are the first few flowers that bloomed before the rest and are now beginning to fade, and there are the flowers that have yet to open. When you see unopened flowers, you know they'll be as beautiful as the rest when they open.

So, you may be an early bloomer, a late bloomer, or in the middle. Does it really make any difference once you've bloomed?? Believe in yourself and keep practicing and remember, if those late flowers don't get any practice, uh, water, they won't bloom.

Chapter 27
Loud and Soft Playing

Success or failure in loud and soft playing is primarily dependent on air, although greater embouchure strength is required at high volume levels. You need a balance between loud and soft playing: during marching season, most of your practicing needs to be softer. During concert band season, the reverse may be true.

Loud Playing

The key to power in brass playing is relaxation, which increases air flow. When you try too hard, your throat closes, reducing the amount of air going into the mouthpiece. To "fix" this, you often end up muscling it, distorting the tone and making your sound small.

Future band directors take note: the way to combat this tendency with trumpet players is explaining to them the importance of relaxation so air can move quickly. This is NOT in the trumpet-player nature! Their natural reaction is to try harder and harder. (Just so you know, they aren't actually relaxed when they play loudly, but when they will stop fighting themselves, they will think they're relaxed.)

Large breaths are critical – your subconscious is always aware of how much air you have and how far it is to the next breath. If you don't have enough air, it will automatically reduce the airflow (and your volume) so you reach the end of the phrase.

To increase your volume, practice simple, slow melodies with a great sound, and then bring the volume up just a little by moving more air while staying relaxed. After this settles in, increase the volume a little more. By repeating this process several times, you develop a much bigger, more powerful sound. (See this article by James Clear on the importance of 1 percent improvements.)

While you're working on your volume, be sure to balance it with soft playing so you don't lose that ability. Practice a lot between mezzo forte and forte, too; it is our most relaxed playing and serves as a reference point for relaxation and keeps you aware of excess tension when you play loudly.

> Lou Soloff was the lead trumpeter with Blood, Sweat & Tears. Before this, he gigged a lot in New York City – one night would be a big band gig, the next night he'd play in a salsa band, and the following night he'd be playing in a jazz combo. Over the course of a week, he had an incredible variety of playing. Once he joined BS&T, however, all he played was loud. After about three years of it, that's all he could play.
>
> He turned to Arnold Jacobs for help who prescribed mouthpiece practice – a lot of it. Lou bought Music Minus One recordings (full orchestra minus the soloist) of oboe concertos so he could buzz the solo part on the mouthpiece. Mr. Jacobs told Lou that he was going to have to go back through his entire undergraduate etude repertoire to work his way through this dilemma. I saw Soloff perform after 6 months on Mr. Jacobs' plan – it was working incredibly well! What a great trumpeter and musician!

Note: Mr. Jacobs had him buzz the mouthpiece because "strangeness permits change." More on this in Chapter 34 Solving Problems.

Dale Clevenger recommended practicing as loudly as possible for 5 minutes a day to stretch the envelope. During this brief time, you ignore tone quality to give yourself a chance to learn to play louder. Why only 5 minutes? Playing at 100% full volume is extremely tiring and can easily lead to bad habits; most of your playing should be at 80% or less. Yes, professionals are very loud – just imagine how loud they would be at 100 percent! (In the same manner, when I hear virtuoso players, I often wonder what they practice at home when no one is listening. I bet it's mind boggling!)

As a reference point on volume, I have heard incredibly loud trumpet playing not only from big band trumpeters but also from orchestral players. In 1980 at the St. Louis Trumpet Festival, Adolph Herseth was working with 4 great trumpeters from a university in Kansas, probably upper classmen and even grad students. The four of them were pointed straight at me and really blowing. Mr. Herseth was pointed directly at them, so his back to me. With his bell facing away, he was LOUDER than all four trumpeters, and he wasn't even working hard. He just wanted to be sure they could hear him. Incredible!

Here's my recommendation for marching band, undoubtedly the loudest playing your students do. Sadly, during the summer most of your students get completely out of shape. When they come back, do not allow them to play louder that they can produce a good tone. You will also need to give them frequent chop breaks, make them take things down an octave when they get tired, etc. (Trumpeters will NOT take care of themselves.) After a few days, they will become accustomed to this level – their tones will be consistently good and it's harder to tell when they're getting tired.

Bring up the volume just a bit, not more than 10%. Tones will be a bit distorted at first and they will get tired a little quicker. Stick with this volume until things settle in and they play well again. Continue the process until you get to the volume you want. I am willing to bet the final level will be much louder than when school started, sound much better, and they will be able to sustain it through the entire show.

You need to make this happen; your student's enthusiasm will cause them to start distorting and doing things wrong at the first rehearsal. Things are not likely to get better as the semester goes on. Build the volume correctly!

We're going to discuss this more in Chapter 28 Endurance. Remember, to play loud, you must practice loud.

Soft Playing

In a way, this is much like loud playing – air must continually move across the lips into the instrument – it's just more gentle.

Fear is often a factor in soft playing; fear that nothing will come out or it will be too loud. The first fear is without substance -- remember that if you have a firm embouchure and move air, something WILL come out. Yes, it could be the wrong pitch or too loud, but nothing coming out? Totally irrational fear – myth busted.

Concerning the second fear, I think many people equate soft with not being heard. If no one can hear you, why bother playing? Just hold the instrument up and pretend to play. If the composer didn't want

the audience to hear you, you would have a rest in the music. When I play softly, I expect to intrude on the listener's awareness. Even though your part may be "just" accompaniment, the audience needs to hear it.

Balance of Power

Too often, musicians try to "control" soft playing by putting opposing muscles in opposition and then "controlling" the balance of power between them. Sorry, folks, that's just plain dumb. Think of it as the choice between a tug of war between your muscles and using minimal effort.

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Tug of War	Minimal Effort
Muscle A pulls left with 5 pounds of effort Muscle B pulls right with 4.5 pounds of effort Net result – 0.5 pounds of effort to the left. Total effort expended is 9.5 pounds. Efficiency is 5%.	Muscle A pulls left with 0.5 pounds of effort Muscle B does nothing Net result – 0.5 pounds of effort to the left. Total effort expended is 0.5 pounds. Efficiency is 100%.

In this tug of war, you're working 19 times harder for the same result. Not a good investment of your strength. But it's worse than that – what if nervousness shifts the balance between muscles? Suddenly, the wrong muscles win, and you get the opposite of what you want. Let's substitute blowing and inhaling muscles – what happens when the balance of power shifts? The inhaling muscles out do the blowing muscles: the air stops moving and…nothing comes out. Your worse fear just materialized.

Here are two more analogies that I use in lessons. The first example demonstrates the inefficiency of muscles fighting each other:

> I tell the student I'm going to push on them and then I put my right hand on their shoulder and push. I tell the student to say, "Stop pushing on me," so I grab my right wrist with my left hand and pull away while still trying to push with the right. The strain involved is obvious.
>
> We start over – I push on the student and the student says, "Stop pushing." I stop pushing and get the same result with no effort.

The second example shows the impact of mental tension on "controlling" our muscles:

> I put a bottle of valve oil on one end of a music stand and tell the student it's not really valve oil…it's nitroglycerine, enough of it to take out the entire building leaving a huge hole in the ground. I remind the student that nitro is VERY unstable – the slightest jar will kill us both and then tell them to CAREFULLY pick up the bottle and set it down on the other end of the stand.
>
> It's interesting to watch students with a good imagination – their arm muscles are completely tense: up and down muscles are fighting each other as are the left and right muscles. Their arm shakes! And we die.

I take the bottle of oil from the student and place it on end of the stand. I tell the student it's just a bottle of valve oil and that they're in a classroom bored out of their mind. To kill time, they're moving the bottle of oil back and forth on the stand and they DON'T want the teacher to know they're doing it, so they must be as quiet as possible.

The student quietly moves the bottle to the other end of the stand – no muscle strain is involved and there is no shaking.

Which approach is will work better when you must play softly in a concert?? Hint: it's not the first one!

Air must move over the lips to keep them vibrating. Imagine playing a violin – if you stop moving the bow across the string, the sound quits. Let me say that again: if you stop moving the air across the lips, the sound quits.

Here's how you deal with this:

1. Start at a comfortable dynamic and get everything exactly the way you want EXCEPT the volume. Play it several times until you are relaxed and confident.

2. "Relax it down" – drop no more than one dynamic level, get everything right (especially air flow), and establish confidence.

3. Repeat Step 2 until you reach the desired volume.

4. This next step is critical, taking you from hoping things go right to complete confidence. Repeat Step 2 at a dynamic level softer than required. When you get to the concert, you'll think, "All right! I can play this a lot softer than I have to, so I'm going to nail it!" Even on a bad day, you will play the passage well.

The process doesn't take long – the critical part is establishing confidence at each dynamic before going to the next.

FYI, David Hickman advocates playing even softer – he calls them "whisper tones," playing right on the edge between response and no response. The goal is to get most notes to speak, but it is not a problem when they don't come out. This teaches relaxation and steady air flow even when it's barely going through the instrument.

Students often ask me if they should take a to-the-stretch-point breath when they play a soft phrase. In general, I would say that a good breath should be taken, around 70 per cent of your total. A breath this size has momentum, but not so much that you must work to hold it back. Holding back can lead to tension, making soft playing more difficult. Of course, if the phrase is extremely long, you'll need a huge breath and you'll "suffer" for a short time until you're down to a comfortable amount of air.

Finally, like everything else, if you want to play soft, you must practice soft.

Chapter 28
Endurance

Mohamed Hassan –Pixabay

"ENDURANCE is 90 % of Cornet Playing.

Will Power is therefore necessary to accomplish that which is considered and impossibility by many Cornet Players."

> Herbert L. Clarke, *Clarke'sTechnical Studies for the Cornet*, 1912 edition (For some reason, this important statement was removed from the 1985 edition.)

Endurance is perhaps the most important aspect of brass playing, particularly for trumpeters (who tire the quickest due to the energy demands of the instrument). Poor endurance equals poor performances and shorter practice sessions; good endurance allows continual improvement through longer practice sessions and the opportunity for great concerts.

"More important than EVERYTHING?? Than tone? Or range?" Well, if you can't play more than 30 seconds without wearing out, you don't have much time to show off your tone and range, so I'd say that endurance is critical.

"Endurance. Hmm…how hard can it be to write about that? Just practice a lot and you'll have it." True, but it's not quite that simple.

Endurance is affected by what kind of shape you're in, how efficient your playing is, and pacing. Of course, higher, louder, and longer all take more energy than middle range, medium volume, and music with lots of rests.

We'll discuss mouthpiece pressure in the next chapter, but for now it is important to know that pressure is a poor replacement for embouchure strength. Pressure frequently results in injury; reduced endurance, tone, and flexibility; and playing sharp. You are crushing your lip between your teeth and the mouthpiece – the result is a firmer piece of tissue, helping high notes while denying blood flow to the lips and hindering their ability to move. When you do things correctly (firming the lips with isometric tension), you get the "benefits" of pressure without any of the negative side effects. And, you recover more quickly when you get tired.

One of my students attended masterclasses by Arnulf Nilsen, co-principal trumpet in the Oslo Philharmonic Orchestra. Nilsen said that a 10-second rest will allow you to recover 50% of your strength and a 20-second rest will bring you back to 90% -- IF you haven't hurt yourself.

Causes of Poor Endurance

Endurance and range problems can be caused by:

1. Insufficient air, leading leads to excess tension.
2. Tongue too high, blocking air flow.
3. Weak corners (often with puffed cheeks) do not protect lips from pressure.
4. Weak corners subconsciously block air flow.
5. Stretched corners thin out tone quality and decrease endurance rapidly because mouthpiece pressure is more damaging. There is a strong tendency to play go sharp.

   Note: Slightly stretched corners are more subtle, but they still cause problems. (I had this problem for YEARS because I didn't realize my corners were a little off.)
6. Excessive mouthpiece pressure cuts off blood to the lips.
7. Insufficient amount correct practice.
8. Overall lack of physical exercise, especially aerobic exercise which works the breathing muscles.
9. Excessive mental or physical tension.
10. Poor warmup.
11. "Persimmon lip" – Dr. Swift taught me that fear of running out of endurance can cause you to keep your embouchure flexed all day before a performance. He called it "persimmon lip." When it's time to play, you have nothing left! The "cure" for this is two-fold: 1) have sufficient endurance you don't need to worry, and 2) keep your corners a little more forward than normal and the jaw a little lower, making it harder to create isometric tension in the lips.

Long-Term" and Short-Term Endurance

There are two kinds of endurance: long-term and short-term. Both require practice, but just because you have one of them does not guarantee you have the other.

What's the difference? Long-term endurance is about how many hours a day you can play. It typically includes:

Rehearsals – You rarely play for an entire rehearsal, so 2.5 hours of rehearsal may not even be an hour of playing time.

Individual practice – You can take a break whenever you need to, so it includes downtime as well.

Performance – unfortunately, most of us don't play concerts daily, and concerts are where we NEED endurance!

Short-term endurance is how long you can play non-stop without taking the mouthpiece off your face, so we're talking minutes, not hours. Acquiring short-term endurance requires non-stop practicing without hurting yourself by using too much pressure.

David Laubach studied for a while with Bill Pfund who told him to practice in 10-minute increments: 10-minutes basically non-stop alternating with 10 minutes of rest. I asked David how this worked with long-term endurance; in reply, he asked, "How often do you have to play 10 minutes straight?" My answer was never. He said, "That's right. So, if you can play 10 minutes non-stop, and we never have to do that, you should never get tired."

There's a lot of truth in that, but it's not quite the entire story. If you practice only 10 minutes a day, even though it's non-stop, you are not going to be able to last through a 2.5-hour rehearsal and a 2-hour concert on the same day, especially if it's a pops concert where the trumpets play all the time. You need many 10-minute sessions to have the long-term endurance needed.

A few years after David and I had this discussion, the Faculty Brass Quintet at Henderson played Michael Tilson Thomas' *Street Song* immediately followed by Ewald *Quintet No 3.* It was 35 minutes of almost non-stop playing! Trust me — I used too much pressure getting through that performance! So, 10 minutes of non-stop playing is excellent, but it's not enough for all situations.

Requirements for Endurance

Endurance is about practicing, efficiency, and pacing – and you need all three. Long-distance running provides a great analogy:

1. I doubt there is anyone who would run a marathon without spending a lot of time getting in shape – you must practice a lot to have good endurance.

2. If you are running and your muscles fight each other, you will tire quickly – we need to be as relaxed as possible when we play, which means staying in the top half of the breath.

3. No one would try to sprint a marathon (26.2 miles), so if you're playing all out, you're won't last very long.

Let's discuss each point more fully.

Practicing

First, the better shape YOU are in, the better endurance you will have. Your playing muscles are part of your body, so it makes sense that YOU need to be in shape for your playing muscles to be in shape. Many years ago, I practiced two hours a day and exercised one hour a day. By doing this, I had the same playing endurance as practicing three hours a day with the added benefit of being in good shape overall. (I need to start doing that again!)

My own guideline is that one hour of practice gives you the endurance for a two-hour rehearsal (because of all the time you're not playing). But, one hour of practice only gives you the endurance for a one-hour concert. There is no rehearsing during the concert, so you play more consistently, and you tend to play harder. Once the adrenaline gets flowing, it's hard to keep from doing whatever it takes to make the music sound great.

It makes a difference what kind of music you're playing. Brass quintet and brass band typically require much more endurance than band, orchestra, or big band because there are so few rests. If you have a brass quintet or brass band performance coming up, you must practice short-term endurance. Big band lead playing includes a lot of high notes, so practicing a lot in the middle range and ignoring the upper range will not get you in shape to play lead trumpet.

Efficiency

In a nutshell, play as relaxed as you can using as little effort as possible so the endurance you have goes a long way. As a bonus, you also get your best sound and best flexibility. Let the air do the work as much as possible —take a full breath (unless the music is very soft) and breathe again before you get to the resting point where you begin squeezing air out.

Pat Sheridan, the virtuoso tuba player and one of the authors of the Breathing Gym told me the story of Ifor James, who played horn in the Philip Jones Brass Ensemble. Ifor claimed that if you practiced one hour a day for 3 days in a row, that's a strong as your chops get. If you skipped playing 3 days in a row, you lost all your embouchure strength.

Everyone he talked to said he was crazy, so Ifor finally hired doctors to do the research and find out the truth. The result? Ifor was correct. Embouchure muscles are sheath muscles, and they're different than arm and leg muscles. (Honestly, I don't understand the difference, but I take that point on trust.)

Unfortunately, I didn't ask Sheridan if *what* you're practicing makes a difference, but it must — one hour of low C's cannot be the same as an hour of double C's.

Further evidence: one day Dr. Branstine and a colleague were discussing yard work. Both agreed that after 3 days of hard work, they got used to it and it was no longer a problem.

Okay, so if you're practicing one hour a day and that's as strong as your chops get, how does that translate into playing hours and hours per day like the pros do? Air. You must use air efficiently and let it do the bulk of the work. Remember from Chapter 24 that Maynard Ferguson said that his body got tired before his chops did – his blowing muscles did the bulk of the work.

Another point – Arnold Jacobs told Pat Sheridan (who told me and now I'm telling you) that when your chops feel tired, it's because you are not using air properly. When Sheridan told me that, I thought it was the dumbest thing I'd ever heard. "When I get tired, it's because I'm out of shape, or I'm pushing the mouthpiece into my lips too hard, my breathing is NOT the problem, etc., etc."

Sheridan is a member of Mensa International, placing him in the top 2% of intelligent people. Arnold Jacobs was one of the most brilliant men I have ever met –when he decided he needed a hobby, he didn't take up golf or even chess, he decided to study medicine! That is NOT normal!

> One day I was practicing, and my chops felt terrible, so I decided to test this theory. I made myself breathe really well — big breaths and often. Nothing happened…ha! I was right! It's not the air! I kept breathing well and after 5 minutes, my chops felt great. So, I was wrong!!! (FYI, admitting you're wrong is no big deal, and that self-honesty opens the door to making changes to improve.)

Rule: If you aren't using too much pressure, tired chops are a signal that your breathing is bad – your lips aren't tired, they just feel that way.

Rule: Efficiency is about using your air properly. Without it, you will not have good endurance.

Pacing

A friend told me he owned a "muscle car" that was so powerful that it burned 20 gallons of gas in 4 or 5 quarter-mile starts. Twenty gallons of gas to go a mile or so? Not too efficient, and expensive!! Obviously, his car was wide open to ran out of gas so quickly. The same thing happens to us — if we play as hard as we can, we "run out of gas" in a short period of time.

> The rest of the story – my friend was sitting at a stop light when someone put a knife too his throat and told him to get out of the car, which he promptly did. The man drove off in the car; it was stripped for parts – all the police found was the frame.

Some time back I got curious about the speed difference between sprinters and marathon runners. Sprinting is like racing my friend's muscle car – speed is the only concern because you're not going far. How fast do sprinters run? I went to Wikipedia, the source of all knowledge! The first thing I learned is that there is a 60-yard dash that is over so fast that runners don't even breath. That didn't seem like a good analogy for brass playing, so I went with the 100-yard dash. The record time for men is 9.07 seconds, set by Asafa Powell from Jamaica in 2010. That translates into 22.55 miles per hour. At the end of 100 yards, there is nothing left – the runners use up everything they have for speed.

What about marathon runners? To run over 26 miles, you must pace yourself, so how fast do they run? The record when I checked in 2017 is 2 hours, 2 minutes, and 57 seconds, set by Dennis Kipruto Kimetto from Kenya in 2014. How fast is that? It's 12.79 miles per hour.

The fastest marathon racer runs 56.7% as fast as the fastest sprinter, but the marathon runner goes 461.5 times farther and lasts 813.3 times longer!!! Pacing makes a difference! (Marathon runners train differently than sprinters, but that alone can't account for a 460-fold increase in distance and 813 times more endurance!)

If you play as hard as you can, you will not last long, but if you limit yourself to 50-60% of what you can do, you will have a LOT more endurance!!! How do you do that? Primarily by decreasing volume. Keep your bell out of the stand, raise it when you really need to be heard, breathe well, and stay as relaxed as possible.

"But what I need to play harder than 50-60%?" Then you need to get into better shape! (See Chapter 27 Loud and Soft Playing.)

How to Build Endurance

Clifford Lillya, my teacher at the University of Michigan, said you must rest to build endurance. Somehow, that didn't make sense…the best way to have endurance is by not practicing?? I knew that was wrong! About 20 years later, I finally figured out that he meant knowing when to rest and taking a break at that point:

> In the early 1990s, I was talking to my High Brass Methods class about this subject, telling them the way things work:
>
> - You start playing and aren't tired — you're not building endurance, you're just benefitting from previous work. Endurance gains only happen when you're tired.
>
> - You continue playing and begin to get tired, but no one can tell. In 1981, I attended a series of master classes by Dale Clevenger, principal horn in the Chicago Symphony; during one of the sessions, he said getting tired is very special because this is when you build endurance; rather than fearing this, you should welcome it.
>
> Psychology is critical – just because you're starting to tire doesn't mean you can't go on or that you can't play well.
>
> - You keep playing, and now everyone knows you're tired: your tone starts to deteriorate, you play sharp, and you push the mouthpiece too hard into your lips, reducing your flexibility – I'm sure you know what I'm talking about!
>
> Following this description, Todd Skaggs, one of the students in the class, said, "You should call that 'the point of decline,' where you start to go downhill." I agreed with him and have called it that ever since.

And that's when I understood what Mr. Lillya was talking about – you build endurance by resting…at the right time. When you reach the point of decline, stop – you need to rest. If you stop before that, you don't build endurance; after that point, you risk hurting yourself and becoming good at doing things incorrectly.

Rule: When you reach the point of decline, stop!

Stop, even if there are only two lines until the end of the piece or two minutes until your practice session is over. STOP!!! NOW!!!!!! After a few minutes of rest, you can finish…without injury or bad habits.

During another lesson, Mr. Lillya put his finger on my bell while I was playing and pushed down, tipping the mouthpiece away from my face. I was VERY surprised and asked why he did this – he said, "You're tired." I denied it – I felt fine; once again he said, "You're tired." During the following discussion, he explained background tension: little by little, you begin to tense. At first, there is noticeable effect, but as the process continues, it becomes harder to move and tone diminishes. Taking a short break allows this background tension to dissipate. (If I knew then what I know now, I'm sure I would have heard the changes he heard in my playing. My guess is that my entire focus was on pitches and rhythm – I wasn't listening to tone or what I sounded like between notes.)

FYI, practice both long-term and short-term endurance to the point of decline. Keep going when you start to feel tired but STOP before the left arm is heavily engaged. Remember, you're trying to build lip muscles, not the left arm biceps!

Remember: the general rule is playing and resting in equal proportions. The biggest challenge during the rest is BOREDOM!!! Simple solution – study the music during that time. Remember that the mind plays the instrument, so when you study the music, you're practicing!

One other thing – a sudden increase in the amount or intensity of practice frequently results in a temporary decline in your ability. Imagine that you are consistently running 3 miles a day and then you abruptly increase to 13 miles daily – you are going to be sore and stiff! Treat your embouchure with the same respect you would give your legs – gradually increase what you're doing.

Stan Kenton had one of the most successful big bands of all time. I went to several of their concerts and even saw them play a dance job. It was a great band! And loud!! Playing in a big band on the road was hard – day after day of incredible playing demands. While the job seemed glamorous to the audience, the musician's saw it differently: play a gig, get on a bus, kill time, play a gig, get on a bus…over and over.

Sooner or later, most musicians quit to find a more traditional lifestyle, including the lead trumpeter. Many great jazz musicians were at North Texas State University (now the University of North Texas) playing in the jazz bands and hoping to get a professional gig, so Kenton went there to hire another lead trumpeter who was suddenly called on to play 4 hours a day, day after day. At a concert soon after the new lead player joined, one of Kenton's friends complimented him on the band…except the lead trumpet player wasn't holding his own. Kenton's response was, "He'll be fine. He just doesn't have his road chops yet."

The point of this story is that if you suddenly increase your practice efforts, you <u>will</u> experience a decline. If you stay with it, in time you will adapt to the new level. (This can easily take several weeks.) My only caution is that you avoid hurting yourself while you're adapting. Future band directors, keep this in mind when you start marching band rehearsals in the fall!

Proper Tiring

So, what's the right way to be tired? Ideally, the blowing muscles get tired first – unfortunately, it's usually the embouchure. When the embouchure does become fatigued, the corners of the mouth should feel tired before the lips under the mouthpiece. <u>You need to play well while you're tired</u> – when you cannot do that and start to sound bad or the lips are getting tired under the mouthpiece, you need to take a break!

Let's review – the embouchure works by isometrics: the pull of the cheek muscles (including the buccinator or "trumpeter's muscle") is balanced by the pull of the "pucker muscle" around the lips (orbiculoris oris) and the chin muscles. When these muscles get tired, we feel it in the corners of the mouth.

> Why do we feel tired in the corners? I have no idea, but that is how it works. Sometimes I feel soreness in my chin muscles from practicing harder than I'm used to, so I know they are an important part of this equation.

All this pulling firms the lips up so that they'll vibrate. Higher pitches require more firmness; if the lips aren't strong enough, we often end up crushing the lips between the mouthpiece and the lips. We get firmness at the cost of shutting off the blood supply to the lips and at the risk of hurting our lips. FYI, tolerance to pressure varies widely between individuals; people with a high tolerance get away with using more pressure. It's not fair, but that's the way it is.

When you start pushing too hard, there is one thing you can do to help yourself (and build your endurance): fight back. Consciously firm your corners and reduce the pressure on your lips. Quite often, rest is just a minute or two away in a rehearsal or even during a concert. If you can keep from hurting yourself, you'll bounce back quickly. If you hurt yourself, however, it can take hours or even several days to heal.

Let's review: it's important to get tired in the corners first; when the middle begins to get tired, take a break. If you don't, you're building your left arm muscles and not your embouchure muscles. Take a short break (maybe 5 minutes or less) as soon as you start to get tired under the mouthpiece. This allows the body to bring nutrients and oxygen to your face muscles and remove waste products and lactic acid. Take a drink of water — it will speed up your recovery. (You already know this if you've done much heavy labor, especially outdoors.) After the short break you will feel much better. Practice again until you start to get tired under the mouthpiece and take another break. If you are still tired after the break, take a much longer break.

Remember this: if you hurt yourself, you must heal before you can build endurance. You may win the battle, but you'll lose the war.

Rule: Rest when needed!

End of the Piece Endurance

As you well know, most pieces place the highest notes at the end. It only makes musical sense, but from a trumpeter's perspective, wouldn't it be great if they were all at the beginning? Not going to happen, unless you write your own music.

How do you build endurance to nail the high C at the end? Practice backwards – I call it "layering in." Let's say that the last note is a high C with a fermata; you start by playing the C with a great sound and the power that you want. After that, back up a measure or two in front of the last note. Nail it! Didn't happen? Then try again…as many times as necessary, but do NOT hurt yourself!

After that's established, back up a few more bars and play to the end. If it goes well and you sound like Doc Severinsen on the last note, you can back up a few more bars. If you don't sound like Doc, there's no point in backing up; you'll just end up sounding bad on the last note and creating the "muscle memory" and tonal memory that produces a bad sound.

You must wait. Sometimes it's just a matter of doing things right, so you can go for it several times to see if you can get it. A good rule of thumb is be three times — if you can't sound like Doc after three tries, you must wait. It may take several days, but at some point, you will nail the last note and you can "layer in" a few more measures in front of what you just played. There's no formula — look at the music, take an educated guess about how much to layer in, and see what happens. If it's not working, shorten the "layered" part until you sound like Doc on the last note. Continue the process until you can handle the end of the piece with everything in front of it. (If there is a significant amount of rest before the end, you probably don't need to go back any further than that.)

Once you do this, take it a step further. My "theory of relativity" is that the hardest thing you're playing is not necessarily going to be there every day, so you must practice harder than what you need to play. By doing that, what you must play is relatively easy and you can guarantee it, even on a bad day. Back to our hypothetical high C — when you can play all the way to the end and nail the C, hold it longer than necessary, at least twice as long. Or, go up to a D or even an E after you hold the C for a couple beats. Or, put a shake on the C. Anything that is harder than what's written.

When I first figured out this process, I was dismayed that it took several weeks to work through it. It was worth it because I could play the entire piece and nail the last note. Many months later, I ran into another piece that was giving me problems with the last note. Bummer! I was going to have to go through this entire process again, spending weeks learning how to nail the last note on this piece. H, well…

But, I didn't. It only took a few days, and that's when I realized that this process is more about learning to pace yourself than it is about building strength. You're not going to play that high C at the end until you get there, so there is no reason to waste your strength before you get to it. Completely relax during rests, even if they're only quarter rests. Always, always, always breathe well. Once you go through this process, life is better!

Two more ways to build end-of-the-piece endurance:

1. Pick several places to rest during the piece. Make sure they happen soon enough and often enough that you are not be tired when you reach them. (Take your best guess to start out and adjust as needed).

   Okay, here's the next part. Start at the beginning and play to the first resting place. Rest for 60 seconds before going on. Long before the time is up, you'll be raring to go. Too bad – wait the full 60 seconds.

   Continue to the end of the piece. You should finish with strength and confidence. (If this doesn't happen, either increase the length of the rests or add more of them.)

   Once you achieve this, cut the length of each rest by 5 seconds. Go through the piece again – you probably won't even notice the difference. Continue this cutting process, 5 seconds at a

time, until the rests are gone. Don't be surprised if you get stuck along the way; you may have to wait several days for things to settle in before you can shorten the rest again. Patience!

Back to the "theory of relativity" – begin shortening the rests written in the music until you can play the piece start to finish taking only half the amount of rests written. When you can do that, build to playing the piece twice in a row with only half the written rests. Even on the worst playing day of your life, you will play it well!

(If the written rests are short, like 2 measures or less, you may want to keep them as written so your breathing pattern will be the same as when you perform.)

2. I don't like this method as much, but it also works. Start at the beginning and play until you get tired. Rest 60 seconds and go on until you get tired again, rest 60 seconds, etc., etc. As you get stronger, you will go farther before you need to rest. Eventually, you can play the entire piece without added rests.

Here's something else — Dr. Branstine once told me that when you think you're so tired you can't go on, you still have half of your strength left. Since then I've learned that he was wrong — you actually have 2/3's of your strength left! Now, how does that make any sense??? Why does the body tell us we're exhausted, but we're not??? I have no earthly idea, but if you ever done manual labor you know that you can get really tired, take a few minutes off, drink some water, and be ready to go back to work, pretty much as good as new. Apparently, we weren't as tired as we thought. If it works for our arms and legs, it works for our embouchure as well.

Years ago, I played the Tomasi *Concerto*. It ends on a D concert after three long, tiring movements. I had practiced layering in so I knew I could nail it, but during the recital I was tired as I came to the end, undoubtedly spending too much energy on the rest of the piece. To my surprise, I nailed the D, even though I thought I was too tired. Dr. Branstine was right, plus I had trained my mind and muscles to do things correctly at that point in the piece, and that's what happened despite how I felt.

Chapter 29
Mouthpiece Pressure

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Mouthpiece pressure on the lips is normal and required for two reasons:

1. Prevent air from leaking around the mouthpiece. Despite of stories about playing high C's on trumpets hanging from a string or laying on top of an upright piano, pressure is required to play with any kind of volume.

2. Provide the isolation of the tissue inside the mouthpiece so that the rest of the lip does not respond to nerve impulses from the brain. (See Chapter 15 Embouchure.)

In a downstream (overbite) player (see Chapter 7), the top lip is the primary vibrator; the lower lip must be free to be flexible. Maurice André developed a mouthpiece that had a normal trumpet rim for the top lip, but the rim for the bottom lip was thin, like a horn mouthpiece, to facilitate movement of the lower lip. The lower lip is the primary vibrator in upstream players but still must be able to move for flexibility.

FYI, almost 50 years ago I had a student that developed a double buzz – whenever he played tuning C, a low C sounded at the same time. He was playing octaves all by himself! It only happened on tuning C – it was pretty cool, except that he couldn't turn it off. Unfortunately, I don't remember

how we solved the problem, but we did in about two weeks. After it was gone, he could no longer produce the double buzz, even when he tried.

The preceding paragraph might lead you to conclude that more pressure should be applied to the top lip to free up the lower. This is not the case – the upper lip reacts to pressure much more than the lower. If you get punched in the mouth, your top lip swells much more than the lower.

So, pressure should be equal on both lips – both should get equally tired. Unfortunately, the top lip usually gets the brunt of the pressure. Downstream players need move the jaw forward to align the upper and lower teeth, equalizing the pressure. Quite likely, the angle of the leadpipe to the teeth will need to be adjusted as well.

Pressure increases with range, volume, and tiredness. I've forgotten who said this, but a famous orchestral trumpeter was asked how much pressure he used. His reply was, "Are you talking about the beginning or the end of the concert?"

Excessive Pressure

Normal pressure has no side effects; excessive pressure does. How much pressure is too much? It's a combination of how much pressure and how long the pressure lasts. Tolerance varies between greatly individuals – some can handle a lot and others can tolerate only small amounts.

Pressure is excessive when any of the following occur:

1. The lips are bruised, they may even have a bluish tint from bruising.

2. The lips are swollen.

3. The lips are tender or sore.

4. There are cuts on the underside of the lips. These can be quite painful, but you can play well IF you can ignore the pain. (I have noticed that a stuffy nose increases likelihood of split lip the following day: you sleep with your mouth open, allowing the inside of the lips to dry out and split.)

5. Response is sluggish the following day.

Unless these are happening, you are not using too much pressure, but if any of these symptoms show up, you're using too much. Here's an extreme case of too much pressure:

> In a clinic, the great high note trumpeter Bill Chase said that when he played with Woody Herman, he had to put ice on his lips as soon as the gig ended; if he didn't do it, his lips swelled up so much he couldn't play the next day. One day he was recording a "jingle" for a commercial — the part only went up to E above high C, but he bent his trumpet leadpipe in half! He said he knew he used too much pressure, but that really scared him, and he worked hard on reducing pressure.

FYI, Dr. Branstine saw Bill Chase just a few months before Chase was killed in an airplane crash. Dr. Branstine said Chase's lips looked like "chopped hamburger," so apparently Bill was still using a lot of pressure, although not as much as he had previously.

I guess we better add #6. Instrument is damaged!

Reasons for Excessive Pressure

What causes excessive pressure? We play by isometric tension; when we are too tired, we cannot maintain our "pucker." FYI, trumpeters in the 1940s era talked about "losing their pucker" when they were tired. A simple but apt description of a lack of embouchure strength resulting in reduced range, flexibility, endurance, tone, and playing sharp due to the increased effort used in playing when tired.

When the lips cannot create or sustain the needed tension, the left arm kicks in to crush the lips into firmness. This can be prevented by more practice at the range and volume needed. Another component can be an overall lack of firmness in the embouchure, easily cured with leak and seal.

Playing with too much pressure is like a long, drawn out punch to the mouth. Dr. Swift said, "If you're going to press, you might as well stretch your lip on a table and hit it with a hammer and save the time."

Remember from Chapter 15 Embouchure that a mustache can also cause the player to use more pressure than normal.

Excessive pressure is not a problem, but it is a symptom of another problem and/or a lack of proper practice using lots of air and firm corners in the correct place.

Here's another way to think about using pressure to help you play longer or higher: imagine that you are a weightlifter working out a gym. One of the coaches tells you he has a device that will help you do heavier curls. Intrigued, you ask to see the machine and how it works. Looking at it, you see two pincers – now, what do they do? You ask the coach who explains that they grip the arm at the two X's in the picture and they force your forearm up. Yes, there is some damage to your arm, but you're raising more weight! Isn't that all that matters??

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I'm quite certain you would be horrified at this prospect. Why would you want to damage your arm?? And how does it build muscle if the machine is doing the work??

And how do you build your lip muscles if you are using pressure to firm them up?? And what about the damage to the lips??

Minimizing the Effects of Pressure

Remember, we want the corners of the mouth to get tired before the lips under the mouthpiece. Resist using pressure until you must. When you find yourself using too much pressure, there is a way to fight back:

As a young trumpeter, I was taught that amateurs didn't play as well as professionals, so amateurs used more pressure. About 30 years ago, someone in England decided to test the theory – they sawed the rim off a mouthpiece, attached an electronic pressure gauge, and epoxied the rim back on, allowing them to accurately measure the pressure being used.

There were two results: first, it is not possible to visually discern how much pressure someone uses, and secondly, professional trumpeters used MORE pressure than amateurs, not less. (The one exception was Philip Jones who used less pressure than amateurs.)

"If pros use more pressure, why don't they hurt their lips?" Their embouchure is firm, protecting their lips from pressure the same way that tightening stomach muscles minimizes the damage from a punch to the belly. As long as you keep the embouchure firm, the lips are protected.

In other words, the chops of professional brass players are so strong, they can handle the greater pressure they use. Consider the abuse professional football players take – most of us would be in the hospital after one play, but pros often go an entire season without injury because their bodies are so strong.

Rule: When you get tired, fight back – keep your corners as firm as possible to protect your lips! And BREATHE!! Instead of going down with the ship, start bailing!

Reducing Pressure

What if you want to reduce pressure? There are several mouthpiece solutions, like Warburton's' Special O.P.S., that prevents you from using too much pressure.

warburton-usa.com

This device measures the pressure you use on a real-time basis: Bonsai Systems® QuantiForce Brass.

bonsai-systems.com

Several practice techniques can help decrease your need for pressure:

1. This is obvious, but it's amazing how few people follow through – when you're too tired, STOP!! NOW!! Take a short break and begin again. What do you do you're playing a concert? Do what you must…and start getting in better shape, so it doesn't happen again!

   FYI, I tell my students that the two hardest things about practicing are starting and stopping. It's amazing how much we'll procrastinate about practicing, but once we get going…we get to the point we should stop, but we just keep going, sometimes injuring ourselves in the process. How does that make any sense???!!!

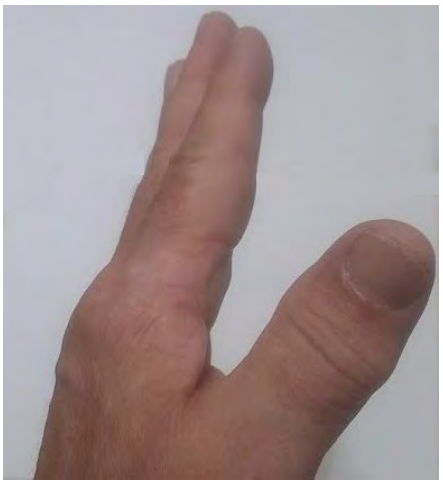
2. Be aware of how much pressure you're using – it can increase gradually, so you may not even notice it until you are using too much.

3. Reduce the amount of pressure you use by 10%, causing your embouchure muscles to work harder to make up the difference. Once they adjust, decrease another 10%. Continue this process until you no longer have problems.

4. Lots of lip slurs. You can't move your lips if they're pinned in place by the mouthpiece, so successful lip slurs require a reduction in mouthpiece pressure.

5. Remember the Warburton P.E.T.E. (Personal Embouchure Training Exerciser) and several other solutions we discussed in 12. Isometrics under "Specific Approaches to Developing the Upper Range" in Chapter 24.

6. My favorite method was taught to me by Dr. Swift – hold your left hand vertically with the thumb pointed up; then move your first finger to the right so that is next to the middle finger. This produces a slight groove between the two fingers. Rest your trumpet on top of the thumb and the groove between the two fingers and start playing.



The left forefinger can be seen to the side of the bell. The middle finger is on the other side.

You can only use a little bit of pressure before the trumpet starts to slide. Keep your pinky out of the finger ring and be careful that you do not pick up pressure from your left hand ring finger; it will tend to grab the valve casing to help you use more pressure.

I have practiced a lot like this over the years. At first, you feel like you'll drop the trumpet, but that goes away fairly quickly. Your chops WILL strengthen, and you CANNOT use excessive pressure. The only negative is that you can't use your valve slides, so you don't play as well in tune. I practiced like this the entire summer of 1990, just before I came to Henderson. It was great! (Once I got used to it, that is.) I thought about continuing to play like that as much as possible, but I could NOT stand playing out of tune, so I quit. And I ended up using more pressure too much of the time. It's a continual battle!

5. This not a practice technique, but it helps understand the concept of firm corners: use a thumb and forefinger to push the corners away from the center of the lips; fight back with the face muscles to prevent the corners from moving back.

6. Here's another: imagine you have false teeth that are trying to fall out. (How embarrassing!) Keep your corners firm so your teeth stay in place.

Injury

If you're a trumpeter, sooner or later you'll injure your lips in the heat of the moment. It's a fact of trumpet playing. Obviously, this is not good:

1. Injuries ritard your progress – you must heal before you can improve. It's like a runner with broken leg – it pretty much stops the training routine.

2. It may take several days for the lips to heal and the swelling to go down. Of course, this detracts from your practice time, but what if you're on tour? You can't take time off the horn! And who wants to sound bad in a concert??

3. It hurts!

Damage Control

Well, you did it. Despite of everything you know, you used too much pressure. Maybe you had too much playing to do for the shape you're in, maybe you got excited and played too hard…these things happen, so what are you going to do??

Treat your lips the same way athletic injuries are handled: ice them down as soon as possible, just like Bill Chase. Icing prevents or reduces swelling. Once the swelling goes down, pain decreases, and healing begins. How do you ice your lips??

1. First, never put ice directly on the lips. The easiest thing is to go to a cold water fountain, the colder the better, and let the water run over your lips until they start to feel numb. You may need to do this several times in a row and several times throughout the day.

2. Another approach is to put water in a glass with ice and start to drink but don't swallow. Just let the cold water sit on your upper lip until it gets numb. (The problem with this is that you tend to slop all over yourself and it is difficult to ice the lower lip this way.)

3. You can get an ice cube or an ice pack, put it in a thin cloth so the ice does not directly touch your lips, and numb your lips.

4. The sooner you ice the lips after pushing too hard, the better. The longer you wait, the more swelling you will have.

After the swelling has gone down and stays down, you can use heat to accelerate the healing. I normally don't do this, but you can use warm water (hotter than body temperature, but not TOO hot!) in a washcloth or cup. Do not burn your lips! (That's only trading one problem for another.) The reason heat helps is that the body brings more blood to the lips to cool the lips down; the blood brings nutrients to the lips and takes away waste products. If the swelling is NOT gone, heat will INCREASE the swelling, so be patient!

If you have done a really good job of hurting your lips, they will be sore the next day and may even have a bluish tint from bruising. If this happens, you must take it easy in your playing if possible. Mezzo

everything — medium range, medium volume, medium length of playing with lots of rest. Easy playing helps the healing process; my theory is that working the lips increases blood flow, giving you the benefits of heat.

And don't do it again!!!! (Yeah, right…but it's a good plan, so try to stick to it!!) The best solution is prevention!

I just realized that I haven't talked about using practice to help heal the lips. Remember that heat brings more blood to the lips, but so does exercise. When I overdo it, I practice things that don't place great demands on my lips or encourage excessive pressure. Even if you have done too much, you can improve things you've neglected, like exercises in F-sharp! You can make sure your finger motion is clean, you can improve your single or multiple tonguing or speed them up. Just be aware of the mouthpiece pressure you're using and rest as soon as you start to get tired.

Who knows? After your lips heal up, you may be an even better player because of this practice!

Chapter 30
Vibrato

Vibrato adds warmth and depth to the tone and changes our perception of tone color. The speed and width of vibrato strongly affects the emotional impact on the listener. (FYI, volume changes also affect tone – the louder you play, the stronger the overtones are and the softer you play, the less prominent they are.)

There are five methods of producing vibrato:

1. Hand – used solely by trumpeters. The right hand rocks back and forth, moving the mouthpiece toward and away from the face, changing the pressure of the mouthpiece on the lips, raising and dropping the pitch. The greatest advantage of hand vibrato is the embouchure is not involved in producing the vibrato. Another advantage is that it is easy to see the motion of the hand and it is also easy to practice with a metronome to steady rhythm. If too much mouthpiece pressure is used, hand vibrato will not work, providing feedback on mouthpiece pressure.

   Hand vibrato is impractical on the other brass instruments because of their size.

2. Slide vibrato – used exclusively by trombonists. The right hand moves the slide slightly in and out, changing pitch. This has the same advantages as hand vibrato.

3. Lip/embouchure vibrato – can be used with any brass instrument. The muscles of the face tense and relax producing a change in pitch.

4. Jaw vibrato – can be used with any brass instrument. The jaw moves up and down, producing a pitch change. This tends to be a slower, wider vibrato.

5. Diaphragm vibrato – this is actually a tremolo, a change of volume, not pitch. It is typically used by flute players and is not practical for brass players, especially high brass where the blowing muscles must produce greater air pressure.

   Some flutists/flautists argue that the diaphragm does not produce the vibrato; instead it is the throat. Others believe that the diaphragm and throat together produce vibrato. Regardless of who's correct, this type of vibrato is not applicable to brass players.

Vibrato type by instrument:

1. Trumpet – hand and embouchure.

2. Horn – embouchure.

Note: Traditionally, the horn does not use vibrato. Too much vibrato makes it sound more like a euphonium. Over the last 50 years it has become generally acceptable to use some vibrato, particularly in solo repertoire. Prior to that – NO vibrato! (Clarinetists have the same tradition.)

3. Trombone – slide and embouchure.

4. Euphonium – embouchure.

5. Tuba – embouchure.

Several observations about vibrato:

1. It should not call attention to itself. If it does, it's too much.

2. Vibrato is faster in the upper range and slower in the low range.

3. Since different musical styles require different vibrato speeds, it is critical to listen to professionals to hear what they use.

4. The width of the vibrato (how much above and below pitch) is also an important part of style.

5. Students should learn to play with a vibrato as soon as they can produce a good, steady sound.

6. You must be able to turn vibrato on and off. Some people use vibrato all the time, even when it's not appropriate.

7. In classical playing, only the 1st chair uses vibrato; the lower parts do not.

8. In jazz, it is more common for all the parts to match the vibrato of the lead player, especially in swing era music and earlier.

9. For me, the desired tone color sets the vibrato speed. When I hear a tone I like (or dislike!), I match the vibrato speed by moving my right hand back and forth on the back of my left hand, as if I were doing hand vibrato on the trumpet. My theory is that the tone color/vibrato speed combination is stored in my mind. When I go for the tone color I want, the subconscious automatically produces the correct vibrato speed.

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Chapter 31
Intonation

It is virtually impossible to separate tone and intonation. An out-of-tune pitch cannot sound good unless it is the only pitch sounding (and it will still bother people with perfect pitch). Notes that are lipped up or down from where the instrument is tuned degrade tone quality. Therefore, the importance of good intonation cannot be overstated.

Beyond the sheer beauty of the sound, when intervals are precisely in tune, the ear hears combinations tones (the sum and difference of the frequencies). The result is that when two pitches are played, four notes are heard, although the combination tones are considerably softer. When five pitches are played, as in a brass quintet, the ear perceives 40 notes! This explains why a professional brass quintet produces such a rich, full sound, beyond what could be expected of only five musicians.

A second result of great intonation is a louder volume. When notes are in tune, sound waves reinforce each other, strengthening the impact on the audience. When notes are out of tune, sound waves tend to cancel each other, much like noise-canceling earphones. (Rhythmic precision also adds to the impact and volume; out of sync sound waves also cancel each other.)

Students do not instinctively know what in tune sounds like. Until you help them play a chord exactly in tune, they cannot do it on their own. Bands, orchestra, and choirs use just intonation – intervals are adjusted so that interval pitch ratios are precise, causing the combination tones to be heard. Keyboard instruments and pitched percussion use equal temperament – all intervals are the same, with the result that almost nothing is perfectly in tune. I mention this because students who play well in tune with a band will have a bit of a hard time learning to play with keyboard accompaniment. The piano cannot adjust, so the student must adapt to the piano's tuning.

> Some time ago, I attended a concert by a Japanese high school band during the Arkansas Band Directors convention. The entire audience (almost entirely band directors) was STUNNED by how well the band played. During the concert, the director had his students demonstrate some of the things they practice, such as scales and lip slurs. They didn't sound any better than Arkansas All-State students, but the band was SIGNICANTLY better than our bands.
>
> So, what was the difference? Intonation. The Japanese band was wonderfully in tune. How did they achieve this level? Their director explained that he used a Yamaha just temperament keyboard to demonstrate how a chord should sound. (Apparently, a computer in the keyboard evaluates the chord being played and adjusts tuning as necessary to create perfectly in-tune chords. Here's a video to help you hear the difference. More information: Improving Intonation in the Instrument Ensemble. The Yamaha Harmony Director HD-300 just/equal temperament keyboard currently sells for $700. I cannot think of a better investment for your band program, especially the beginners!)

Temperature

Air temperatures up to 98.6 F raise the pitch of brass and woodwind instruments. (Above that temperature, the breath cools the instruments back down to 98.6.) Cold temperatures can drop pitch a

half step or more. The science behind this is that the hotter the temperature, the faster air molecules move, making it easier for sound waves to travel and raising the pitch. When air is cold, molecules move more slowly, sound travels more slowly, and the pitch drops.

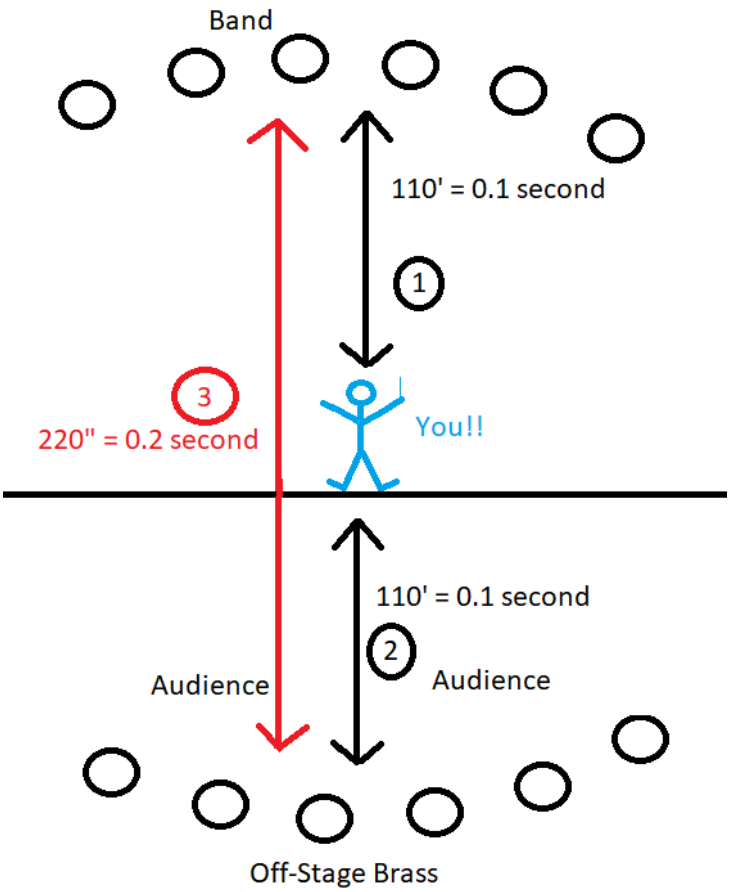
Pitched percussion and string instruments are the exact opposite. Colder temperature shrinks the metal, shortening it and raising pitch. The hotter the air is, the more metals expand, dropping the pitch.

Offstage Groups

Distance also effects pitch – the farther away a performer is, the flatter they sound compared to musicians next to you. If you are doing a piece with offstage brass, not only will they tend to be flat from not being under the hot stage lights, distance drops their pitch even more.

And then you have the timing issues – quite often, the offstage group is behind the audience. Being a perfectionist, you will insist that they play early so that the sound arrives at your podium right with your baton. This takes some practice – not only are they playing early to make you happy, the sound from the stage is getting to them late, so they have to completely ignore what they hear…which is the opposite of what you've been making them do since they first started band. It's a difficult situation, but it's worth it – audiences love it!!

This is a typical offstage setting with the brass behind the audience. I've exaggerated the distances to 110 feet so that the timing issue is 0.1 second. (Sound travels at approximately 1,100 feet per second, depending on the temperature.)



No. 1 – the back of the band must play 0.1 seconds early so the sound gets to you precisely as you conduct.

No. 2, the off-stage brass must do the same thing.

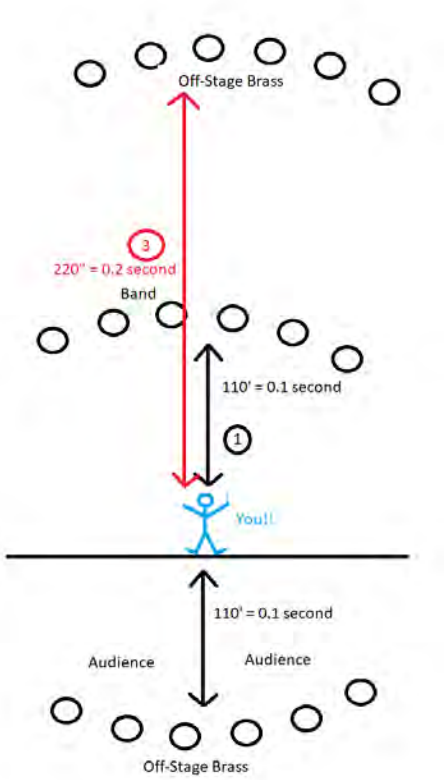
No. 3 – notice this: the off-stage brass are playing a tenth of a second early, but the band sound is reaching them a tenth of a second late. The result is that music does not line up by approximately a 1/16th note (at quarter note = 120).

The back of the band is hearing the off-stage brass 0.2 seconds late, so they must ignore the off-stage brass.

People sitting by the off-stage brass also hear this timing discrepancy. Fortunately, they're so excited by the off-stage brass that they rarely notice.

So, the only person hearing things correctly is you!

If you move the brass off-stage behind the band, they must play even earlier than the band, but the precision you're hearing on the podium is exactly what the audience is hears. Brass behind the stage provide a wonderful, mysterious, distant effect, but it does not make the blood boil nearly as much as brass right behind the audience.



Regardless of where they are, the off-stage players MUST blow warm air through their instruments while they're waiting for their cue or they'll be ***FLAT***!!!!!

Adjusting Pitch While Playing

If you play trombone, you can tune on the fly simply by moving your slide. Horn players can make intonation adjustments with their right hand; covering the bell more lowers the pitch and opening it raises it.

The rest of the brass adjust pitch solely with the lips; practicing bending the pitch helps students learn to adjust, enabling them to correct intonation while playing. (See "Slippery Groove" in Chapter 19 Flexibility and Slurs.)

Trumpet, euphonium, and tuba players can make adjustments by moving valve slides on the fly or using alternate fingerings, but the lip is a critical component for many pitches. It is preferable to move slides whenever possible to produce a better tone and create less work for the player.

> **Note:** In addition to setting the tuning slide, valve slides must also be tuned on horn, euphonium, and tuba. They are designed to be pulled out somewhat at A440, giving these instruments room to adjust for groups tuning sharper than A440. (Trombone F, D, and or E-flat attachment slides must also be tuned.)

Matching Pitch

How do you teach matching pitch? A turner gives visual feedback, but it's important to know that tuners use equal temperament. With this "bias," you'll hear musicians say things like, "The major third of a chord must be lowered 13.7 cents." (A cent is 1/100th of a half step.)

That's true – the major third of an equal temperament instrument is 13.7 cents too high, but it makes more sense to tell students to place the third where it belongs…their ears tell them what's in tune, not their eyes. (Here's an article that goes into much more detail.)

Students need to be taught to listen for beats, heard when two pitches are almost (but not quite) in tune. The beats represent the difference in frequency between two pitches; the closer the pitches are, the slower the beats, and the farther apart the pitches are, the faster the beats. The time-honored advice is that when you hear beats, adjust your pitch – if they slow down, you're going in the right direction; if they speed up, move the other way.

The internal ear must hear in tune; it controls the lips and the vocal cords. It is probably easier for most students to adjust their vocal pitch than their instrument's pitch, so learning to sing in tune is very helpful. Once students can do that, they are in a good position to playing in tune.

Tuning the Trumpet

To start, a list of trumpet intonation tendencies is on the next page. The F and G at the top of the staff are usually sharp. The F can be brought down with the 1st valve slide; the G can be lowered by lipping or playing it 1-2 (the 7th partial). This may be too flat, but if the G is the 3rd of a major chord, it probably will be dead on.

> FYI, some people state that F and G are not actually sharp; the problem comes from lipping up the D and E below them (which are flat) – when you get to the F and G, you keep lipping up, forcing them sharp.

Directors often give their students a chart to fill out, using a tuner to find out their instrument's intonation tendencies. This is okay for a starting point, but it fails to consider where the note is in a chord. For example, the third of a chord must be lowered below what the tuner indicates as in tune.

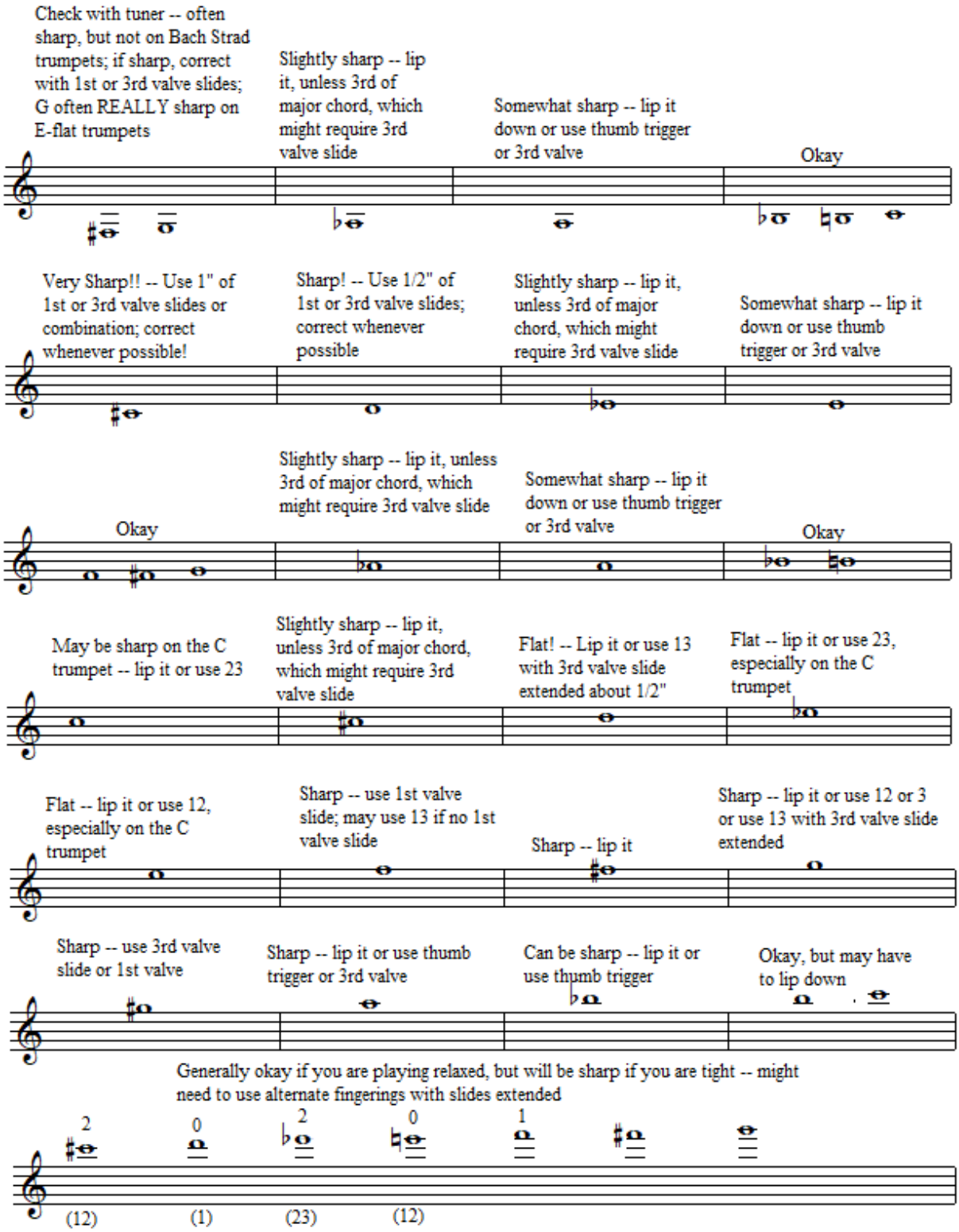
> Rule: Your ear must override what you "know" about intonation tendencies.

Be especially careful with Benge trumpets; over the years, I have taught 8 students who played them. The fourth line D and fourth space E-flat and E-natural were so flat on 50% of these instruments that alternate fingers had to be used. (Henderson used to own several Getzen E-flat trumpets that had even bigger problems with these notes, so it's not just Benge.)

Trumpet Intonation Tendencies

(But Use Your Ears First!)

Corrections listed in general order of preference

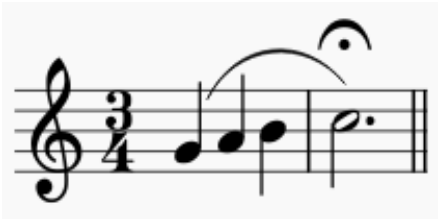


Tuning Slide

It seems that little needs to be said about brass tuning slides, except that they should be kept greased and move with little effort. Tuning needs to be adjusted to the pitch of the ensemble, and it is often necessary to pull the tuning slide to adjust for the sharpness of most mutes.

The trumpet is easy to tune; a good place to start is with the main tuning slide extended half an inch, putting most trumpets at A440. (The half-inch pull gives a little room for adjustment for playing sharper than A440.) FYI, a trumpet slide pulled more than ½ inch probably indicates someone playing too tight. Listen to the tone color – if it's small and bright, they're too tight.

It is tempting to do what many band directors do – go down the line checking the pitch with a tuner, but it's not a good idea. Why?



A brass player with a good ear will match a tuning note even if the tuning slide is in the wrong place. To be certain the student is tuning the instrument and not just matching pitch, have the student slur G A B C (written pitches) into the tuning C. (Transpose this for the other brass.) By the time the trumpeter reaches the C, they are playing where the horn is, not where they hear the tuning note. If the instrument is out of tune, move the slide and repeat the process, several times if necessary, until the student arrives dead center on the tuning note.

> **Note:** I have watched MANY students check pitch on recitals; they often make the same mistake: they realize they are out of tune, so they move their tuning slide, but they fail to check the re-pitch! I've even seen students move the slide in the wrong direction. Remember, it only takes a few measures of rest to move a tuning slide, so move the slide. Do not continue to play the entire piece out of tune!

Why not let the student lip the instrument in tune? The farther the pitch is lipped, the more the tone suffers…and it's more work for them, especially if they're lipping up. Sooner or later, the student will have to stop lipping the pitch and they will go flat or sharp depending on where the slide is set.

Rule: It is critical that you insist on good tone quality when tuning your brass players!

"But I can't afford to take that much time to tune each student!!!" Oh, really?? You can't take the time to be sure your students play in tune? There's something else you need to know:

Brass instruments are very stable in their tuning – once tuned, they stay in tune. (This is assuming that the instrument has been warmed up to pitch before tuning by blowing warm air through it until you can feel it coming out the bell.)

Woodwinds have much greater problems with pitch stability, so you need to check them daily. Tune the brass on Monday and forget about them until the following week (unless you hear something wrong). In fact, once a semester may be enough, so do it right once instead of a lot of times incorrectly.

> No one is more competitive than British brass band musicians. During their competitions, if someone accidentally kicks a mute over 7 measures after letter B in the test piece, every band that follows will have someone kick a mute over 7 measures after letter B in the test piece. (The judges

are behind screens to prevent them from identifying the bands. That kicked-over mute could be a signal!!)

A bit obsessive? Does it sound like they would be careless about anything?? Nope, not a chance, yet English brass bands stop tuning 2 weeks before competition because brass instruments don't change pitch.

Note: The trombone is the only brass instrument that can be played perfectly in tune (or out of tune!). This is not a low brass text, but I did want to mention that trombonists typically tune with their slide slightly extended so that they can raise first position notes when necessary. (Some trombones have a spring in first position allowing the slide to be pulled in farther than normal.)

Young students (including college musicians) frequently play above the center of pitch, especially in marching band. It happens from playing louder than they can handle and/or playing beyond their endurance. Forcing the sound results in blowing the instrument sharp. Even when the student has recovered, they often continue blowing sharp. The director tells the student to pull their tuning slide: a sharp player with a flat instrument results in an in-tune player with a shrill tone quality who gets tired too fast because they must hold the flat instrument up to pitch.

FYI, if you must choose, it is better to tune sharp than flat because you must relax to drop the pitch instead of tensing to raise it.

There are tonal clues that the student is not playing in the center:

1. Above center results in a brighter sound which is small and tight. It is harder to play loud and reduces flexibility and endurance.

2. Below center results in a darker, dull, lifeless tone that does not project.

FYI, I played above the center of pitch when I first got to college. Dr. Swift helped me find where my trumpet should be tuned, which was great, but the problem was that if I did things wrong, I would be out of tune. Dr. Swift knew this and told me I was NOT to move my tuning slide under ANY circumstances, even if the band director told me to move it! (Sounds like blasphemy!) He further instructed me to correct any pitch errors by relaxing and dropping the pitch. It took some time, but I eventually learned how to play correctly. (It's very possible that Dr. Swift told our band director what was going on – all I remember is that I did not get in trouble while I learned to relax.)

Vicious Cycle. Many trumpeters fall into this trap: they're too tense, so they play sharp and must tune flat. If they ever relax, they instantly go under pitch and immediately tighten up to come back up to pitch. After a while, they play tight all the time. It's a vicious cycle, and they need your help to break it.

How do break this cycle? Get them to relax and produce a good sound when tuning and to use pitch/lip bends to find out where the trumpet itself is tuned. Yes, it takes time more time than saying "pull out," but if you take the expedient route, you perpetuate the problem.

How do you teach pitch bends? The basic concept is blowing the instrument sharp and then flat in a sine wave pattern. Do this three times; as you come up to pitch on the third time, stop where you hear the best sound and it's easiest to produce the tone. This is the center, the "slippery groove," or the "sweet spot" and is where the instrument itself is tuned. If the instrument is not where it's supposed to be, the

tuning slide must be moved. Repeat until the sweet spot is in tune without lipping. (More in Chapter 19 Flexibility and Slurs.)

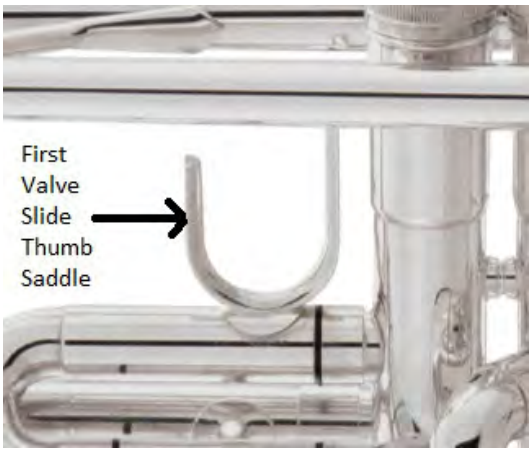
The effect is like a small siren. If this is difficult, try sirens on the mouthpiece for a while, then sirens on the trumpet with the valves halfway down, making the harmonic series weird so that sirens are possible). Then do pitch bends with the valves used normally. (It's like riding a bike – hard until you can do it, and then it's easy!)

FYI, it is much easier to bend the pitch flat than sharp; typically, you can bend halfway to the next partial, but you'll be lucky to raise the pitch even a quarter tone.

Trumpet Valve Slides

To excel on the trumpet, it is necessary to play in tune with a great tone quality – this can only be accomplished with the use of the valve slides. At first it is quite awkward to use them, but in time it becomes very natural. The great trumpeters use their slides — so should you!

Two of the major improvements in student trumpets over the years have been valve slides that move easily and the addition of the first valve slide thumb saddle. (The third valve slide ring has been around for years, but for decades it was almost impossible to move the third slide while playing.)



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Moving a valve slide affect all fingering combinations using that valve:

1st valve affects: 1, 12, 13, 123

3rd valve affects: 3, 23, 13, 123

The result is that any valve combination can be lowered except open and 2nd valve.

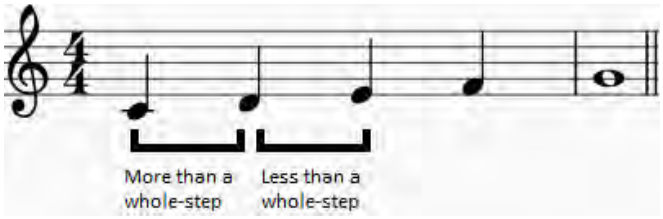
It is critically important that students use their slides to play low D and C-sharp in tune. Beginners rarely notice these notes are out of tune and quickly become brain-washed into hearing them out of tune. The entire band will groan about the trumpets' intonation, but your trumpeters won't not have a clue! The way to prevent this is teaching your beginners to use their slides.

"But, that's too hard for beginners!" Really?? Are trumpet players so dumb that they can only use three fingers?? It takes five fingers to play trumpet – three on the right hand and two on the left – yet band

directors continue to ignore teaching beginners to use their slides. (This is probably a hold-over from the days when slides didn't move, and thumb saddles didn't exist on beginner instruments.)

Seriously, do you teach your woodwinds to use only three fingers? I'm telling you – trumpeters are at least half as smart as the woodwind. Teach them to use five fingers!!

Beginner books start trumpeters in the key of C (concert B-flat). One of the first things they learn to do is play the first five notes of the scale out of tune because the 3rd slide is in:



So, they learn to play out of tune from Day 1. Does that sound like a good plan??? Start your beginner trumpets with the 3rd valve extended ½ inch.

"What about low E-flat???? And A-flats??? They'll be out of tune!!!!"

In the early 1990s, I examined virtually every beginner method book to determine when E-flats and A-flats were introduced. Without exception, it was MANY pages into the book before this happened. In one book, it didn't happen at all! (They finally showed up in the 2nd volume.)

So, we're going to teach our beginners to play out of tune because of notes they're not even playing. It does NOT make sense. Period.

Start with the 3rd slide out; when you get to E-flats and A-flats, teach the students to pull their slide in. It's not hard! Trust me – they can handle it!

> Confession: Before college, I knew I was supposed to extend my slide for low D and C-sharp, but I didn't until my senior year of high school when I decided I better get serious if I was going to major in music. So, I started using my 3rd slide…and I couldn't hear the difference! That's crazy! That's at least an eighth of step for low D and a quarter-step for C-sharp!
>
> After another fifty years of playing, I can't stand to hear these notes out of tune, so why didn't I hear them as out of tune back in 1970? My theory is that after playing them out of tune for 8 years, I lipped the notes sharp <u>despite</u> having my slide in the correct place.

Third Valve Slide

The third valve slide needs to be extended about one-half inch to correct intonation for the 1-3 valve combination and about one inch for the 1-2-3 valve combination 1-2-3 (unless you're playing the flat 7th partial). The only notes normally fingered 1-3 are low D and low G, and the only notes normally fingered 1-2-3 are low C-sharp and low F-sharp. On many instruments, however, the low G and low F-sharp are too low and end up more in tune with the third valve slide in. On these instruments, only D and C-sharp need to be corrected. Use a tuner to find out which notes to correct for your instrument.

"Why is this necessary? Can't trumpets be built that aren't out of tune?" It is possible – one way is to have six valves, making it a heavy, expensive instrument, and there are compensating systems

developed for euphoniums and tuba that could be applied to the trumpet, again making it heavy and expensive.

Here's why the use of valve slides is necessary – I call it intonation math.

Intonation Math

We're using incorrect values in this example to make the math simple. We'll assume that the B-flat trumpet is 100 inches long (it's actually 56.6 inches long) and we'll assume you add 10% additional tubing to drop pitch a half step. (it's closer to 8.3%). Using these assumptions:

2nd valve drops pitch a half step by adding 10% of 100 inches; the 2nd slide is 10 inches long

1st valve drops pitch two half steps by adding 20% of 100 inches; the 1st slide is 20 inches long

3rd valve drops pitch three half steps by adding 30% of 100 inches; the 3rd slide is 30 inches long

Playing low D (1st and 3rd valves), we have:

a 100-inch instrument length, plus

the 20-inch 1st valve, plus

the 30-inch 3rd valve, which equals

150 inches of tubing

To go from D to C-sharp, we need to add a half step, requiring 10 percent additional length:

10% of 150 inches = 15 inches additional tubing required

The only valve left is 2nd valve, which is only 10 inches long – we are 5 inches short!!!

We get the additional length tubing by extending either the 1st or 3rd valve slides 2.5 inches (which adds 2.5 inches for the top tube plus 2.5 inches for the bottom tube, a total of 5 inches).

It's not a design flaw but the reality of physics that requires the use of valve slides.

Some trumpeters choose to lip the notes in tune and not move their slides. While this can produce an in-tune pitch, tone suffers because the trumpet is still sharp and the player is bending the pitch down, resulting in a deterioration of tone quality.

As mentioned in Chapter 19, when you practice lip slurs with either 1-3 or 1-2-3, you should extend your 1st or d 3rd valve slide since all the overtones of these combinations (except the flat 7th partial) are also sharp. Why play out of tune when it's so easy to fix??

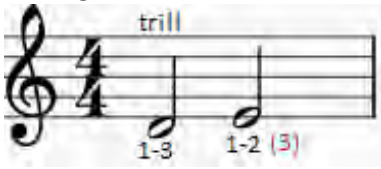
First Valve Slide

The first valve slide can be used to lower notes played with the first valve or the 1-2, 1-3, or 1-2-3 combinations. This is particularly helpful in lowering fifth-line F's, high A's and high B-flat's that are sharp.

Choice of Slide

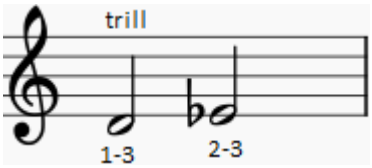
It makes no difference if you use the first or third slide to correct 1-3 or 1-2-3 intonation. However, some fingering patterns make either the first or the third valve slide easier. Two examples:

Trilling low D to low E:



This awkward trill is easy using 3rd valve for the E instead of 1-2. Try it both ways! Using the 1-2 fingering, you would extend the 3rd valve slide and both notes would be in tune. Using the 3rd valve slide will not work with the substitute fingering, so extend the 1st valve slide instead. Both notes are in tune.

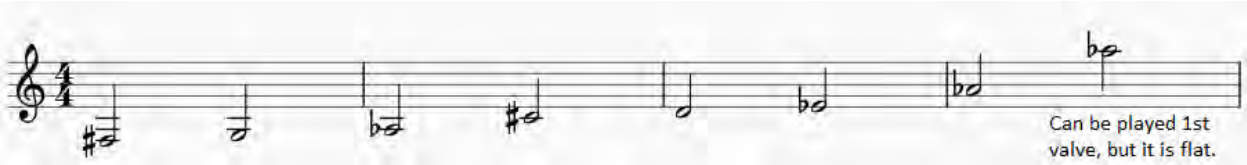
Trilling low D to low E-flat:



Using the third valve to correct the low D would require that it be pulled in for the E-flats and pushed out for the D's, just as fast as the trill. Much too hard! However, by using the first valve slide to correct the D's, the E-flats are in tune.

Why? The only time air goes through a valve slide is when it is depressed. Take your third slide completely off the horn. You can still play *The Carnival of Venice*!

For years, drum corps instruments only had two valves. Of the 31 notes between low F-sharp and high C, only the following 8 pitches could not be played:



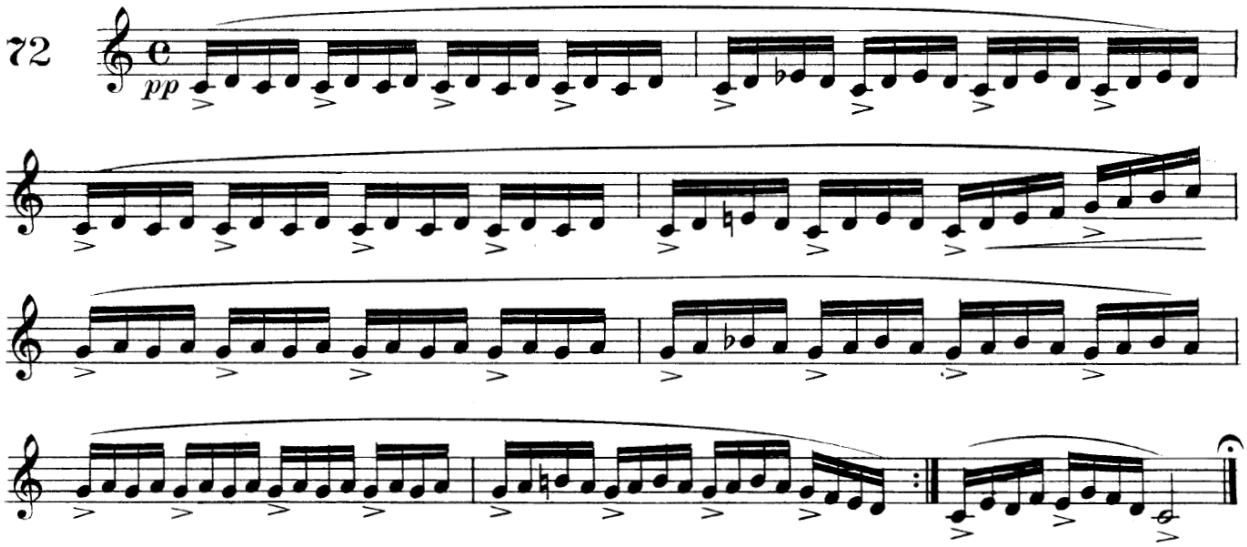
Leave the Slide Out

The only notes requiring the third valve slide to be pulled in are the 2-3 combination E-flats and A-flats (unless using alternate fingerings). If a passage has no E-flats or A-flats, you can start with the third slide out, play thousands of D's in tune and never have to move the slide! It only takes a split second to look at a piece to see where you must have the slide in (E-flats and A-flats); the rest of the time it can be extended.

Therefore, it is not necessary to move a slide back just because you move to the next note. If leaving the slide out makes the next note out of tune, put the slide back. If it doesn't make any difference, leave it out.

Consider this example from the Fourth Study of Clarke's *Technical Studies* – there are 32 low D's. In the 1st measure, low C is unaffected by the 3rd slide's position, so start with the 3rd slide extended and leave it out,,, until you get to the E-flats in the second measure, which involves moving the 3rd slide back and forth. (It can be done!)

If you must choose, pull the slide in – the pitch of the E-flat will be more noticeable than the D because the E-flat is at the top of the phrase. Since the D is ascending into the E-flat, a sharp D leads into the E-flat. After the 2nd measure, leave the 3rd slide out– there are no more 2-3 notes to be affected by the 3rd slide.



Or, you could start with the 1st slide extended – you can play all the way to the E-natural in measure 4 without moving it. Push the slide in for the E – back out for the D' and in for the C's and then you're good until the last measure. The 3rd valve slide is the better choice here – push it out for the D and leave it for the rest of the measure. If you used the 1st valve, you'd have to move it 3 times.

Sometimes you can't win – in this exercise, neither slide is the better choice.

Teaching Use of the Valve Slides

It is easier for a beginner to learn to use valve slides than older students whose habits are firmly established. It seems an incredible task when an older student makes the decision to use valve slides. Simply remind them that as a beginner they thought they would never learn fingerings that are now second nature. In a relatively short time, they will be comfortable using their slides and no longer play out of tune.

If a student wishes to be wonderfully proficient, I recommend the Second and Third Studies from Clarke's *Technical Studies*. When a student plays these at the marked tempo (half note equals 120) and adjusts as necessary for all the D's and C-sharps, they will be skilled! At this level, if you cannot adjust for a note, it is doubtful that anyone will be able to hear a problem.

Alternate Fingerings and Intonation

Standard fingerings use the shortest length of tube to produce the desired note, keeping the note as low as possible in the overtone series, reducing the likelihood of missing the note. However, many notes can be played with more than one fingering, each with its own intonation tendency. For example, A is normally fingered 1-2, but it can also be played with the 3rd valve. (This is true for any note fingered 1-2 – just remember "1 and 2 makes 3.")

Note: You must practice alternate fingerings for them to become comfortable.

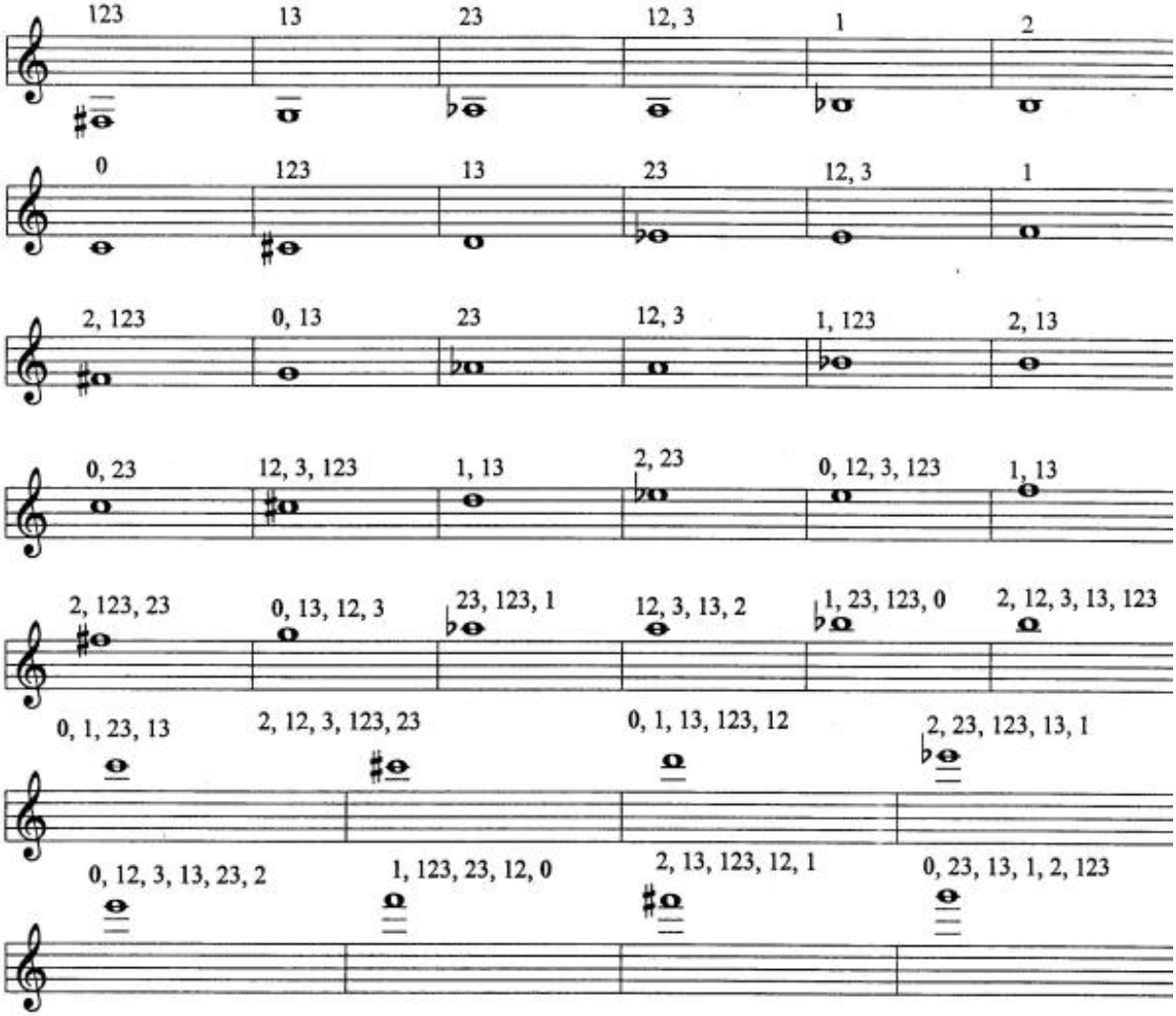
FYI, manufacturers intentionally make the 3rd valve slightly longer than the 1-2 combination to lower pitch of the 2-3 combination; if they didn't, 2-3 would always be sharp and we'd have to kick the 3rd slide even more often. As a result, 3rd valve A is slightly lower than A fingered 1-2.

When would you want to do this? If the A is the third of an F major chord, it will probably be more in tune with the 3rd valve. Or, you could play low E with the 3rd valve if it's the third of a C major chord. (Of course, you can always kick the 1st valve slide out.)

In the Clarke exercise on the preceding page, you could play the E's and A's 3rd valve and leave the 1st slide out the entire time. It makes for some awkward fingerings; each person has to decide what works best for them.

If you have four valves (on most piccolo trumpets, euphoniums, and tubas), remember that "1 and 3 makes 4." The fourth valve on the piccolo trumpet provides additional low range, such as "low" F (is ANYTHING low on the piccolo?), which is fingered 1-4. Generally, the 4th valve slide must be pulled more for low F's than when it is used as a 1-3 substitute. Piccolo trumpets often have valve slides, offering further options for correcting intonation.

The following page has a listing of alternate fingerings for the trumpet:



Fingerings are listed in the approximate order of intonation. The first fingering given is the normal fingering. Some fingerings affect the pitch slightly, and others affect it severely. Anytime the 7th, 11th, 13th, or 14th partials are used there will be intonation problems.

Tuning the Horn

Alright, I've saved the best for last. Yes, I'm being sarcastic – tuning the double horn is complicated! It's two horns in one, sharing the leadpipe and bell. The valves do double duty, affecting F and B-flat sides at the same time. The result is an instrument with seven to ten slides that must be tuned.

On most horns, pushing the thumb valve shortens the tubing from F to B-flat, but there are some that are reversed, and there are some that allow the player to choose. Descant horns exist in B-flat (9') and F (6') for playing high Baroque parts, and there are even triple horns (12' F, 9' B-flat, and 6' F).

Remember from Chapter 18 Holding Positions that the right hand MUST be in the correct position to tune the instrument. A good clue is the placement of the valve slides – if they are pulled excessively, its's a strong indication that the right hand is incorrect.

One final thing before we begin – this process only needs to be done twice a year for young players. As you're about to find out, that's a good thing!

Here we go:

1. First, some definitions:
    a. Main tuning slide – affects both F and B-flat sides.

    b. Secondary tuning slide – affects only one side of the horn. Some instruments have a tuning slide that affects only the F side, some have a tuning slide that affects only the B-flat side, and some have both.

    c. Water slide – some horns have additional slides that exist primarily to facilitate dumping water from the horn. (These can also function as secondary tuning slides.) How do you know? If the bow of the slide is basically down, its purpose is to collect water where it can be quickly dumped by removing the slide.

    d. Valve slide – affects only notes played with the valve pressed. They're easy to locate – they're attached to the valve. On double horns, you'll see two sets of valve slides. The longer slides are typically on top and are in use when the horn is in F. When the horn is shortened to B-flat, the slides underneath come into play.

2. The first task is to find the main tuning slide. How do you know? Start at the mouthpiece receiver and trace the tubing until you get to a slide. That should be it. Just to be safe, remove the slide and play a note on the F side. All you should hear is a buzz. Press the thumb valve (switching to B-flat); if you continue to get a buzz, the slide you removed is the main tuning slide.

3. Examine the rest of the tubing, checking each slide you find to determine if it affects one or both sides of the horn. Older instruments (pre-1970) tend to have a main tuning slide and a tuning slide that only affects the F side of the instrument. More recent instruments generally have a main tuning slide plus a secondary tuning slide for the F side and another secondary slide for the B-flat side. How do you find out what you have? Remove the slide and play on both sides – it will be obvious!

Time out to make sense of this:

If the horn has a main tuning slide plus two tuning slides (one for F and one for B-flat), the main tuning slide affects the entire instrument. The F and B-flat tuning slides allow you to tune one side without affecting the other.

If no B-flat tuning slide is present, the main tuning slide affects the entire instrument; the F tuning slide allows you to correct only the F side of the instrument.

Confused? I don't blame you! Time to start tuning.

4. On instruments without a secondary B-flat tuning slide, the ONLY way to change the pitch of the B-flat side is with the main tuning slide. After that is done, the F side secondary slide is used to tune the F side.

   Note: If you have a secondary B-flat tuning slide, you can begin with the F side. For simplicity's sake, I recommend always starting with the B-flat side – it works whether or not there is a B-flat tuning slide. The choice is up to you, but we're going to start with the B-flat side. (See #14 below for to tune starting on the F side.)

   Tune third-space C played on the B-flat side using the main tuning slide. Don't worry about the F side yet.

5. Tune the 2nd valve to B using the second B-flat valve slide (the lower set).

6. Tune the 1st valve to B-flat using the first B-flat valve slide.

That wasn't so bad was it? I hope not, because now things get messy. We're about to tune second-space A with the 1-2 combination…but 1-2 is a sharp, so we're going to adjust the B and B-flat a little under pitch, leaving the A a bit sharp. In other words, all three notes are slightly out of tune, which can be fixed with the lip or the right hand. Let's continue:

7. Mark how far the 1st and 2nd slides are pulled with a pencil.

8. Tune the 1st and 2nd valve slides to A by pulling them in a 2:1 ratio. Since the 1st valve slide is twice as long as the 2nd valve slide, you pull it twice as much as the 2nd slide to get the same percentage change.

Okay, we just destroyed the tuning for B and B-flat. It's time to compromise - look at the picture on the next page for step 9:

9. Move the 1st and 2nd slides halfway back to the pencil marks; the horn is now equally out of tune on 1st, 2nd, and 1-2 – the lip/hand can put them in tune.

10. Pencil mark at new position – this is very important! You must know where to put the slides after you dump water from them or put oil on the valve.

We're almost done – it's downhill from here.

11. Tune the 3rd valve slide to A-flat by moving the 3rd slide only. The reason it's okay to tune 3rd slide to A-flat is that horn players avoid the 1-3 and 1-2-3 combinations on the F side by switching to thumb-1-2 and thumb-2-3. There are still problems with the very lowest notes, but they're rarely played.

Time for the F side – don't worry…this is going to be easy!

12. Move the F side tuning slide until the F side matches pitch of the B-flat side; pressing and releasing the thumb valve will produce a color change, but there should be no pitch change.

    Note: this does not work on Conn horns, so use a tuner.

13. Match the 1st, 2nd, and 3rd F side valve slides to the B-flat valve slides – hold the valve slide down and use the thumb valve to determine if there is any pitch discrepancy. After you have done this, mark the position of the slides with a pencil!

    Note: For Conn horns, use a tuner.)

14. If you have a B-flat tuning slide, you can follow steps 5-11 on the F side. When you get to step 12, you'll match the B-flat side to the F side using the B-flat tuning slide, and in step 13, you'll match the B-flat slides to the F slides.

adapted from Steve Bidmead – Pixabay

There is another tuning possibility which eliminates steps 8-9 – by playing second-space A with the 3rd valve, you tune the 3rd valve slide to A. It's a simpler tuning process, but it has several issues:

1. The 2-3 combination is sharp. The 1-3 and 1-2-3 combinations are even worse than normal.

2. Finger facility is not as good for most people.

Here's a bit of good news – after horn is tuned, the students will quickly learn where the slides go; they will put them in the same place every time they pull them to dump water or oil the valves…which is why it's critical that horns are tuned correctly from the start.

Chapter 32
Fingering

Fingering is the easiest part of brass playing, so it is usually neglected. As the years go by, range, tonguing, lip slurs improve, but the fingers are still bad. Eventually, everything else is good…but you don't sound great because poor fingering hurts your playing: slurs aren't clean, the fingers and tongue don't align, you can't play certain passages. You finally decide to fix your fingers, but you have YEARS of bad habits to overcome.

It is inconceivable that woodwinds would neglect their fingers – they are such an integral part of playing these instruments. And they are just as important in brass playing.

> (Even worse, it's so much easier to finger brass instruments – we don't have to cover open holes and play multiple keys with each finger, so what's our excuse??)

The best long-term solution is up to you as a future teacher – make sure your brass players have good finger technique from the beginning. Insist on it, and when other playing issues go away, your students will be fantastic! When some of them become band directors, they will naturally insist on correct finger technique –soon the problem will no longer exist.

Review Chapter 18 Holding Positions for more details, but simply put – the fingers need to be arched like a piano player with the balls of the fingers on the valves. None of this flat finger playing pushing valves with the middle of the finger!

There is another thing – the valve needs to be up or down, not in between: fingers must move quickly. In the up or down position, the holes align: air moves easily through the instrument, producing a clear tone, and there is no confusion in the harmonic series. (We discussed this briefly in Chapter 19 Flexibility and Slurs.)

When valves move slowly, holes are only partially aligned; it's harder to blow, tone suffers, and you slide between notes instead of moving cleanly. (Yes, this is often appropriate in jazz, but slow fingers should be considered an exception, not business as usual.)

When you move your fingers quickly, there is an impact when the valve hits the valve cap; the impact should easily be heard when practicing fingering without playing. I like the word "click" to describe it – Doc Severinsen prefers "bang." No matter the word choice, the speed and impact are there.

Here's a bad habit – slow music means slow fingers. Nope. Slow fingers mean you smear between notes. It detracts from the music! The fingers move just as fast between whole notes as it does between 32nd notes.

The upstroke is a bit trickier. The spring doesn't push up that strongly, making it difficult to hear precisely when the valve is up. And, your finger does not have the definite stopping point it does pushing down. There are two opposing schools of thought on the upstroke:

1. Your finger should never come off the valve. Place dimes on top of the valves and play – they should not fall off. (Try this – it's not easy!)

2. Your fingers should lift off the valves – if they don't, you risk preventing the valve from coming up all the way. The faster the notes, the closer the fingers stay to the valves.

I've been taught both ways – for me, it works best if my fingers come off the valves. However, there have been times that I've noticed my fingers are not coming off the valves and yet my playing is very clean. My advice is to teach both ways and let the individual decide.

There is a way to make the upstroke easier to hear – loosen the valve cap slightly. It's annoying, but you can easily hear when the valve stops on the way up, making it much easier to hear the rhythm of the fingers.

Here are a few practice techniques to improve fingering:

1. Slow playing. The virtuoso violinist Isaac Stern practiced fast passages at 1/16th tempo, giving each sixteenth note four beats. Why does this help? The longer you hold a note, the more time for it to sink into your brain; brass players don't have the endurance of a violinist, so this is impractical, but half tempo is certainly reasonable.

   A variation on this technique is putting a fermata on a note you keep missing. Play the passage and stop on the trouble note, giving the subconscious brain a chance to understand what it needs to do. It is a quick and highly effective technique!

2. Altered rhythms. This technique is widely used by woodwind players and pianists. Why brass players don't is beyond me – do we really think we know as much as people who spend their entire life dealing with fingers?? We're probably too obsessed with our lips…

   I've written quite a bit about altered rhythms on my webpage. There are four main reasons they work:

   A. Boredom is minimized, allowing you to play a passage more times before you simply cannot stand it any longer.

   B. Rob Roy McGregor explained that playing the same thing over and over is unproductive after only 6 repetitions. Not only do YOU crave variety, so does your subconscious. Forcing yourself to keep playing it time and time again is inefficient.

   C. You pay greater attention to notes held longer, similar to the benefits of slow playing without the endurance issues.

   D. It is difficult to play a rhythm that differs from what's on the page; when you go back to playing as written, it's so much easier!

3. Altered articulations. This has the same benefits as altered rhythms. If you want to be super creative, combine the two! More information is available on my webpage

4. Additive technique – more information is available on my webpage.

5. Left-handed practice. This technique comes from James Stamp and is difficult to do on anything other than the trumpet. Its effectiveness was explained to me by one of Stamps' students: when you practice left-handed, the right side of your brain is engaged. The left side of the brain (which controls the right hand) says, "I can play it better than that!" Because of this, when you go back to right-handed playing, you will play it better. (He told me he practiced left-handed playing so much that he played that way better than most people could play right-handed.)

This brings me to another important point – practicing outside of the box. Here's what I mean:

> Many years ago, animal psychologists studied the difference between the way dogs and cats think. They came up with a simple experiment – all they needed was a cat, a dog, two rooms with a door between, and a portable wall that wasn't quite the width of the first room.
>
> First, the dog was placed in the second room with the door closed. A bowl of food was placed on the far side of the first room. When the door between the rooms was opened, the dog came out, smelled the food, and ate. In a short time, the dog was trained – when the door is opened, it's dinner time.
>
> Time to throw the dog a curve. The portable wall was put in the first room so that with a gap on each end. The door was opened, the dog came out and smelled the food. But there was a wall in the way. The dog jumped at the wall MANY times without success before they took pity on the dog and gave it the food.
>
> Time for the cat. The same training procedure was followed, and the cat quickly learned that dinner was on the other side of the first room. The partial wall was put in place – what would the cat do? Try to jump over the wall like the dog??
>
> Nope. They opened the door, the cat smelled the food, and it walked around the edge of the portable wall and enjoyed its meal.

The morale of the story is that most of us practice like dogs, repeating the same thing over and over without success. It's like trying to knock a brick wall down with your head; the sad truth is that if you do it long enough, the wall will fall, and you think the solution is an insane amount of repetition.

We need to think outside the box, like cats. If something isn't working or quits working, it's time to try something new. Not only is this approach far more effective, it's more interesting and will give you many ideas of how you can help your students learn challenging passages.

Alternate Fingerings

Many years ago, I taught a class in the history of music in the Romantic period. Unfortunately, I can't tell you who wrote this, but it has stuck with me since the early 1990s – "Perhaps the reason some individuals are virtuosi is that they know more fingering possibilities than everyone else."

Let's talk about this. Regular fingerings tend to be more in tune than alternate fingerings and they tend to be the shortest tube length available, putting notes lower in the overtone series and less likely to be missed.

Then why would we use alternate fingerings?

1. To correct intonation. Each fingering possibility changes the pitch of a note. (See the previous chapter.)

2. To facilitate fingering. Some combinations are easy, and some are awkward. See the chart at the end of this chapter.

Alternate fingerings must be practiced – the more they're used, the easier they become. They can be practiced in three ways:

1. While playing the instrument.

2. Fingering the instrument without playing.

3. Fingering without the instrument – you can use:

   a. The knuckles on your opposite hand.

   b. A tabletop or other firm surface.

   c. A practice device create for this purpose.

   I don't recommend practicing with the fingers in the air – it's important to feel the impact of the downstroke.

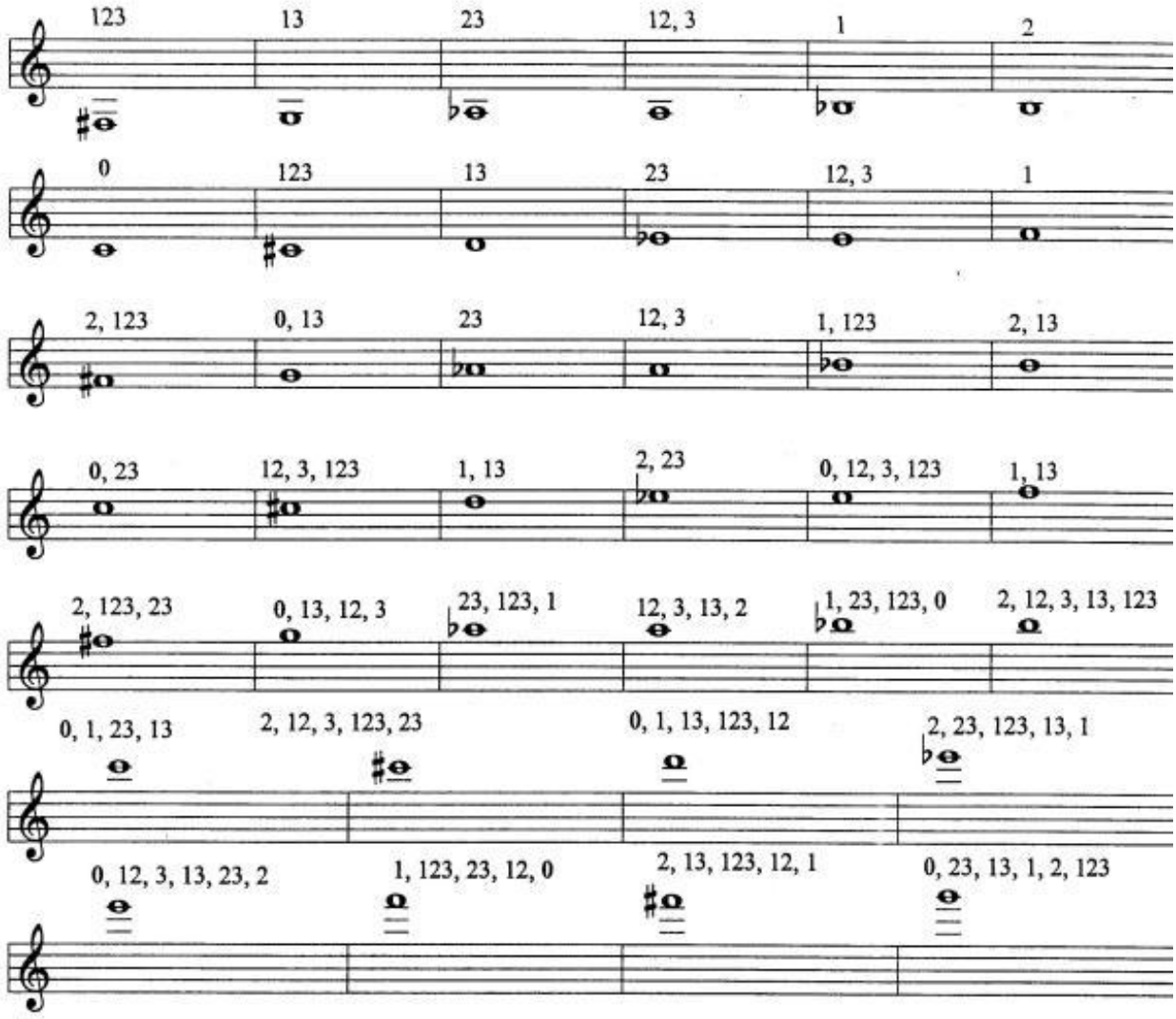
D'Addario WoodwindsWW-PG-01 Practice Grip Instrumental Hand Exerciser

You can practice like this anyplace, anywhere, especially when you're bored. You might as well get something good out that time!

Trumpet

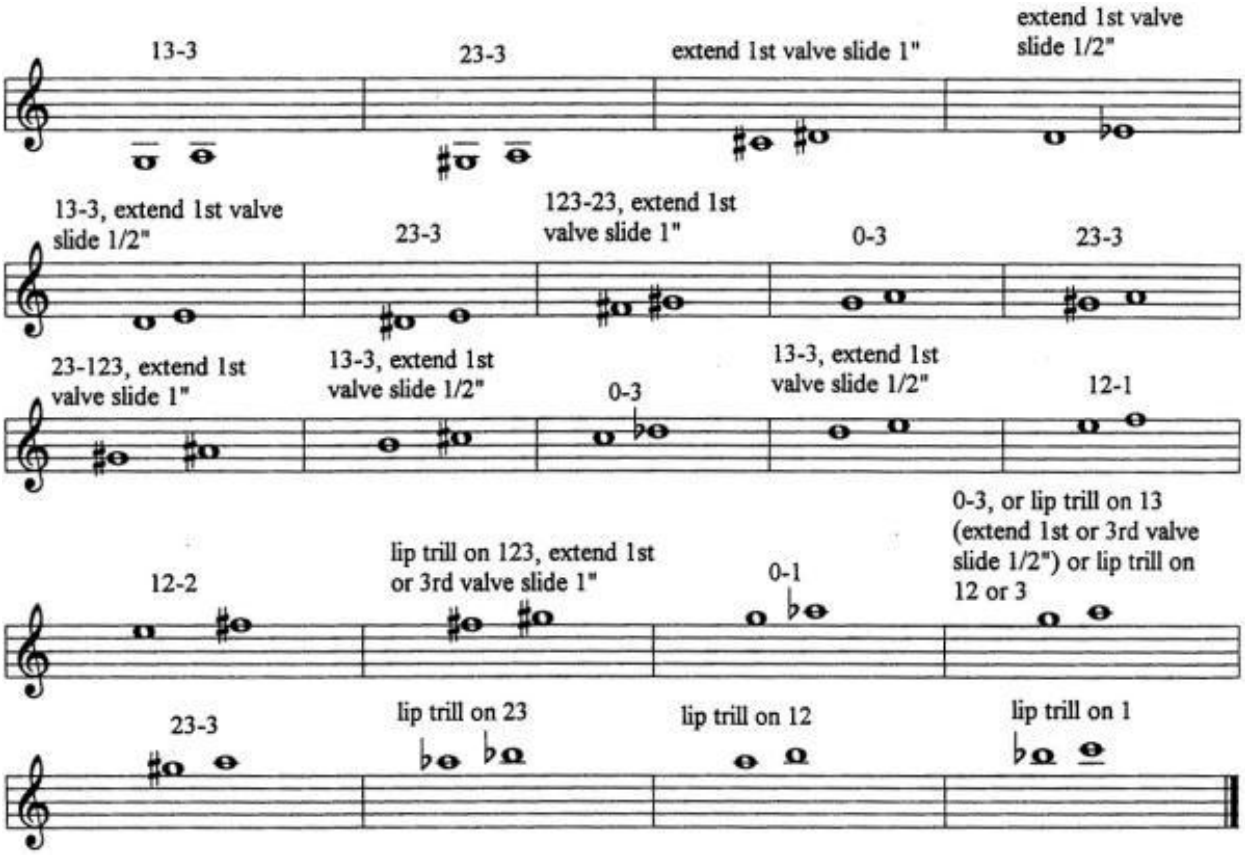
See Standard and Complete Trumpet Fingering Chart in the Appendix.

Alternate Trumpet Fingerings



Alternate Trumpet Trill Fingerings

Alternate trill fingerings for the trumpet are listed on the next page. When playing Baroque and Classical trills, the trill is frequently started on the upper note of the trill to increase the dissonance. In this case, it is a good idea to start on the normal fingering for the upper note and then switch to the alternate fingering from that point on. The ear hears the first pitch in tune and (incorrectly) assumes that the following trill notes are in tune.



Whole-step trills starting above this are usually done as lip trills.

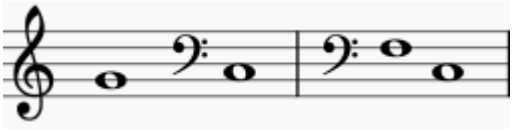
Horn

See Horn Fingering Chart in the Appendix.

Strictly speaking, the thumb valve places the horn in a different key. HOWEVER, it should simply be considered as another valve.

Playing on the 9-foot B-flat side tends to be more accurate since you are lowering in the overtone series than on the 12-foot F side. Despite this, fingering facility is the most important criteria in deciding whether to use the F or B-flat side.

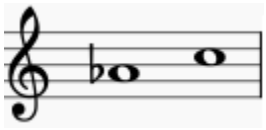
Mr. Farkas' recommendations on switching sides depended on the direction of melodic motion. From second-line G and below, he recommended the F side, with the exception of isolated notes from fourth-line bass clef F down to bass clef second-space C; these notes tend to work better on the B-flat side.



Use F- Side

Isolated Notes: Use B-flat Side

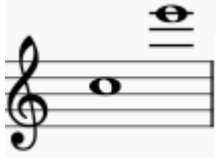
The fingerings for second-space A-flat up to third-space C are the same for the F and B-flat sides. If you enter this range from the F side, he preferred to stay on the F side until going above C. If you were already on the B-flat side and coming down, he suggested remaining on the B-flat side until you reached second-line G or lower.



Use F side or B-flat side – depends on melodic direction

Note: Conn horns have intonation problems between the two sides on these notes. It is best to stay on the F side until going above C-sharp.

Third-space C-sharp and above should be played on the B-flat side.



Use B-flat side

Possible Fingering Combinations for a 4-Valve Instrument chart is on the next page.

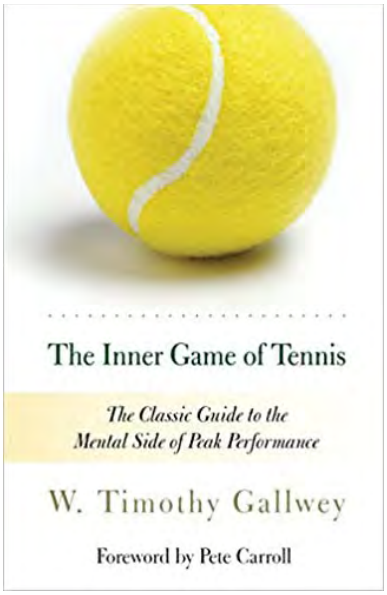
Possible Fingering Combinations for a 4-Valve Instrument			
Easy (20)	**Awkward (19)**	**Difficult (80)**	
0 to 2	0 to 1-2	0 to 23	2-3 to 4
0 to 1		0 to 13	2-3 to 2-4
0 to 3	2 to 3	0 to 123	2-3 to 1-4
0 to 4	2 to 2-3	0 to 2-4	2-3 to 1-2-4
		0 to 1-4	2-3 to 3-4
2 to 1	1 to 3	0 to 1-2-4	2-3 to 2-3-4
2 to 1-2	1 to 2-3	0 to 3-4	2-3 to 1-3-4
	1 to 1-2-3	0 to 2-3-4	2-3 to 1-2-3-4
1 to 1-2	1 to 4	0 to 1-3-4	
1 to 1-3	1 to 1-4	0 to 1-2-3-4	1-3 to 4
			1-3 to 2-4
1-2 to 1-2-3	1-2 to 2-3	2 to 1-3	1-3 to 1-4
	1-2 to 1-3	2 to 1-2-3	1-3 to 1-2-4
3 to 2-3	1-2 to 1-2-3	2 to 4	1-3 to 3-4
3 to 1-3	1-2 to 1-2-4	2 to 2-4	1-3 to 2-3-4
		2 to 1-4	1-3 to 1-3-4
2-3 to 1-2-3	3 to 1-2-3	2 to 1-2-4	1-3 to 1-2-3-4
		2 to 3-4	
1-3 to 1-2-3	2-3 to 1-3	2 to 2-3-4	1-2-3 to 4
		2 to 1-3-4	1-2-3 to 2-4
4 to 2-4	2-4 to 1-4	2 to 1-2-3-4	1-2-3 to 1-4
4 to 1-4			1-2-3 to 1-2-4
	1-4 to 1-3-4	1 to 2-4	1-2-3 to 3-4
2-4 to 1-2-4		1 to 1-2-4	1-2-3 to 2-3-4
	3-4 to 1-2-3-4	1 to 3-4	1-2-3 to 1-3-4
1-4 to 1-2-4		1 to 2-3-4	1-2-3 to 1-2-3-4
	2-3-4 to 1-3-4	1 to 1-3-4	
3-4 to 2-3-4		1 to 1-2-3-4	4 to 1-2-4
3-4 to 1-3-4	1-3-4 to 1-2-3-4		4 to 3-4
		1-2 to 4	4 to 2-3-4
2-3-4 to 1-2-3-4		1-2 to 2-4	4 to 1-3-4
		1-2 to 1-4	4 to 1-2-3-4
		1-2 to 3-4	
		1-2 to 2-3-4	2-4 to 3-4
		1-2 to 1-3-4	2-4 to 2-3-4
		1-2 to 1-2-3-4	2-4 to 1-3-4
			2-4 to 1-2-3-4
		3 to 4	
		3 to 2-4	1-4 to 3-4
		3 to 1-4	1-4 to 2-3-4
		3 to 1-2-4	1-4 to 1-2-3-4
		3 to 3-4	
		3 to 2-3-4	1-2-4 to 2-3-4
		3 to 134	1-2-4 to 1-3-4
		3 to 1234	1-2-4 to 1-2-3-4

Chapter 33
Psychology

Remember, you don't teach trumpet, horn, brass, etc. You teach people, which means an understanding of psychology can greatly help your teaching. I must admit that after teaching for almost 50 years, it is my favorite part of pedagogy. Change how someone thinks, and you change how they play!

Before we get into specifics, I want to list six books that have helped me be a better teacher:

1. *The Inner Game of Tennis* by W. Timothy Gallwey. (The link points to a more recent version than the one I've read.)



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Timothy Gallwey played tennis in college. Like so many people, he felt he lost more often because of his inner turmoil than to his opponent's skill. Following graduation, he simply could not let go of this – he studied and researched intently, even getting into the philosophy of China and India. He came up with the following way of thinking to address the "inner game" – what goes on in the mind while playing tennis, trumpet, horn, etc.

He determined we have two "Selves" – Self I (the conscious) and Self II (the subconscious). When things are correct, Self I sets the goals we want – hitting the tennis ball where your opponent cannot reach it or playing a difficult musical passage. The role of Self II is to move our muscles to produce the desired results. When things are wrong, Self I tries to control the body (and usually fails miserably.) Here's a great example from the book:

> You and I are playing tennis and you're way ahead. Wanting to win, I decide to psych you out. The next time we change sides, I comment, "Your backhand is great today! What are you doing different?" You think about it and decide that today you are keeping your wrist straight today.

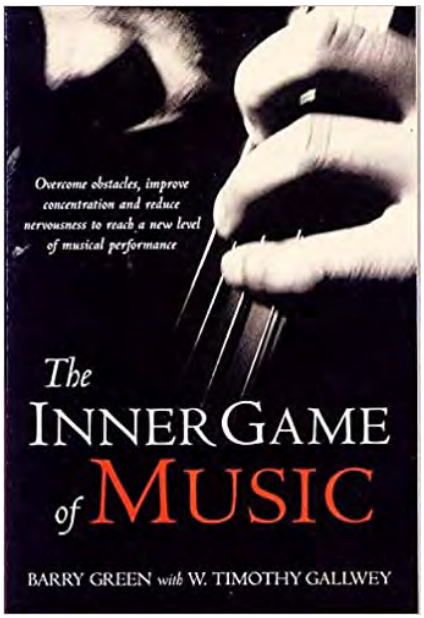
You just lost. Before this, you were putting the ball where I couldn't hit it. Now, you focus on keeping your wrist straight. Self I has taken over controlling your muscles and it's not very good at it.

But why would you want to read about tennis to teach music? It's simple – every time you see the word "tennis," think "trumpet" or "horn" and you will understand why this is a great book for musicians. Here's one example – Gallwey says that it's not enough to watch the tennis ball; you need greater concentration, so you need to watch the pattern of the tennis ball seams as

it's coming toward you. Obviously, you're watching the ball, but you are more intently focused when you watch the seams. In brass playing, it's not enough to get the correct pitch and rhythm; you need to focus on tone quality, the sound between the notes, the attack, volume, etc. When you are aware of all of these at once, you are completely focused on your playing and produce the best results

FYI, the first time I heard about this was in 1975 during a master class by Jeffrey Reynolds, bass trombone in the Los Angeles Philharmonic. This was the textbook that Keith Johnson used for his brass pedagogy course. (MANY of the principles incorporated into this book came from that class.)

2. *The Inner Game of Music* by Barry Green and W. Timothy Gallwey.



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Gallwey was occasionally asked to work with musicians; he didn't like doing it because he is not a musician; even so, he was able to help many people through the Inner Game concept.

Barry Green was principal string bass in the Cincinnati Symphony Orchestra and also taught at the Cincinnati Conservatory. He'd heard about the *Inner Game of Tennis* but hadn't read the book, so he wasn't too impressed. That was fine until he and his brother decided to take up skiing.

Green commented that he and his brother were very competitive, always trying to outdo each other. Green found a skiing coach who taught him how to lean into the curve and how to manipulate the ski poles. Hah! He'd show his brother a thing or two!

Meanwhile, the brother read the Inner Game of Skiing which focuses on setting goals and allowing the body/subconscious to deal with the muscles. It taught things like "become one with the mountain."

The big day arrived – the brothers met at the ski lodge and started on the beginner slope. Barry was using all his intellectual knowledge of what to do with his body and having a tough time of it. His brother, however, was following the Inner Game concepts and making remarkable progress. Before long, he was handling the pro slopes while Barry was struggling on the beginner slope.

Barry said that he then realized that he there must be something to this Inner Game business, so he started reading the books. Quickly impressed, he attended a session with Gallwey. At the

end, he told Gallwey that an inner game of music was needed. Gallwey agreed but said he was not the person to do it; it needed to be written by a musician.

Green agreed to write the book with Gallwey ensuring it followed Inner Game principles. Barry went back to Cincinnati and experimented with himself, tried it on his students, and convinced a number of his colleagues to participate. When he was done, he and Gallwey collaborated on the final version…and it's terrific.

Self I and II have different definitions for musicians – Self I is "that which interferes" and Self II is your cumulative musical experience: everything you've ever played or heard. Self I is the part of you that critiques while you're playing and frequently forecasts doom: "Oh, that wasn't good! I missed the G-sharp, and the rhythm was bad in measure 3. And the high C is coming up and I'm getting tired – I'm going to miss it!"

Sound familiar? That's Self I, and what information is it sending to the muscles? Nothing at all or, even worse, what you don't want to happen. (More on this in a bit.) Instead of Self I, you should be drawing on Self II, focusing on what you want the music to sound like.

> If you're a music major and wonder why you must go to all those concerts and recitals, it is to develop your Self II. If you've only heard one piece in your life, you don't have much to draw on; if you've heard thousands of hours of music, you have a large repertoire of what different styles of music should sound like.
>
> After all, how do you play something you've never heard? No matter how hard someone tries, they cannot describe it adequately. Remember, a sound is worth a million words!

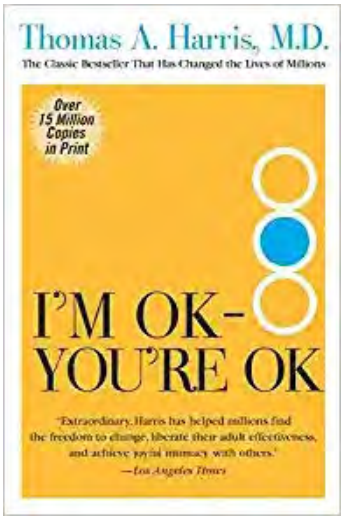
This is what Arnold Jacobs taught: wind and song. You must have air in motion, and you need to concentrate on precisely what you wanted to sound like (the song).

The Inner Game of Music is a wonderful book covering every aspect of music, including listening.

1. *I'm Okay – You're Okay* by Thomas Harris. This book discusses three simultaneous aspects of our personality – the parent, the child, and the adult.

   The parent is the part of us that causes us to look both ways before crossing the street, brush our teeth before going to bed, etc. The child part is our emotions – the child is critical for musicians: it is the center of our creativity.

   It is also our biggest roadblock to success. "But I don't feel like practicing." "I'll never be any good." Etc. The child wants its way, regardless of the consequences.



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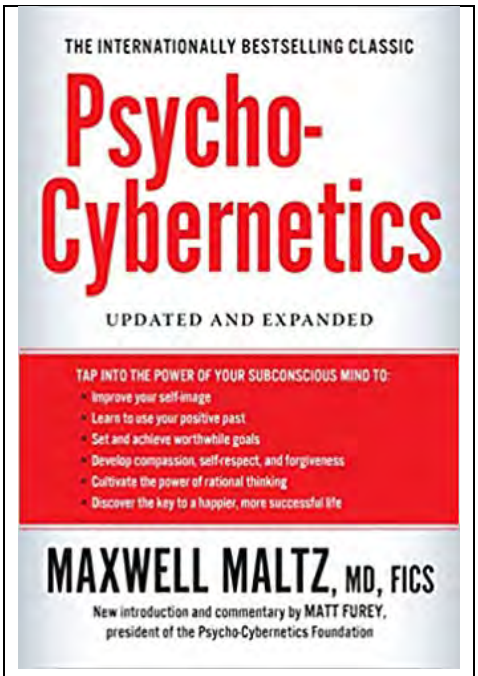
And then there's the adult that is supposed to be in charge. It's the part of you that develops while you're in college; you start making decisions based on what's best, what's right, etc. and not on your feelings.

If you're not practicing and studying like you know you should, your adult is not in charge!

2. *Pscho-Cybernetics* by Maxwell Maltz. (The link points to a more recent version than the one I've read.)



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Maxwell Maltz was a plastic surgeon who was perplexed by the realization that some women were emotionally transformed by his surgery while others couldn't see the changes in their appearance. Maltz realized that he had to deal with the psychology of the person as well as perform surgery.

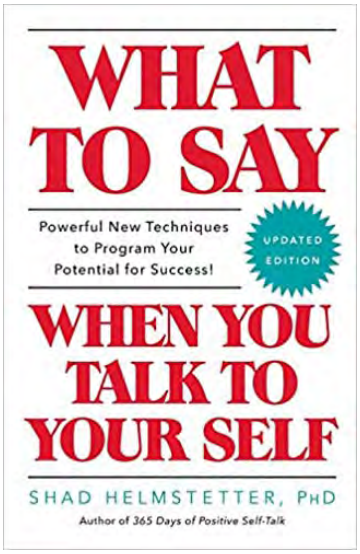
He determined we have a goal-setting mechanism within us, and we move toward our goals, whether good or bad. For example, the person who thinks they're a loser will get drunk the night before a major meeting. Missing the meeting, they lose the contract, and the person says, "See! I was right! I'm a loser." The truth is, seeing themselves as a loser caused them to take steps to make that happen.

Set the goals that you want to achieve and describe them as if they were a reality, something like, "I'm a dedicated musician who constantly strives to be the best." Okay, that may not be true, so go ahead and "lie" – you are not trying to describe who you are now, you are setting a goal for who you want to be.

So, one day you're standing around with your friends complaining that you're not getting anywhere, and a lightbulb goes off; you think, "What am I doing? I'm not someone who stands around and talks, I'm someone who strives to be the best musician possible." And you go practice.

Maltz also discusses course corrections in our life to those made by a ship at sea. He says that a ship goes straight ahead until it gets off course. When that happens, the course is changed, and the ship moves in the new direction. When we do things wrong, we need to make a course correction; after we make the change, we're good to go until the next time we mess up. This takes the sting out of "failure" by pointing out that it is a learning experience that resulting in a change in our lives; making a mistake is not a "bad" thing, it's a "good" thing.

3. *What to Say When You Talk to Yourself* by Shad Helmstetter. . (The link points to a more recent version than the one I've read.)



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The author observes that despite what we intellectually know to be true, our inner dialogue complete overrides it. For example, motivational speakers initially can have a great impact on people but within a few weeks the impact diminishes. Since the message was correct (or it wouldn't have worked in the first place), something happened inside the listener to override the message. He blames it on what we say to ourselves.

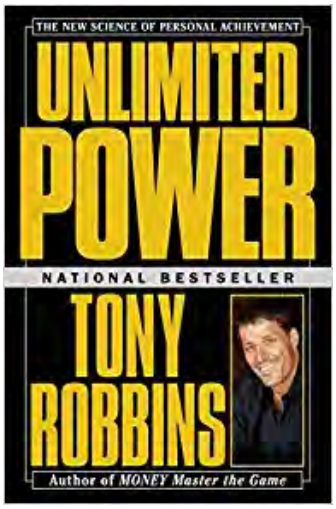
His personal revelation came when his wife was listening to weight loss cassettes (yes, this was a long time ago) in the mornings while they were getting ready for work. The tapes said things like, "You never eat too much" and "You always eat the right foods." He didn't feel like he needed to lose weight, so he ignored the recordings.

And he lost weight. That's when he realized that the inner voice dramatically impacts your life.

You need to decide what to say when you talk to yourself. How many times have you said, "I'll never get this" or "I'll never be any good"? Careful – they're self-fulfilling prophecies! You must change your self-image – all it takes is saying, "I practice every day – it's what I do." That may not be true now, but it WILL become a reality. (This is similar to Malt's philosophy.)

Consider this – if what you say to yourself makes a difference, think how what you say impacts your students!!

4. *Unlimited Power* by Tony Robbins. I love this book – there are so many life-changing possibilities within it. (I believe the title should be *Ultimate Power* because it teaches you how to change yourself, and what is more powerful than that??)



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Here's some background on Tony – as a high school student, he started a business which became so successful that by the time he graduated, he hired a manager to run it for him. Tony was basically retired at the age of 18. Fortunately (for us), the manager ran Tony's business into the ground. Tony quickly ended up in a one-room apartment and he was *STRESSED*!!! He gained 30 pounds withing a month.

Tony realized he was on the road to self-destruction. He took two steps:

He observed thin people when he was at a restaurant and then started eating like a skinny person. He calls this "act as if" – he acted as if he were a skinny person and quickly dropped the 30 pounds.

Tony got every self-help book he could find. Many people buy these books; they don't read them, and they don't follow their advice, so they often don't work. Not Tony. He studied the books thoroughly and followed their advice. Unlike most people, he began seeing patterns and how different techniques complimented each other. He put them together into his own philosophy, which I have found to be very powerful.

Here's another story about Tony – you need to understand that he is not like us, which is why we should consider his wisdom.

Tony is doing a little better financially, but not enough, so he decides to do something dramatic. He goes to the U.S. Army and tells them he will teach anything they want, and he'll do it in half the time and at a much high success rate than the current process. The colonel (or whoever) says, "That's very interesting…we could certainly use more efficient and effective training methods. How much do you want?

Tony replies, "$50,000." (That's more like $120,000 in todays' economy.) The colonel thinks, "This is a bargain – we've got bombs that cost more than that – and we've got thousands of troops that could benefit." The colonel says the fee is agreeable if Tony is successful.

Tony is excited! He asks, "What do you want me to teach? Strategy? Logistics? Some other academic-style class?"

"No, not that. Pistol shooting. I want you to teach our men how to become marksmen at a very high percentage and in half the time."

Tony said he gulped…he'd never held a gun in his life. His dream of a great payoff began to vanish. Instead of giving up, Tony said,

"Okay, but before I can do that, I have to meet with your top 3 marksmen for several hours."

So, Tony met the marksmen and "elicited their strategy" – he learned how a marksman thinks, how they approach their shooting. (In other words, he learned The Inner Game of Tennis Self I information.) Following this meeting, Tony designed his curriculum and taught it to the troops with most of them achieving marksman level in half the time.

And Tony got his $50,000.

That was in the mid-1980s – 35 years later, Tony is so successful and in such high demand that when he does a live appearance, he's standing in front of a camera in his living room while his audience watches him live on a jumbo TV. In the early 1990s, Tony's fee for a one-hour "lesson" was $2,000 ($3,700 in today's dollars). He said he didn't want to work with anyone who wasn't serious about changing their life, and that's why his fee was so high.

One of Tony's concepts that I have found to be particularly helpful is removing the possibility of failure from your mind. When you do this, it is amazing how creative you become in finding a solution.

Convincer Strategy

Another idea that I share with virtually all of my students is what Tony calls the "convincer strategy," aka, what does it take for YOU to be convinced. My version of this is the traveling valve oil salesperson. You've just taken the job, and you come into our building. Stopping by the low brass teacher, she is immediately convinced and is a loyal customer from then on.

Next you stop by my office. I'm interested, but I don't buy any valve oil. You're persistent and continue stopping by my office; after about three visits, I'm convinced – from that point on, I only buy valve oil from you.

The oil you sell is also great for woodwind keys. The third stop in our building is the clarinet/sax teacher. He very politely declines to buy oil, but <u>finally</u>, after about 20 calls, he starts buying from you.

The final stop is the voice teacher. (This valve oil is amazing stuff because it also helps the larynx produce better sounds.) No matter what you say, the voice teacher is not interested and NEVER becomes your customer.

In summary:

The low brass teacher is convinced the first time.

I'm convinced after a few times.

The woodwind teacher is convinced after 20 times.

The voice teacher is NEVER convinced.

How does this relate to music? Some people play something perfectly once and they <u>know</u> they have it. Some people require a few perfect repetitions to become convinced, some take 20 times through, and some people could play something right a thousand times and STILL not have confidence in themselves.

Susan Slaughter told me that Mozart had to play something 100 times in a row before he <u>knew</u> he could play it. Susan settled on 20+ times in a row, but she found that this created a lot of stress as she neared the final repetition. She was sick and tired of playing it which blew her concentration. So, she settled on playing a passage three times in a row perfectly – she said if you can do that, you own it. Period. If you mess up after this, it's because you weren't paying attention. You <u>still</u> own it! (Susan felt one time perfectly could be an accident, but three times in a row…no way!)

Over the years, I have realized that you choose your convincer strategy. There is no law or any other reason you must play something a certain number of times before you own it. The choice is yours!

Concerning the lack of concentration…imagine you're driving and get distracted by a beautiful view. Inadvertently, you turn in that direction and suddenly hear your tires hit the gravel on the edge of the road. Do you:

A. Pull off the road and decide that you can no longer drive? Or,

B. Keep driving and pay attention to the road instead of looking around?

I'm pretty sure you'll choose B. You never lost the ability to drive, you simply weren't watching the road. As soon as you do that, you're fine.

Finally, I want to tell you about Tony and the chocolate cookie recipe. Tony talks about the chef who spent 20 years developing the ***perfect*** chocolate cookie recipe, and then he asks how long it will take you to duplicate the chef's success.

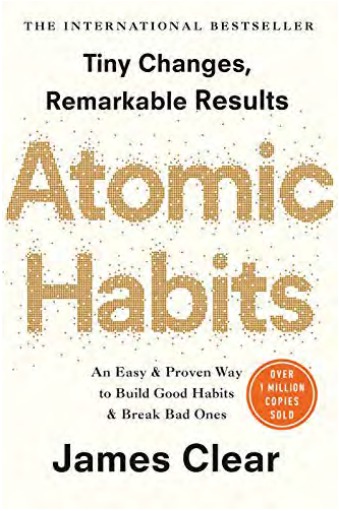
The answer…20 minutes, because that's long it's going to take for you to follow the recipe. The chef did all the hard work, all you have to do is take advantage of that. Which brings me to our great role models – they've done all the hard work figuring out what to sound like. All we have to do is imitate their success.

Tony has much more to say, but you're going to need to read the book!

In the early 1990s, Tony's fee for a one-hour "lesson" was $2,000 ($3,700 in today's dollars). He said he didn't want to work with anyone that isn't going to be serious about changing their life, and that's why his fee was so high.

Read *Unlimited Power* – you can change your life and that of your students!

5. Atomic Habits – An Easy and Proven Way to Build Good Habits & Break Bad Ones by James Clear.



I just bought this book and haven't had a chance to read it, but I've been following James Clear's blog for years. It is great! He scours the internet for ideas on creating good habits and eliminating bad ones and reduces his research into simple, manageable steps that produce big results. I am looking forward to seeing what I can learn from this book!

My Thoughts

Here are some things I've figured out:

Psychology is more important than physiology. It's a question of "mind over matter" – the mind almost always wins.

Bad habits fight back when you try to stop them. The solution? Replace them with good habits. Take two plants – water one and give it sunlight. Cover the other plant so it receives no light and do not water it. Which one thrives, and which one dies?? Starve bad habits by giving them no attention; focus on doing things correctly and you will soon make the desired change.

Fear

Fear keeps us from achieving our potential. It is important to remember that no matter how much we want perfection, we will never attain it. It does not exist! What?? Of course, it does!!! No, it doesn't. Decades ago, someone asked John D. Rockefeller, the richest man in the world at the time, ""How much money is enough?" He answered, "Just a little bit more." No matter how well you play something, it could always have been a little louder or a little softer, a little faster or a little slower, more emotional, etc., etc., etc.

There is no point in worrying about perfection – focus on sharing your music with your audience and helping them feel the emotion in the music. Whether they think you're a great player or not, if you look impressive or not – this is not the point. Lose yourself in communicating…you'll be too busy to be fearful.

It never hurts to remind yourself that no matter how you play, it will not change the course of the world. You won't cure COVID or create a plague. It's NOT brain surgery! Etc., etc. It's a chance to bring a fleeting moment of beauty into the world, not to change destiny. Ease up on yourself!!

"Big You, Little You"

This is a parallel to Self I and Self II from the Inner Game of Tennis. I call them "Big You" and "Little You." Big You must first decide how You want something to sound – remember, these need to be <u>musical</u> instructions, the actual sounds you want, <u>not</u> words trying to describe the sounds.

Little You desperately wants to please Big You by moving the muscles to get the results You want. For Little You to be successful, Big You must give feedback. There are three possibilities:

1. When you praise yourself, Little You" says, "Aha! I'm on to something. I'm making Big You happy!" This encourages exploration in the direction that was successful.

2. If there is no feedback, Little You says, "I guess that didn't work so I'll try a new direction," which may not be the right direction. In other words, Little You is lost, wandering around hoping to get lucky.

3. If your feedback is consistently negative, Little You" says, "There's no point…no matter what I try, I can't make Big You happy, so I'm going to quit trying."

Listen carefully to everything you play. If you catch yourself doing something right, take a moment to celebrate, even if it's "Wow! I sounded great during that rest!" Okay, I'm exaggerating, but you need to reward yourself to encourage good behavior from Little You in the future.

You also need to do this with your students. My experience is that the more you compliment yourself (when it's truly deserved), the easier it is to compliment your students. If they know your compliment was heart-felt and deserved, they will do ANYTHING for you. Why, they might even PRACTICE!

Language

Word choice is so important. Let's start with several words you need to remove from your vocabulary:

1. "Try" implies the possibility of failure. If I said to you, "Try to open the door to your room," you immediately begin to wonder what's up. Did I jam the door so you can't open it? Glue it shut? Something must be up because OBVIOUSLY you can open a door, so why did I use the word "try" instead of saying "Open the door"?

   "All right, students, let's try it again." – Bad language! This opens to door to failure.

   "All right, students, let's do it again." – Much better! This closes that door and opens the door to success.

   I like the phrase Yoda uses in *Star Wars* – "Do or do not. There is no try." Here it is on Youtube.

2. "Can't" is a BAD word! I call it the "C" word and I will NOT let my students use it in my presence. "Can't" limits the future, possibly even permanently. Some things can't be done – you can't jump over the moon – but you don't EVER want to say you can't play something. (I'm getting the shakes just from typing this – BAD, BAD, BAD language!!)

   I guess there's nothing wrong with saying, "I can't do it today" because that leaves the door open for tomorrow…but I still don't like it!

3. "Problem" – Here is a quick way to curse your students: tell them they have a problem with range, tonguing, slurs, whatever. Before you said something, they needed to improve that area, but now THEY HAVE A PROBLEM!!!! That is so much harder to fix than simply improving what they were doing.

I'm sure there's more words to eliminate, but these 3 are DANGEROUS!!

The High Brass Methods classes of 2020 and 2021 added several additional words:

1. "Hard" tends to imply failure, that something cannot be played. "Too hard" is even worse. I do not believe that great musicians EVER use "hard" to describe a piece of music. They probably use words like "interesting" or say something like "I better practice this slowly so I don't get psyched out. Once I've learned it, it will be easy."

2. "Issue" has the same connotation as "problem."

3. "Maybe" is too wishy-washy – it's a lot like "try."

4. "Don't"and "avoid" focus on what NOT to do instead of what should be done. More below under "Don't Say Don't."

5. "Support" referring to air makes me think of stone columns supporting a heavy roof. It encourages stiffness and tight playing. But, it's not breath "support" – it's air flow! "Support" implies muscle tension; "flow" implies motion.

6. "Bad" is a bad word to use. It tends to discourage students by implying what they are doing is not worthwhile.

7. "Unable" predicts the future as does "never." These words tend to place psychological block in students' minds that limit their potential, similar to "can't."

8. Something positive – "do your best" reduces the fear of failure and encourages students to strive for perfection while not requiring it.

"Support"

Varun Kulkarni – Pixabay

"Flow"

use – Pixabay

Don't Say "Don't" – I read this in *Reader's Digest* many years ago. The essence of the article is that the subconscious misses the word "don't." When you say, "Don't forget," the message received is "Forget." When you think don't miss the high C, Little You hears "Miss the high C." Bad phrase!!

Consider this – when you think "Don't miss the high C," you're actually thinking, "Don't hit the high B-flat (the flat 7th partial fingered open) because it's the wrong note and out of tune anyway! Remember,

the subconscious misses the "Don't," so you are focusing on the pitch you wish to avoid. If you're hearing B-flat, that's what you're mostly likely to play.

Another phrase demonstrating this is "Don't think about monkeys for 10 seconds." Try this with your students or friends. MOST people will start smiling within a second or two because they realize they must think about monkeys to make sure they're NOT thinking about them!

Every now and then, you tell someone to not think about monkeys and they don't smile. When the 10 seconds are up, ask them if they thought about monkeys – they'll tell you they didn't…because they thought about something completely unrelated, like carburetors in cars.

The more you try not to play something wrong, the more you think about the wrong, and that's what you get. We know that the secret is to not thinking about monkeys is concentrating on something completely unrelated, but that's not good enough for music. If you think about carburetors instead of the sound of a high C, you may only get air…not even the B-flat…because you are not sending instructions to the muscles (via Little You).

Here's the secret: <u>think about what you WANT to play</u>! When you do that, that's what you'll get.

> **Note:** On rare occasions, your body will let you down – you'll focus on the correct thing, but it's not what you get. Fortunately, this is a RARE occurrence. Here's a story to illustrate things going wrong:
>
> > The Berlin Philharmonic was in New York many years ago. The New York Philharmonic wasn't playing that evening, so the entire orchestra went to hear Berlin, one of the world's GREAT orchestras. Included on the program was Bach's *Brandenburg Concerto No. 2* with its ridiculously demanding trumpet part.
> >
> > I've forgotten who the trumpeter was, but it was NOT a good night for him. After the concert, he was heard to say, "I don't understand what happened. I put them in right." In other words, he was thinking the right thoughts, but his body did not cooperate.

Reframe – This comes from Tony Robbins. You all know about this – it's related to whether the glass of water is half full or half empty. You can choose to look at things in a positive or negative light. When you get tired in a concert, instead of focusing on how much playing you've done, remember that you have a lot of strength left! Remember from Chapter 28 Endurance that Dale Clevenger said that being tired was a special time because it's when you build your strength – that's reframing. Put it to use in your life – look for the good and you'll find it!

Another way of saying this is "Attitude is everything." I learned this from an elementary teacher in Bismarck, Arkansas. It's true!

Daydreaming

We all know that daydreaming is bad from the time we're little kids. Except that it's not. Two weeks before her senior recital, one of my friends started focusing on how great the performance would be. She imagined sitting in the audience watching herself come on stage with a beautiful smile and nailing the recital.

And that is exactly what she did! That "daydreaming" set positive goals for her performance. What do most people do two weeks before their recital? Worry about how bad it might go – and that's usually what they get.

Our culture values worrying – try sitting in the hallway with your head hanging down. When someone asks you what's wrong, tell them you're worried about your recital (or passing a test…whatever). I can guarantee that person will say, "It will be fine. Hang in there." They'll be supportive and encouraging.

Now try this scenario – sit in the hallway, leaning back against the wall with your legs out in front, your eyes closed, and a big grin on your face. When someone asks you what you're thinking about, tell them you're it's about how great your recital will be or how you're going to nail that test. There's a pretty good chance that someone is going to tell you to quit daydreaming and get busy.

Our culture values worrying (focusing on the negative) and it belittles daydreaming (focusing on the positive).

This all ties in with the goal setting mechanism we discussed at the beginning of the chapter – what you focus on is what you will achieve.

Focus on the positive! Because attitude is everything!

Chapter 34
Solving Problems

Sooner or later, everyone runs into problems. Depending on how they're handled, they can be a bump in the road that builds character and the ability to deal with issues in the future, or they can be a car crash that ends a person's playing career.

Most players who get into trouble are those who get away from the basics. Long ago, a trumpeter with the Cleveland Orchestra trumpeter read a newspaper during his warmup. It only took a few months for his playing to deteriorate to the point they fired him.

Rule: Prevention is best – warm up and review the basics daily to reinforce correct habits.

Consider this – every problem you overcome gives you the tools to help students with the same or similar problems. Therefore, problems are good for those who want to teach because you learn how to work through issues.

(Problems are not good for those who wanting to perform; in addition to slowing their development, problems can leave psychological landmines with the potential to interfere with great playing.)

When you practice, you learn how to teach, yourself first and then others based on your experiences. When your students are struggling, you'll find yourself thinking, "How would I solve this?" Your answer will be based on what you learned while practicing. This is why I say that -- practice rooms should be called self-teaching rooms.

There are 3 types of problems:

1. Serious problems – something has truly gone wrong because of an injury or the acquisition of a bad habit.
2. Minor annoyances – physical and mental fatigue that affect day-to-day playing but have no long-term consequences.
3. Minor annoyances that you think are serious problems. Problems are often only as serious as you think they are – no more, no less. The students likely to make this mistake are your smartest, most caring musicians who develop a bad case of "what if" –

   What if I can't ever play a high C?
   What if I get too tired to get through my recital?
   What if I can't double tongue?
   What if…
   What if…

The list goes on and on, limited only by the imagination of the student and fueled by their desire to play well and their fear of failure. Which brings me to the 10-year rule:

> One day in the mid-1990s I was complaining to Dr. Branstine about not having time to grade a test for this course. I wanted a quick turnaround so my students would get feedback on their efforts ASAP, but it wasn't going to happen. (I should have been grading the test instead of complaining!) He said to me, "Remember the 10-year rule." I had no idea what he was talking about, so I asked him to explain. He asked, "Is it going to change the lives of your students 10 years from now if they get their test back next Tuesday instead of tomorrow? Of course, it's not. How many things make a difference in 10 years?? If you can't decide, use the 20-year rule – not many things matter 20 years later."

Teach this to your students – it will help them keep their "problems" in perspective.

You also need to know about the "worry quotient." Everyone has the capacity to "freak out" over major things – it accomplishes very little, but it's certainly understandable for major concerns, such as:

> Life and death. The only thing bigger than this is your eternal salvation, if you're a religious person.

These are hugely important, so we'll call them Level 1 issues. There are level 2 issues, such as:

> Marriage and divorce. These can make a difference for as much as 50+ years, but you can always get divorced or remarried. Not life-and-death issues.
>
> Career choice. How you spend 40+ hours a week of your life for 40 years. If you're a teacher, you are potentially influencing the career choices of all your students. Big! But not as much as Level 1.

Level 3 issues include:

> Where you work. If you're teaching, does it <u>really</u> make a difference <u>where</u> you teach? The job is the same once you shut the band room doors.

The levels go on and on, continuing to decrease in importance. At some point, you reach the level of your senior recital (which is when I usually discuss this with students). Not life and death, not marriage and divorce, not career choice, etc. It's important, but not THAT important!

Even further down is passing a class; below that is passing a test…down, down, down until finally you reach the level of losing a penny. You're not going to get worked up about that!

Time to make my point – most of the time we make things a Level 1 issue – life and death – when they're not. If nothing worse is going on in our life, we lose our perspective. If you were about to walk on stage for your senior recital (Level 20 or so), and you found out your best friend from high school was in a horrible car accident and might not live through the night (Level 1), suddenly your recital wouldn't seem very important. You'd walk on stage, play the stupid thing, and go to the hospital.

The worry quotient is our capacity to freak out and our tendency to make things more important than they are. It's not that we intend to do this…it just sneaks in, a little at a time. The cure is to ask yourself how important something is and will it matter in 10 years. I always add that I sincerely hope perspective is never forced on you…because that means something bad has happened in your life.

Air

By far, most problems are symptoms of insufficient air that disappear when it is used correctly. Let me explain:

If you know much about Sherlock Holmes, you know that his nemesis was Professor Moriarty who lurked behind the scenes of criminal activity in London. Unaware of Moriarty at first, Homes gradually began to suspect the existence of a mastermind behind London crime. Once he identified Moriarty, Holmes determined to eliminate him…permanently.

Professor Moriarty
Sidney Paget
Public Domain

Lack of air is our Moriarty. When we do not use enough air or use it incorrectly, problems manifest, such as:

Lips often feel stiff and unresponsive.

Tension in the throat (because of excessive tension in the abdomen).

Poor endurance and increased mouthpiece pressure.

Poor intonation.

Increased body tension reducing flexibility, slowing fingers, and sluggish tonguing (especially double- and triple-tonguing).

Bad upper and low ranges.

Poor tone quality.

Reduced flexibility.

Difficulty playing loud or soft.

On and on…

You can frequently cure what appears to be a totally unrelated problem just by using more air. Even if the problem doesn't go away, it will be greatly minimized.

Lack of air can be described as:

Insufficient quantity (because of excessive tension or simply not blowing enough).

Too slow.

Thin. (See "Thin Air vs. Thick Air" in Chapter 14 Relaxation).

How do you fix air issues? Away from the instrument. Mr. Jacobs said when you pick up an instrument, it's like picking up a file cabinet full of memories, many of them good and too many of them bad. When you need to make changes, the fewer memories you must fight, the better. He called this principle, "Strangeness permits change." Practice just the mouthpiece, play standing on one foot, anything that is out of the norm.

Correcting inhalation is best learned without the instrument. Show the body (Little You) what you want to happen so this knowledge can be transferred to your playing of the instrument. Mr. Jacobs would work with a student's breathing; when he was satisfied the student understood, Mr. Jacobs would say, "Now pick up your instrument and play. Forget everything we did – just play."

My version is, “Show the body a better way and it will switch from what it was doing before.” Little You wants to do things the easiest and best way possible.

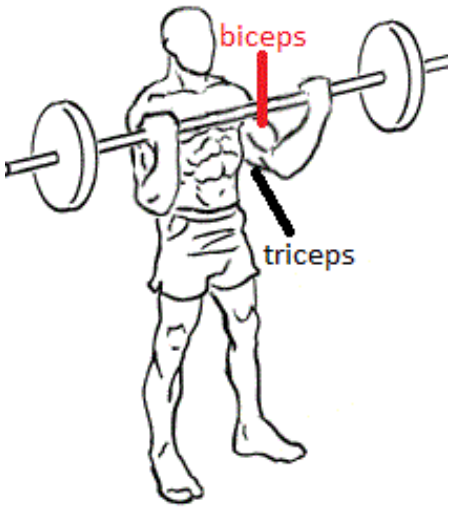
Rhythm

I estimate that 95% of the problems we face are related to air. Most of the remaining 5% are caused by poor muscle coordination created by poor rhythm.

There are two aspects of muscle coordination:

1. Opposing muscle groups function without isometric tension. Basically, the muscles cooperate, taking turns. Three examples:

   a. If you’re performing curls, you don’t want your triceps fighting your biceps. In this position, the biceps raise the barbell, but the triceps would push it toward the floor. The biceps should do all the work; the triceps should do nothing.

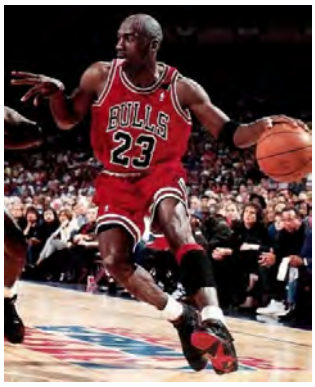
   Everkinetic - Attribution-Share Alike 3.0

   b. When we work on sirens on the mouthpiece, we are working on the coordination (cooperation) of the protractors and retractors.

   c. During puberty, the body is going through so many changes that the brain must is constant relearn how to control the muscles. Quite often, young people become quite awkward during this time – opposing muscles are not coordinating, resulting in jerking motions.

2. Muscles move rhythmically. Consider great basketball players – they are rhythm in motion, especially when they dribble the ball.

   Bad rhythm creates mistakes. Wiff Rudd told me that there was a time that he and Charles Lazarus were making a lot of mistakes in the Dallas Brass. While they were traveling between gigs, Wiff and Chuck listened extensively to their concert recordings to find out what was going wrong. They discovered that virtually every mistake was caused by inaccurate rhythm; it was true for the rest of the group as well. Wiff and Chuck fixed their rhythm and the mistakes stopped. A word to the wise!

   Michael Jordan – 1992
   wikimedia.org – public domain

   Consider how awkward it is to move your fingers and tongue at the same time. Any non-musician would think you’re crazy if you asked them to do it. Here’s how I describe it:

Imagine there is a small metronome controlling your fingers and another controlling your tongue. Not modern digital apps on your phone; old-fashioned wind-up metronomes. If you start two of them precisely together, they cannot maintain that precision. They are not that accurate, gradually they will phase out of sync.

What if we could attach a MIDI cable (musical instrument digital interface) to each metronome and connect them to a master metronome that told them exactly when to move? They would stay precisely together.

PublicDomainPictures – Pixabay

What is the master metronome that controls our fingers and tongue? Our internal rhythm. When it's strong, the fingers and tongue are locked together; when it's weak, they drift apart. Out-of-sync fingers and tongue are not a problem that needs to be fixed – they are a symptom of weak rhythm. Strengthen the rhythm, and the "problem" disappears. (In other words, rhythm is another Moriarty.)

How do you strengthen your rhythm? Internalize a strong, steady pulse. I've asked many students if they think it's easy or hard to keep a steady beat. Most say it's hard and are shocked when I tell them they're wrong: it is natural to be steady. Here are four examples:

When you walk, you keep a steady pace. You may speed up or slow down to a new speed, but it becomes steady at the new pace.

Dancing is similar – people tend to be rhythmic in their body movements while dancing.

For a given exertion level, your breathing rate is steady.

Same thing for your heart rate.

Note: This is my theory on how to internalize the beat:

1. Remember from "Scientific/Analytical" in Chapter 6 that when we think our speech muscles microscopically twitch as if we were talking.

2. Conduct the proper pattern – it is every easy to feel and maintain a steady pulse. Once that is established, your conducting muscles microscopically twitch when you feel the pulse even when you do not move your arms.

3. The pulse is therefore internalized.

I have no proof for this – anyone interested in a research project??

The reason most people do not maintain a steady beat is because no one made them do it. Let's face it, when you're struggling to find the right partial with your lip, you're just glad you got it! It doesn't matter if the note is a bit early or late.

Except that it does matter. I find it very interesting that when people hear something out of tune, they are practically offended by it. You frequently see them make a face as if smelling something bad.

BUT…if something isn't together or a rhythm isn't accurate, most people don't notice. Who catches this error? Percussionists! Rhythm is what they do – it is the center of their focus.

When was the last time a snare drummer wondered if the note would come out when they hit the drum? Never. Brass players think about it all the time, especially horn players. Has a snare drummer ever been concerned with hitting the correct pitch or being in tune? Never. Brass players, all the time.

> Joe Neisler told me about a lady who went backstage to talk to the first chair horn player who had played many wonderful solos that evening. She asked him, "What do you think about? Do you have mental images about what you're playing?" He replied, "No, I think 'I got this note and I got that note.' That's all."

I admit that there is <u>much</u> more to percussion than simply hitting a drum with a mallet, but my point is that for percussionists "WHEN" is everything. The notes will always come out, so they don't worry about the "WHAT" – just the "WHEN." Wind players need to be just as concerned with "WHEN" as percussionists.

Here's another reason – many people lose professional auditions because their rhythm is inaccurate. Think of it this way:

> You and I manufacture airplane parts. Your company is in Dallas and makes airplane bodies; my company is in Seattle and makes wings. We ship our parts to St. Louis where they are assembled…IF everything is built to the exact specifications. If not, the parts won't go together, and St. Louis will have to go to a lot of trouble and expense correcting our mistakes.
>
> Now we're in an orchestra – you play your part exactly in rhythm and so do I. Our parts fit precisely together. In a school setting where there are many rehearsals before a concert, things can be worked out over time, but time is money in a professional setting: there as few rehearsals as possible. If everyone plays the correct pitch in tune at precisely the right time, there are no ensemble issues, saving a LOT of expensive rehearsal time.

Rule: Insist on a steady beat and accurate rhythm at ALL times.

Metronome

There are three reasons to use a metronome:

1. Learn to keep a steady beat. A friend of mine loaned me a book in which a great set drummer was asked what he practiced. He answered that he turned a metronome and practiced playing the bass drum precisely with the metronome. That's all he practiced – nothing else, not rolls, not fills, not drum solos, just a steady beat. Because of his great sense of time, he was one of the most in-demand drummers in Los Angeles. (Sorry, I don't remember the name of the book.)

   After all, how often do you see someone perform with a metronome?

2. Set the tempo of a piece. We've talked about perfect pitch – there are musicians who take pride in setting a tempo without a metronome and then using the metronome to confirm their tempo. Some of these folks are right on the money!

3. Use a metronome to gradually work a piece up to full tempo. When we speed something up without using a metronome, we tend to make a substantial tempo change. The old "tick tock" metronomes sped up about 5% each time you changed the position of the weight, an increase that is barely noticeable. Digital metronomes allow a tempo change of 1 beat/minute, which is virtually undetectable.

Let's go back to the first point – learning to be steady. The sooner you teach this to your students, the sooner they'll become great players. Let me tell a story on myself:

In junior high, our band director told the trumpet section that we rushed the tempo. Only vaguely understanding this was bad, we accepted it as who we were…the rushing trumpeters. When I got to college, I was told not to rush, but the habit was strong, and I didn't understand its negative impact on my playing, so I continued to rush. Dr. Swift told me not to rush, so did Mr. Christensen, and I'm sure Mr. Lillya told me as well. (Notice that I was told what NOT to do.)

Several years later, I was teaching at Truman State University in Missouri; the St. Louis Symphony was having auditions for extra players (people who come in when someone gets sick, to play off-stage parts, etc.). At that point in my life, I wanted to play principal trumpet in a major symphony, so becoming an extra with St. Louis would be a big step in the right direction. After that, I would become a section player, and then I would become first trumpet.

So, I took this audition VERY seriously; I practiced extremely hard and was ready. I passed the first round of auditions and felt the second round went well. I went home expecting to be placed on the list.

Long before email, I waited and waited…and waited for a letter. I began to suspect the worse, and sure enough, the letter finally arrived and said thanks, but no thanks. I was crushed!

The St. Louis Symphony came to Truman State every fall for a two-day residency, so I already knew Susan Slaughter. The next time the orchestra came, I immediately found her and asked what I needed to improve. She said, "I can't speak for anyone else, but for me, it was your rhythm…it wasn't steady. If you were in the section, we could work with you, but as an extra player, you must already have good rhythm'; there's no time to fix it. We talked more, and Susan agreed to help me.

My first task was to go back to the Arban major scales with the metronome set on the eighth note pulse. Oh, my! It took me two weeks to train that metronome to follow me. (Actually, it was the other way around.) During one of my lessons, Susan said, "I think it's going to take you five years to break this habit." That seemed like an eternity!!!

(Sometimes when you practice with a metronome, you feel like it's dragging or rushing. Of course, it's not, but this sensation points out your rhythmic accuracy.)

During this time, I played first trumpet in the Quincy (IL) Symphony. I took special care to be precisely with the conductor. When I wasn't playing, I listened carefully to the other musicians to see if they were with the conductor. I quickly discovered that I wasn't the only person who rushed, but at least I was now trying to do something about it. (I call this listening critically – not to put someone down but listening honestly and accurately to evaluate their playing. When you do this, it isn't long before you turn those same critical ears on yourself, and that's when things improve.)

The next year, I took a new job at Western (North) Carolina University. I continued to work on own to deal with my tendency to rush. Several years later, I was in a lesson with Luther Didricksen at Northwestern University; he said, "You're rushing." I asked him what I should do about it – Arban with a metronome, eight hours a day for six months? I should be over this! The five years Susan Slaughter predicted were about up!

Mr. Didricksen replied, "Think steady." That was all he said… I was ticked!! I didn't say anything to him, but you should have heard me complaining in the practice room!! "Think steady – he just blew me off!! Instead of telling me how to practice eight hours a day to fix it! Think steady…what good is that advice??"

So, I imagined that I practiced Arban eight hours a day for six months – I completed the course of study. It was time to turn the metronome off…but what was going to keep me accurate without it?

And then I understood. I'd have to think steady!! Susan gave me the process, but Mr. Didricksen told me the end result! I have been obsessed with being steady ever since; I still rush occasionally, but not very often!

Remember "don't say don't." "Don't rush" conveys "rush" to the subconscious. "Think steady" conveys the desired result.

Note: Studio musicians frequently wear earphones with a click track (metronome), especially when recording a movie score where a big chord must hit PRECISELY with an explosion. They also wear them when a recording is made in layers – perhaps the rhythm section recorded the song earlier, so the brass players listen through headphones to hear what's already recorded as they add their parts to the mix.

Metronomes can limit interpretation – Mr. Christensen told me about a rehearsal he attended where the band director had a Dr. Beat metronome running through an incredibly loud PA system. He said the band played precisely with the metronome, but it was the most unmusical thing he ever heard – unmusical because the tempo was so rigid and did not adjust to the needs of the music.

When you use a metronome, you must be exactly with it. If you're going to ignore it, why bother?? Admittedly, it can be difficult for a brass player to hear a metronome when they're precisely with it…unless it's a LOUD metronome. You may need to move the metronome to a place closer to your ear…on the piano or on a music stand level with your head.

Practicing Correct Rhythm

You do not need to practice the instrument to work on your rhythm. In fact, I would say it's a waste of endurance. You must play the instrument to know that you are producing the correct pitch (which you

evaluate by tone quality), but you can clap rhythms, tap them with a pencil (or even snare drumsticks), or whatever. Once the rhythm is correct in your mind, it will be correct when you play. If, for some reason, it's not right, you will know it's wrong and fix it.

I know you know this: be sure you count rhythms! Make sure your students count rhythms! Counting exists to help us learn rhythms correctly. Once that is done, I believe it's okay to not count while you play, although I'm sure there are MANY who would disagree.

Mental Practice

I ask my students what part of the body plays the trumpet; they usually reply, "the lips." Or they may say, "the air." They're wrong –the brain plays the trumpet, horn, etc. The brain tells the muscles what to do and they do it.

What if you turned a metronome on and thought through the music? You could totally focus on the correct rhythm, developing an accurate concept that will be there when you play the instrument.

Mr. Didricksen got after me one day – he said, "You practice like a freshman." As a doctoral student, I didn't think that was high praise, so I asked him what he meant. He replied, "Because you don't think enough. You spend too much time playing." (I'm still guilty of that – my primary practice goal is maintaining my endurance, and that only happens while you're playing.)

Conducting

Before you can become a great conductor, you must learn the conducting patterns. How can you show the band what you want if you don't know where your arm goes next? Much repetition is required for that to become automatic. Do you need a license to conduct? A signed contract with a school? Of course not, you can start now, and it will help you be a better performer.

Why am I talking about conducting in a section on rhythm? Because conducting is the best metronome; it helps you internalize the beat and keep it steady.

Why not tap your foot? That's what we're all taught as beginners. Foot tapping is not as good as conducting for several reasons:

1. It's your foot. The fact that you're staying with your foot doesn't mean you're keeping a steady beat – it only proves that it's your foot. If Little You isn't keeping a steady beat, your foot won't, either, because it does what it's told.

2. The foot is a lousy metronome; it is so easy to change tempos. It doesn't feel awkward when you're unsteady.

3. All beats are the same – there is no difference in placement between beats 1, 2, 3, or 4.

   Although this does not specifically apply to our playing, foot tapping is distracting to the audience…especially when it's not together!!! If you do it all the time, it's hard to stop doing it during a concert.

How about conducting?

1. Yes, it's your arm, but…

2. The arm is a wonderful metronome – when you change speeds or are unsteady, it feels awkward and is very noticeable. Try it…conduct for a few measures and the conduct a beat too early or too late. It feels awful!

3. Every beat has its own place in the pattern, helping you catch mistakes. For example, you're singing while conducting and realize your arm is showing beat 4 while you're singing beat 1. Oops! You just caught a mistake. Try doing that with your foot!

How do I conduct and play at the same time? You don't. You can conduct with a trumpet, but it is awkward and tends to make the mouthpiece move on the lips unless you press too hard. With the rest of the brass, it's even more difficult.

Instead, conduct while singing your part. It's mental practice with a strong sense of pulse and where you are in the measure. Once things are correct in your brain, they will be correct when you play; if you make a mistake, you will know it's wrong.

Does your arm follow your singing or does the singing follow the arm? Does the band follow you or do you follow the band? Follow your arm!

Sometimes you will work with conductors who are great interpreters of the music but can't maintain a pattern to save their life. This can be a problem when you're counting rests – you look at the conductor expecting to see beat 2 and see beat 3 instead. You immediately assume you're wrong and go with the conductor. While you're looking back at your music, the conductor corrects their error. You don't see them make the correction, so you play in the wrong place. (Been there, done this.)

Simple solution – when you get a conductor who prioritizes emotion over pattern, conduct during the rests. Nothing major – rest the heel of your hand on your leg and conduct in a small pattern, maybe moving only an inch in each direction. When the conductor messes up, you'll know it's them and not you.

Other Issues

What about those few problems that aren't caused by rhythm or air? There are general approaches to try, but you must be flexible. If something doesn't work within the first 2 or 3 attempts, abandon it, and try something else. (Sometimes you can come back to the first approach after trying other things and it works; the brain has learned from the other things, enabling it to understand the first approach.)

You don't have to fix everything immediately. It may be a minor annoyance, or it could be caused by panic or fear of failure. Sometimes things just go away on their own…IF you don't make a big deal about the ***PROBLEM***!!!

Your first response must be to the inner child – fear increases the severity of problems, so calm the inner child to lower the anxiety level. Focus on the fundamentals of playing – great sound. wonderful use of air, and a strong, steady beat. There is a good chance that "problem" will simply fade away. Give it at a week or two before bringing in the heavy artillery and declaring war.

Okay, the problem didn't go away. Bummer! The next step is to find something the student does well and build from that. In almost every lesson with Norman Bolter (former principal trombone of the Boston Pops Orchestra), Mike Levine (of the Dallas Brass) was told, "Always start with what you CAN do." From there, gradually move toward the issue the student is facing while maintaining an extremely high success rate – I would suggest at least 90%. It's hard to be fearful when things are going well! (Another way to say it is, "Failure creates fear. Success builds confidence.")

Here are several examples:

1. Play it down an octave (or up an octave if it's a low passage). Establish a great sound, relaxation, confidence, steady pule, and be certain it is musically expressive.

   Take it up (or down) a half step at a time. Yup, that's going to be a problem if you aren't comfortable in every key. Learning to play in new keys is a good thing…it's a bonus prize. It also keeps your mind off the "problem." Be sure great tone is maintained despite the new key. (Mr. Didricksen once asked me, "Are you going let a few sharps keep you from sounding good?") Continue moving by half steps until you reach the desired range. While you're at it, go a couple half steps beyond what's required for additional confidence in playing what's written.

2. If the tongue is having problems, slur the passage. This gets the air going and allows focusing on tone and rhythm.

   Once everything is sounding great, try it tongued. If It doesn't work withing 2-3 repetitions, STOP!! You don't want to undermine everything you just accomplished. Go back to slurring and reestablish air, tone, and rhythm; gradually add the tongue in. (See "How to Teach Articulation" in Chapter 20 Articulation for examples.)

3. If slurring is the problem, you can try tonguing, but I suspect it will make things worse because tonguing is more complicated than slurring. Regardless, be sure you have constant air and lots of it!

4. If it's a fast passage, play it slower and gradually speed up using a metronome to keep the increases small.

5. If it's a slow passage, play it faster and gradually slow down.

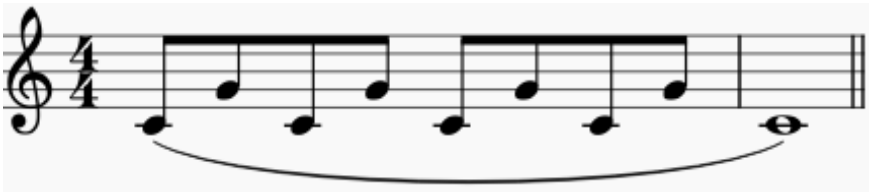
6. Play if louder and work your way to softer.

7. Play it softer and gradually increase the volume.

8. Etc., etc.

Mr. Chichowicz taught me to look for the intermediate steps. This is similar to what we just covered but may require some creativity on your part. For example, let's say a student is struggling with the following:

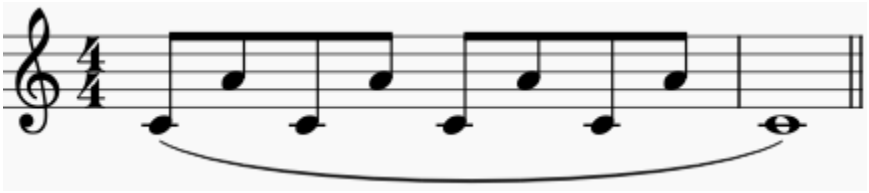
Have the student try this:



Yes, I used the word “try,” but that’s because must find out what the student can do and where they need to start. As soon as that’s established, we drop the word “try.” Better still, tell the student “play this” – no point in our opening the door to failure.

> (If the C to G slur didn’t work, start with a smaller interval. Remember, “Always start with what you CAN do.”)

Okay, your student can play this 2nd example. “Try” the first example – it the student can play it, you’re done. If they can’t, you need to create intermediate steps:



If this doesn’t work, make the interval smaller – C to A-flat. If it works, increase the interval to B-flat, and then to B, and finally, the octave.

Why stop there?? When you must perform the hardest thing you can handle, there is great room for doubt. Increase the interval until it’s a major tenth. That octave slur is going to be easy!

Problems are often caused by a lack of self-honesty. If what you’re doing isn’t working, admit it and find something that does. Trumpeters especially have problems with this: “I don’t need to go THAT slow!” or “I don’t need to take it down an octave.” Let the evidence speak for itself. Be humble, admit your limitations, and move in the direction of improvement. Start from where you ARE, not from where you think you are or where you wish you were.

We talked about the Inner Game. One of the techniques suggested is giving your permission to fail. Seriously, what do we do in music that is so life threatening?? So what if we mess up?? Once you remove the fear of failure, Little You can focus on finding the right way to do things.

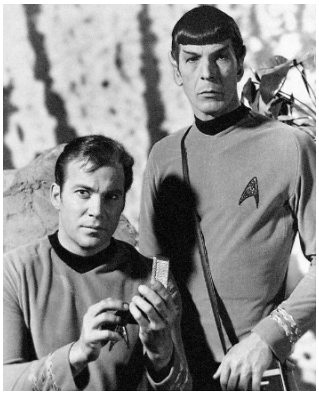
Shades of Gray

Mr. Jacobs used a technique he called "turning two shades of gray into black and white." It works!! If you are not sure you're doing something correctly, do it as wrong as possible. It is surprising how much that helps your understanding of what you are supposed to do.

In one of my favorite Star Trek episodes (The Immunity Syndrome), the Enterprise is under attack and taking a beating. Kirk turns to Spock and says, "What is that thing?" Spock replies that he has insufficient information. Becoming exasperated, Kirk says, "If you can't tell me what it is, can you tell me what it isn't??!!"

Spock replies with a list of things it isn't; as he does, they begin to understand what they're up against.

And they save the ship!



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When you do things really wrong, you develop a better understanding of what's right.

Remember from the Inner Game principles – keep the mind focused on the desired results (not on the body) and let the subconscious take care of the muscles without interference.

Finally, return to the basics to solve problems – good, simple melodic melodies, mouthpiece practice, and warmup materials. Use simple things to solve problems, not virtuoso passages where the mind is so tied up in the notes that you can't be aware of your tone.

Embouchure Change: Horror of Horrors!

The best practice is teaching your beginners correct embouchures and continuously monitoring them to be sure everything remains correct. Never take this for granted, even after your students have played for years.

Beginner embouchures are flexible, which is why you must watch them. Over time, their embouchures "harden," making change DIFFICULT.

During my internship semester, I worked with a junior high trumpet student (7th grade) whose mouthpiece was not in the correct place. I showed him where it should be and had him try playing. Instant success! The change was completed in mere seconds.

The next day I worked with a 10th grade trumpeter at the high school whose mouthpiece was also in the wrong place. Emboldened by success at the junior high, I showed him where his mouthpiece should be and had him try it. The result was TOTAL FAILURE! He couldn't play anything! He immediately went back to his incorrect mouthpiece placement.

I discussed these two students with the high school director, who at one point had been their beginner band director. He said he was careful to make sure that all his beginners did things correctly. After elementary school, his students went on to junior high under a different director. Unfortunately, this man had taught too long and was merely counting the time until his retirement; he did not care how his students did, and he certainly wasn't keeping an eye on their embouchures.

The elementary band director became the high school director; shortly after that, he began to "inherit" the brass students he had so carefully started. He was dismayed that so many of their embouchures had gone bad under the "care" of the junior high director. This taught me:

Rule: Never take embouchures for granted. Keep an eye on them!

Rule: Never assume that the people in your feeder program are doing the correct things.

When you start a new job, you inherit your predecessor's work. If they knew what they were doing, your students' embouchures will be fine. If they didn't know or didn't care…you'll want to fix embouchures. (Even when a director does things properly, things can go wrong, resulting in bad embouchures.)

My first word of advice is:

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Although it's not hard for a young player, an embouchure change for an experienced player is not to be taken lightly! I know this from first-hand experience:

1. I went through an embouchure change in high school.

2. I studied with Dr. Arthur Swift (my first trumpet teacher at Iowa State) who went through an embouchure change as a professional and helped me through mine. (More below.)

3. I have taught college students who made embouchure changes. The results were less than spectacular.

I think it was because of excessive playing, but I even fifty years later, I have no idea why my embouchure changed during my junior year of high school. I rolled my lower lip out and placed the mouthpiece bite on the red of the lip.

There is a horn embouchure like this called "einsetzen" used for very low notes. I'm not sure how much it's used today – the lip must roll back in to move out of the low range, tending to limit flexibility.

I played like this for many months and began to realize that it limited my playing. My band director was a trumpeter, but he had no experience with changing embouchures. Beyond agreeing that I

needed a change, he didn't know what to do, so he sent me to Luther College to take a lesson with Robert Getchell, composer of the *Practical Studies* that many of you know. Mr. Getchell knew that this would be difficult for me, so he advised me to buy Phillip Farkas' *The Art of Brass Playing* (which we discussed in Chapter 5 Two Contrasting Approaches).

I have been told that medical students often think they have every disease they learn about; they know a little but not enough to make an accurate diagnosis. I was the same way with Mr. Farkas book. It covers a LOT of embouchure issues (including einsetzen), many more than I had. Your students should NOT have access to this book, and YOU should be very careful reading it or you may self-diagnose problems you do not have. When I was assistant high school band director, I found a copy of it in the band library. I promptly put it in my desk drawer so that no student would see it.

I began using the correct embouchure again, but it did NOT work well, so I had to do all my rehearsing and performing with a bad embouchure. I can still remember how excited I was to finally get to the end of concert season so that I could ditch the bad embouchure for good! Making this change was NOT an instant success – far from it.

I spent my entire senior year struggling to make things work. I am convinced this was a mental battle, not a physical challenge, but I simply did not know what to do. Even worse, I wanted to be GOOD on the trumpet, so I was more focused on avoiding failure than on achieving success, a recipe for disaster.

I enrolled in college the summer after graduating high school and started trumpet lessons with Dr. Swift. At one point, he had been solo cornet in the U.S. Navy School of Music (now the Armed Forces School of Music.) He realized he needed to make an embouchure change, so he quit the old one cold turkey.

It was a disaster! He couldn't play ANYTHING, so he moved to last chair 3rd cornet. Nothing worked for several days and then he could finally play a tuning note – third space C. He could NOT move up a half step from that C to C-sharp. After several more days, he found he could move from C up a fourth to F, and a few days later was able to go to the F and come down chromatically to the tuning note. But he STILL couldn't go from C to C-sharp. It took two weeks of hard work before he could play C to C-sharp. (He told me that he might have been better off to not play at all for a few days before making the change.) Eventually, he worked through everything and played well again.

He was EXACTLY the man I needed, and he knew I needed help. I went to my first hour lesson on a Monday and we spent two hours together. Tuesday, I stopped in to ask a question, and we spent another two hours together. The same thing happened Wednesday through Friday and five more days the following week. Twenty hours of instruction to get me where I could begin to get past my embouchure change! I have never been able to repay my debt to him, but I work hard to pay it forward.

As a MUCH younger teacher, I encountered a couple students who had serious embouchure problems. I convinced one of them to change his embouchure; as expected, it destroyed his playing. What I didn't expect was his reaction – he was so disheartened that he gave up the trumpet entirely. I suggested he go back to the old embouchure, but he wouldn't do it; he just quit. He was crushed, and so was I.

A year or two later I had another trumpeter with issues. Fortunately, things weren't so bad that he had to start over, but I advised him to try euphonium for a while. Traditional wisdom says that most trumpet players with problems do MUCH better on euphonium as soon as they adjust to the bigger mouthpiece. He did NOT want to switch! Still, he was not a good trumpet player and I finally convinced him to change. (This reluctance to switch is typical of older students – they identify with their instrument; it is part of their persona, of who they are and how they think of themselves.)

I knew he wouldn't instantly become better…but he didn't get better at all. He had the same challenges on euphonium as he did on trumpet. Finally, I accepted the inevitable and told him he might as well go back to the trumpet. Surprisingly, he said he was happy on euphonium and stayed with it.

At least he kept playing!

I haven't made an embouchure change since, and that's been at least 33 years. Ruining one player and risking another was enough for me. Most people will not survive an embouchure change; it should be done only as a last resort.

I need to share a word of caution from Dr. Swift – IF you move the mouthpiece to a different position, do NOT use the words "higher" or "lower" to describe the change. The danger, especially for a good student, is that they will make the change, get comfortable with the new placement, and in a few weeks think, "I need to move the mouthpiece higher (or lower)." So, the student makes another embouchure change which will require a third change to get things back where they belong. Tell the student, "This is the new position for your mouthpiece," not "Move the mouthpiece higher (or lower)."

I want to share an alternative way of making an embouchure change Joe Neisler told me about. I've never used it, but he said he had great success. Here's the process:

1. Try different places on the lips to find out where the mouthpiece buzzes the best.

2. Once the student learns this new position, play on it for a total of 5 minutes. The rest of the day, goes back to the old embouchure.

3. Each day, the student uses the new embouchure 5 minutes more than the previous day. Soon, the student is only playing on the new embouchure.

4. Since the student doesn't quit "cold turkey" on the old embouchure, their playing is not destroyed.

5. The student gradually gains the endurance needed for the new embouchure. (Using muscles in a different position often affects strength and endurance.)

Here's a story about an embouchure change that took 20 years, told by Mr. Herseth during a clinic I attended in 1976:

Mr. Herseth (in his fifth year as principal trumpet in the CSO) and Armando Ghitalla (who later became principal trumpet in the Boston Symphony) were drinking and driving around Chicago. Mr.

Herseth was at the wheel when he ran into a bridge abutment, breaking off the steering wheel with his jaw! An oral surgeon worked on him every day for a month, rebuilding his jaw and teeth.

When the surgery was done, Mr. Herseth could no longer play trumpet. Not at all. The end of a brilliant career. One day, he went to a CSO recording session (I think it was Tchaikovsky's fourth symphony which has some GREAT trumpet parts. Remember, he can't play a note…so he sits down in the orchestra and nails the part. Mind over matter! He's cured!

Nope. He went home and couldn't play a note. His force of will in the recording session overcame all the physical and psychological trauma of the accident, but at home, well, there was no pressure on him, so nothing worked.

In time, he worked through all of it and continued playing first trumpet in the CSO. At the end of his story, Mr. Herseth said the accident was 20 years ago (1956) and only now, after all this time, was he able to put the mouthpiece in the same place it was before the wreck. Meanwhile, he was setting the bar for orchestral trumpet players around the world. Musical motivation is THE most important aspect of playing…period!

By the way, I heard Mr. Ghitalla play Mahler's fifth symphony a couple years before Mr. Herseth's clinic. I have NEVER heard a bigger sound from the trumpet! It was a PHENOMENAL performance!!

Mr. Ghitalla followed Mr. Lilla as trumpet professor at the University of Michigan. I was told that he liked to change embouchures; I don't know if was true, but after going through it once, I never wanted to do it again, so I didn't considered Michigan for my doctorate. I'm sure it was my loss, but the risk was too great.

Problems, Teachers, and Performers

Most people have problems – there are pluses and minuses:

If you want to perform, problems are not good; things are no longer automatic, your playing may take a dip while you work through them. How do you prevent them? Review the basics every day and keep your thoughts focused on the precise sounds you want coming from your instrument.

Since you're reading this, there is a very good chance that you want to teach, not perform. If this is the case, problems are good for you. No, I haven't lost my mind – let me explain. If you're going to progress as a musician, you must work your way through your issues, and that means you can help students. Since most people have problems, you can reach all your students.

Gifted players have a difficult time understanding why anyone has problems, making it hard for them to help the majority of students.

Who's going to have the better band:

A. the teacher who has never had a problem and can only help 5% of their students play well, or

B. the person who has struggled and is able to help everyone?

I'm pretty sure the answer is A. You don't have to like problems, just learn from them!

Part III

Instrument Specifics

Chapter 35
Trumpet Specifics

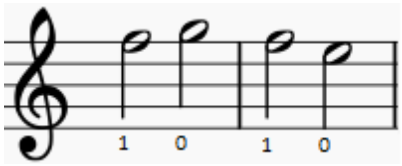
Trills

The ability to play trills is required for much of the trumpet solo repertoire, particularly Baroque and Classical works. From personal experience, I can tell you trills only improve with practice, so you need to get after it!

Trills are easier when the valve change shortens the tube – a shorter tube naturally wants to go up. They're more difficult when the valve change lengthens the tube – a longer tube wants to go down.

For example, fourth line D to E (1 to 0 shortens) is easier than 3rd space C to D (0 to 1 lengthens). It is easier to go against the grain on fourth space E-F (0 to 1 lengthens) because it's only a half step, although the lip must focus on the E or you'll end up trilling D to E or playing something like the last measure below. An easy fix for this is to finger the E with 1-2; by doing this, you're shortening the tube. It's almost impossible for the trill to be incorrect.

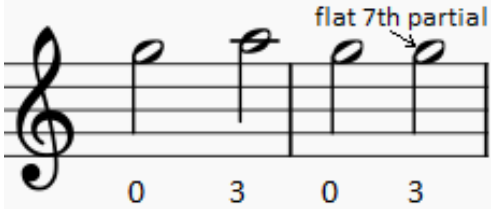
Top-of-the staff F to G is another challenging trill – it can easily turn into E to F. The lip must make the G happen or you will play E instead. (The tube is shortening, so the trumpet should want to ascend to the G, but the E is only half step away and less work for the lip.)



The valves must be all the way up or down; there is a tendency to use less than the full stroke of the valve resulting in a partial "half valve" and a distortion and muffling of the tone.

Half step trills are only as hard as the fingering – the lip does not need to move. On the other hand, whole-step trills REQUIRE lip movement, especially in the upper range. (FYI, I have an unproven theory: when you trill very rapidly, the lip centers on the half step between the two notes and does not move. This does not work with slower trill speeds.)

Trills at the top of the staff, so common in Baroque and Classical solos, are particularly challenging because the partials are so close together. For example, G to A can become G to G. (This happens with 0 to 1-2 and 0 to 3.)



Practicing Trills

Clarke's Fourth Technical Study is excellent for working on whole-step trills – it covers all of them! If you need to improve your trills, add them to your warmup. How many of the Clarke exercises? Be sure to practice the ones that have the trills required in your music, but the more you do, the better all your

trills will be. (If you want to be extra efficient, practice only the measures with trills; it's less interesting but more focused.)

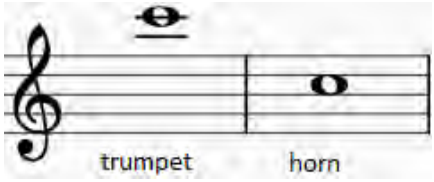
Remember that 1 and 3 makes 3, so you can play G to A trills 0 to 3 instead of 0 to 1-2. Use the "Complete Trumpet Fingering Chart" in the Appendix to find other possible trill fingerings.

Lip Trills

The lip is critical in upper range trills, plus you have the added challenge of making the lips and fingers move precisely together…why not play them as lip trills, eliminating the fingers? After all, in the Baroque period, the trumpeters had to use lip trills…no valves, you know. Once you get the hang of them, lip trills are much easier than valve trills.

How do you practice lip trills? The same way you practice lip slurs in the middle and low range – start slowly, insist on great tone on both notes, and speed up. Lip trills are easier than lower lip slurs in many ways because the interval is smaller.

See "Learning to Lip Trill" Chapter 36 Horn Specifics – you'll need to raise everything an octave because the 8th partial on the trumpet is notated two ledger lines above the staff; the same 8th partial on the horn is notated as the third space C.



Eighth Partial Notated for Trumpet and for Horn

Shakes

Shakes are rapid changes back and forth between adjacent overtones (and sometimes wider intervals); they show up in jazz and jazz-influenced music. There are several ways to produce a shake:

1. Shake the trumpet back and forth. The increase and decrease in pressure on the lips aid in changing pitch. The result is pretty much "wild and crazy" and can be quite exciting for the audience. (See the sidebar The Meaning of "Shake.")

2. Pivot the bell of the trumpet up and down, increasing and decreasing pressure on the top lip to help change pitch. It can be helpful with upper register wide interval shakes which are slower than other shakes.

3. Play them as lip trills, i.e., lip slurs. They sound more refined than #1 but are still impressive.

4. Start them as lip slurs and then shake the trumpet back and forth to continue the shake. This is similar to #1 but is a bit easier on the lips.

Personally, I absolutely prefer #3. The other three ways tend to hammer the lip with the mouthpiece – I NEVER use them.

Cornet, Flugelhorn, Rotary, and Herald Trumpets

Here's an interesting statement from bandestration.com:

> There's an old formula that helps to understand the relationships between the instruments. The Trumpet is roughly 2/3 cylindrical and 1/3 conical, the Cornet is roughly 1/2 cylindrical and 1/2 conical, and the Flugelhorn is roughly 1/3 cylindrical and 2/3 conical.

Cornet

The cornet is NOT a weird trumpet, and it's NOT a unique creation; in fact, it is a member of the horn family. When cornets first came out in the early 1800s, they were high-pitched hand horns (corno aigu) with valves added. "Cornet" means "little horn." ("Cor" is French for "horn). In French music, you often see "Cornet à pistons" – "little horn with pistons (valves)."

This explains the often-heard statement that cornets must have deep, V-shaped mouthpieces – not surprising since they were played by horn players! Arban and his buddies realized this new instrument was in the trumpet range (which did not yet have valves), so by using a trumpet-style mouthpiece, they could play it. The cornet has been "owned" by trumpeters since that time.

> FYI, even with valves, early cornets made extensive use of crooks, leading to parts written in many different keys.

Horn players had the last laugh – once it was determined that the cornet was more flexible than the trumpet because of its conical leadpipe, trumpets began to incorporate conical leadpipes. In other word, the modern trumpet is part horn!

schillerinstruments.com

Most newer cornets have a "shepherd's crook" leading into the bell, darkening the tone quality. Earlier American-made cornets

The Meaning of "Shake"

Some people believe "shake" means "shake the trumpet" – I believe this is a misunderstanding of history.

"Shake" is not strictly a jazz term – I have a 1905 musical dictionary that defines "shake" as "trill." How did early jazz musicians come to use an out-of-date classical term?

New Orleans had a HUGE influence on early jazz. Following the civil war, African- American musicians in New Orleans studied with European-trained musicians in the French quarter and were undoubtedly exposed to classical terminology.

In 1890, New Orleans passed a restrictive segregation code (despite national law). The African American musicians were very unhappy and stopped studying in the French quarter, but I doubt they forgot all their training.

Because of this, I believe early jazz musicians used "shake" to describe what we would call "trill."

frequently do not have this feature, but it is quite common on even earlier instruments.

You may run into "long model" cornets as well. These are cornets with the tubing bent so that its overall shape is that of a trumpet. The giveaway is the mouthpiece. The receiver on long model cornets only accepts a cornet mouthpiece; a trumpet mouthpiece is too large.

Trumpet (top) compared to long model cornet (bottom).

Closeup of trumpet mouthpiece (left) and cornet mouthpiece that came with the long model cornet (right). You can see the cornet mouthpiece is shorter and the shank has a different taper. Although it is hard to see in this photo, the end of the cornet mouthpiece is smaller in diameter than that of the trumpet. (You'll notice the silver has worn off on part of the shanks; this is normal and does not pose a problem. If the silver comes off the mouthpiece rim, then the mouthpiece should be replated or replaced so that the musician is not playing on raw brass, which is poisonous to the body.)

Cornetto, or Zink

There was a Renaissance instrument called the "cornetto" or the "zink." Practically a woodwind, it was made of wood covered in leather. Finger holes aided in the change of pitch created by lips buzzing in a cup-shaped mouthpiece. It came in many sizes and keys; the soprano cornetto used a mouthpiece so small that players were forced to place the mouthpiece off-center, toward one side or the other of the mouth where the lips are thinner. This sounds bizarre, but the instrument was VERY successful and lasted almost to the end of the Classical period. The cornetto fell completely out of use until a revival during the second half of the 20th century due to a renewed interest in period instruments.

There is no relationship between the modern cornet and the cornetto except that both use cup-shaped mouthpieces. More information is available at Wikipedia.

Cornetto instrument family – the soprano cornetto is on the left - BenP, color enhanced by Jacek Halicki GNU Free

Documentation License

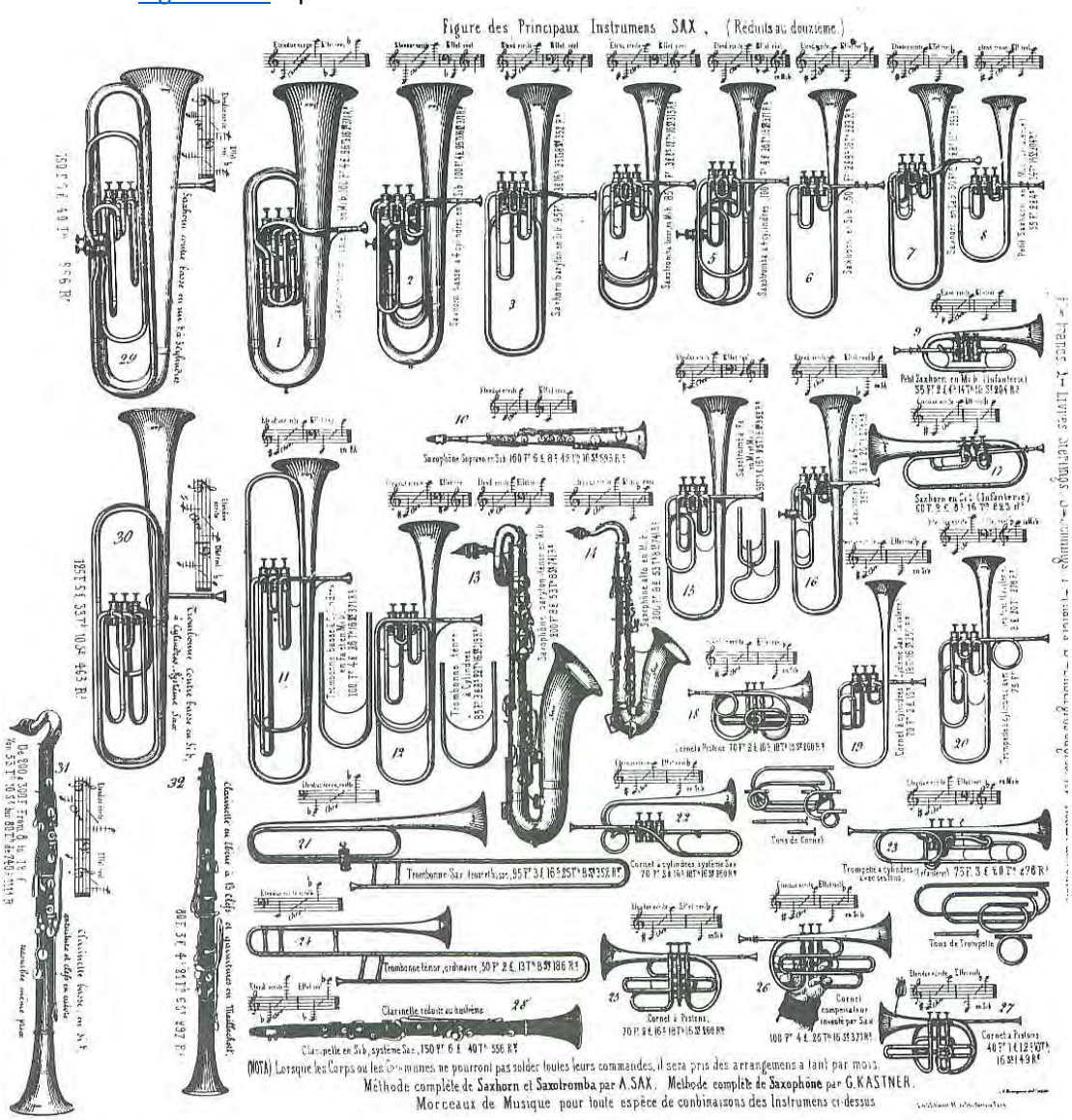
Flugelhorn

jmhucb – Pixabay

Flugelhorns come from the addition of valves to valveless bugles. A much deeper V-shaped cup is used to increase the darker tonal tendency of the instrument. (According to Wikipedia, modern flugelhorn design is strongly influenced by the saxhorn family created by Adolphe Sax, the same man who invented the saxophone.)

Note the taper of the bell on the signal horn is more like a flugelhorn than a trumpet.

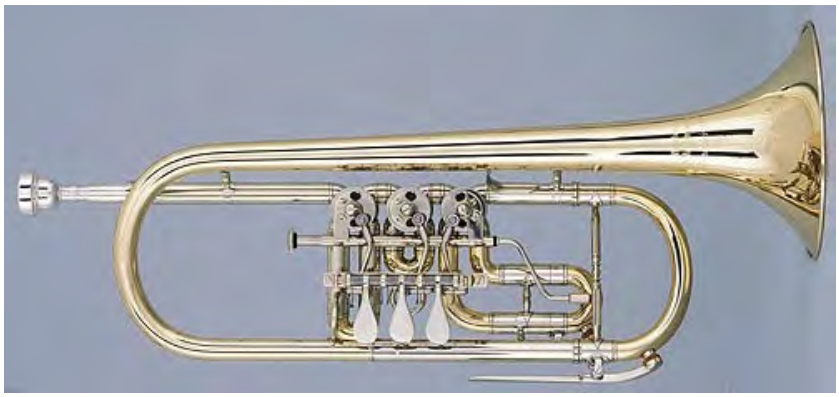
Signal Horn – public domain



Adolphe Sax Instrument Catalog - Public Domain

Rotary Trumpet

Standard wisdom is that rotary valve trumpets are darker than piston valve trumpets. This is only true at softer dynamics; rotary trumpets are brighter than piston valve instruments when played loudly.



Rotary C Trumpet made by Bernhardt Willenberg
Aichas - GNU Free Documentation License

Rotary trumpets are common in Germany and Austria. In the United States, they are often used in orchestras to play Classical and Romantic Austrian and German repertoire, including Haydn, Mozart, Beethoven, Bruckner, and Mahler.

Beyond the type of valve used, several additional differences between the two types of trumpets contribute to the difference in tone color.

Herald Trumpet

Herald (or fanfare) trumpets are standard instruments with the tubing folded to produce a long bell (often removable) suitable for a hanging banner. They are reminiscent of natural trumpets used to signify the importance of a dignitary in medieval times. (The modern equivalent is a motorcycle escort!)

youtube.com

Pinterest

skeeze –Pixabay

Piccolo Trumpet

amazon.com

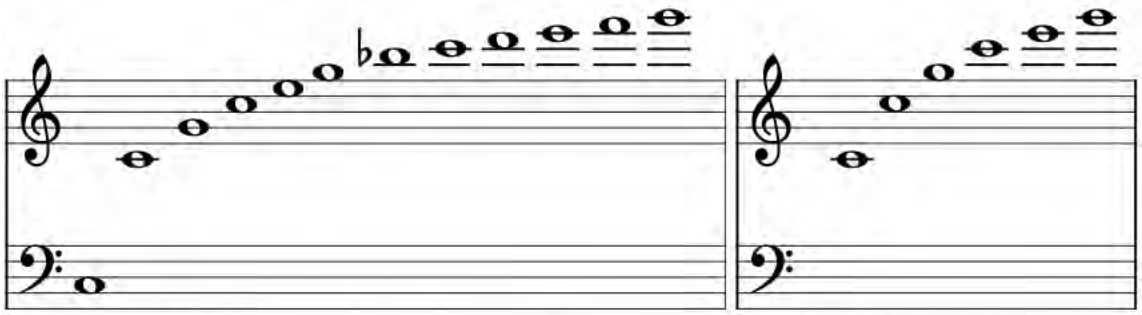
I wouldn't even bring this up, but as a future band director you need to know about piccolo trumpets – sooner or later you will have students who want to play one. Unless you have an exceptional student, I recommend that they wait until they are in college. Playing the B-flat trumpet extremely well is a prerequisite to using these challenging "toys."

Is it easier to play high on the piccolo trumpet? Well, is it easier to sing high if you use a smaller microphone? Nope, and it' s no easier to play high on a piccolo trumpet - the person makes the pitch, not the instrument which is merely the microphone that amplifies (and beautifies!) what the lips produce. Another myth busted!

> FYI, I once read an orchestration book that said every time you shorten an instrument a whole step, you gain an half step in range. WRONG! If that were true, switching to piccolo trumpet from B-flat would increase your range by half an octave. NOT going to happen!

Okay, okay, it is a little easier to play high on piccolo trumpet, I admit, but that comes from the shallower mouthpiece normally used with the piccolo trumpet and the increased resistance of the instrument, not because of the shortness of the tubing. The most you can hope for is a half step or possibly a whole step increase in your range.

Why use a piccolo trumpet? Accuracy is the biggest reason – the overtone series of the piccolo trumpet is an octave higher than the standard B-flat, so for a given register, the overtones of the piccolo trumpet are farther apart:

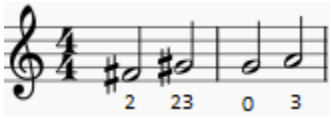


B-flat trumpet overtone series

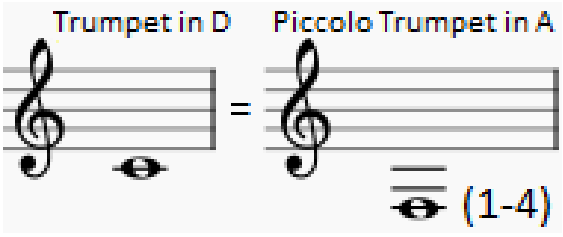
B-flat piccolo trumpet overtone series

Not only do you make fewer pitch mistakes on the piccolo trumpet, you tend to be more mentally relaxed because of the safety net of a more widely space overtone series. Mental relaxation promotes physical relaxation.

The piccolo trumpet will not take the same volume of air flow as the B-flat; the intensity of the air flow is there, but not the quantity. You must relax, and this makes it easier to play delicately. Trumpets in the baroque did not produce the volume of modern instruments, so balance issues were less of a problem. Even though its tone it's fairly piercing and can cut through an ensemble easily, piccolo trumpets reduce the dominance that a larger trumpet would generate in the upper range.



The piccolo trumpet is primarily pitched in B-flat and A, although C piccolo trumpets exist. Why B-flat and A? If you're playing a piece in concert D (which was very common in Baroque music), the B-flat piccolo is playing in E major with the F-sharp to G-sharp trill occurring frequently (fingered 2 to 2-3). If you're playing the A piccolo, however, the part is now in the key of F and the trill is G to A (fingered 0 to 3). It's easier on the A picc. (It's the same principle as B-flat and A clarinets.) Ease of fingering is the primary factor in choosing between A and B-flat.



Piccolo trumpets are quite short (2' 5"), yet they're often used to play music written for natural trumpets 7 or 8 feet long (in the keys of D and C, respectively). To compensate, most piccolo trumpets have a 4th valve to play low D concert and lower. (The lowest 2 notes of the natural trumpet cannot be played on the picc, even with the 4th valve.)

Many piccolo trumpets use standard trumpet mouthpiece receivers, but some use cornet receivers. I was fortunate to be able to ask Renold Schilke why his piccolo trumpets use cornet-size mouthpieces. He said, "What the difference in range between a trombone and a trumpet? An octave. What's the difference in range between a trumpet and a piccolo trumpet? An octave. Would you use a trombone mouthpiece on a trumpet? Of course, not! It's too big. Then why would you use a trumpet mouthpiece on a piccolo trumpet??"

In 1971, I attended a clinic by Bernie Glow – I doubt you've heard of him, but I grew up listening to Bernie who was the #1 trumpeter in the New York City studios. (Unlike today, not much was happening in Los Angeles during this time other than film scores.) Bernie had an excellent upper range – he said, "I can play F-sharps all day long, but G's make me tired!" Bernie sometimes used a piccolo trumpet when he got tired in long recording sessions; leaning close to the microphone, no one could tell the difference.

Chapter 36
Horn Specifics

Many areas of horn playing are controversial – ask 3 horn players a question and you'll get at least 4 different opinions. My advice is to be pragmatic: if it works, it's right for you – but it may not be right for someone else!

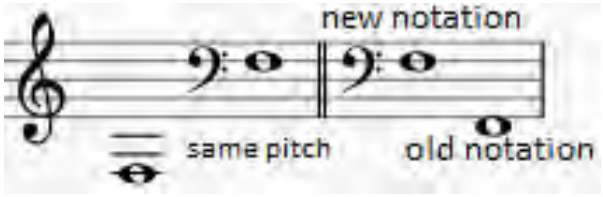
F vs. B-flat Side

In general, horn players prefer the darker tone quality of the F side to that of the somewhat brighter B-flat side. Nevertheless, accuracy is the overriding consideration in determining which side to use.

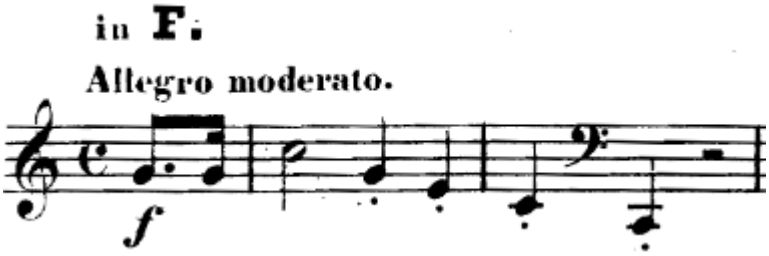
Low Range

A fine horn player has a FOUR octave range – the extra octave is on the bottom, not the top. Mr. Farkas said the way to approach this register is blasting low notes, forcing the embouchure to learn how to produce them, i.e., sink or swim. Once the low notes come out, the horn player learns to play them with a better tone and more softly.

Bass Clef



With its enormous range, horn parts often go too low to be read as ledger lines below the treble clef; they are often written in bass clef, as seen in the first measure. Horn music is always written in the key of F…even when notated in bass clef. In modern times, the bass clef F in the first measure is noted as it sounds, as shown in the second measure and labeled "new notation."



Beethoven *Horn Sonata*

In older music, such as the Beethoven *Horn Sonata*, bass clef notes are notated an octave lower than is correct, labeled above as "old notation." It doesn't make sense…I have no explanation except to wonder if Classical composers thought horn players wouldn't play in the correct range, so they wrote an octave too low to ensure it was played correctly.

How do you know? If it's Classical or even Romantic period, it's probably old notation. Twentieth-century music should be new notation (but that doesn't mean that some composers didn't continue the old notation tradition). You need to look at the parts and use common sense. A BIG clue is the part itself – old notation often goes lower than the horn can possibly play.

Stopping

There is nothing like the trombone glissando. And there's nothing like stopping the horn. It is a great special effect!

If you remember from Chapter 18 Holding Positions, we talked about keeping the right hand in a position that can quickly stop the horn. How do you do this? Keep the fingers of the right hand against the bell and pivot the heel of the hand so it completely closes the bell using the big knuckles as hinges. Be sure the thumb knuckle remains out. (It doesn't completely close…if it did, you couldn't get any air through the instrument.)

If you do move the hand slowly while sustaining a note, you'll her the pitch drop a half step just before you close the bell – this is called echo horn. It is another cool effect, sounding distant without the metallic brittleness of stopping. It does not project well and is rarely called for (if ever) outside of solo works such as Bozza *En forêt*.

Once the bell is "completely" stopped, blow harder and the pitch jumps up a whole step and you get the metallic tone quality of stopping. The net change in pitch from open is up a half step:

Echo horn – drops pitch a half step from open
Stopped horn – raises the pitch a half step from open
(Net change between echo horn and stopped is up a whole step.)

Both stopped and echo horn require the player to transpose – the composer does not transpose these sections! Echo horn requires the player to transpose up a half step from the notated pitch; stopped horn requires transposing down a half step from the notation.

Both effects are normally done on the F side. (Stopping on the B-flat side raises the pitch about ¾ step above what's written; it can be done on the B-flat by pulling the tuning slide an additional 2 inches or by inserting the right hand further in the bell and transpose down a whole step.)

Stopping poses two problems: it is difficult to play low notes stopped, and people with small hands often cannot closing the bell. Stopping mutes solves both problems. Most stopping mutes require transposition, the same as hand stopping. (See Chapter 44 Mutes).

Stopping is indicated with a plus sign (+); open is indicated with an "o."

Here are the foreign language equivalents of stopped:

German – gestopft

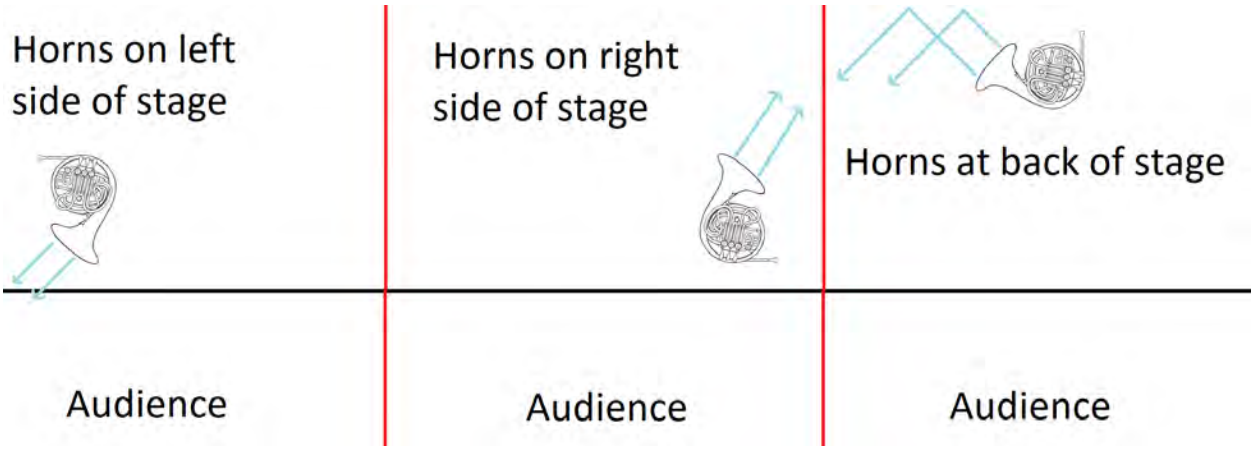
French – bouche'

Italian – chiuso

Bells Up

Bells up is a wonderful visual effect, especially when all the horns raise their bells at the same time – it's a bit of marching band in the concert hall. Remember, the modern horn is a hand horn with valves – even with the bells up, it's still a hand horn! The right hand MUST remain in the same position; students will be tempted to grab the rim of the bell to make it easier to raise the instrument. If they do, they will not be in tune with the band.

Placement in Band and Quintets



Horn images by Clker-Free-Vector-Images – Pixabay

Horns positioned on the left side of the stage point their bells toward the audience, making it easier for them to balance trumpets and trombones pointing straight out. Traditionally, horn players don't like to do this – they prefer that their sound bounce off a wall before going into the auditorium. Why? Mr. Christensen said he sat behind horn players with fuzzy, airy tones, but it was magnificent in the hall after bouncing off the wall. (Modern horn players seem less concerned with this – perhaps they have better sounds!)

Placing the horns on the right side of the stage puts them at a great disadvantage; quite often they are blowing into heavy, sound-absorbing curtains. Reflectors are a must! (See below.)

Horns at the back of the auditorium allows the sound to bounce before it goes into the hall…IF there is a hard surface behind them. If it's thick curtains, the horns will be seen but not heard.

Horns can also be placed in the middle of a group but not against the back wall. Unfortunately, their sound tends to get absorbed by the musicians behind them, causing projection problems. Reflectors are required for this to work.

Screw Bells

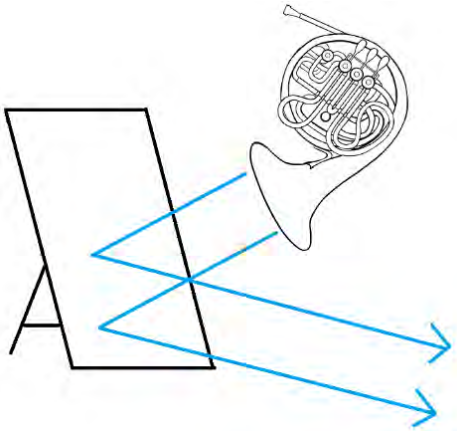
While we're talking about bells, I want to mention that some horns are made with a screw bell. The bell unscrews from the rest of the instrument, allowing a more compact instrument case.

Jupiter Horn Case – pinterest.com

Reflectors

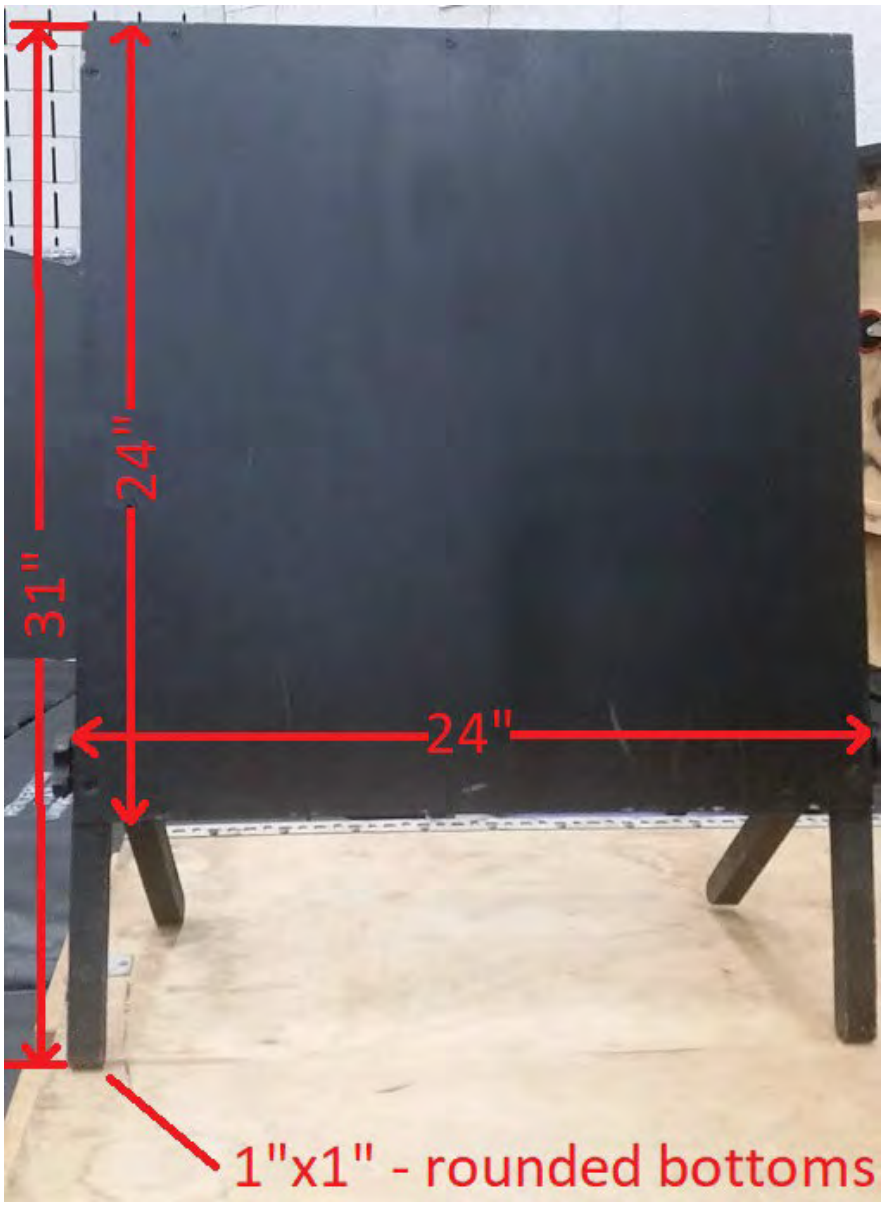
Reflectors behind the horns help with balance issues. Be sure you think about the angle of bounce so that the sound goes into the auditorium.

Commercial reflectors are available, and I don't care for them. Most are heavy and difficult to carry, and the plexiglass is likely to break over time. My advice is to find band parents who like to do woodworking and ask them to make them for you. It's just a thin a plywood sheet with a couple legs to hold it upright. Make the legs foldable and be sure there is something on the top to make it easy to carry it. Dr. Branstine designed, built, and sold quite a few reflectors:



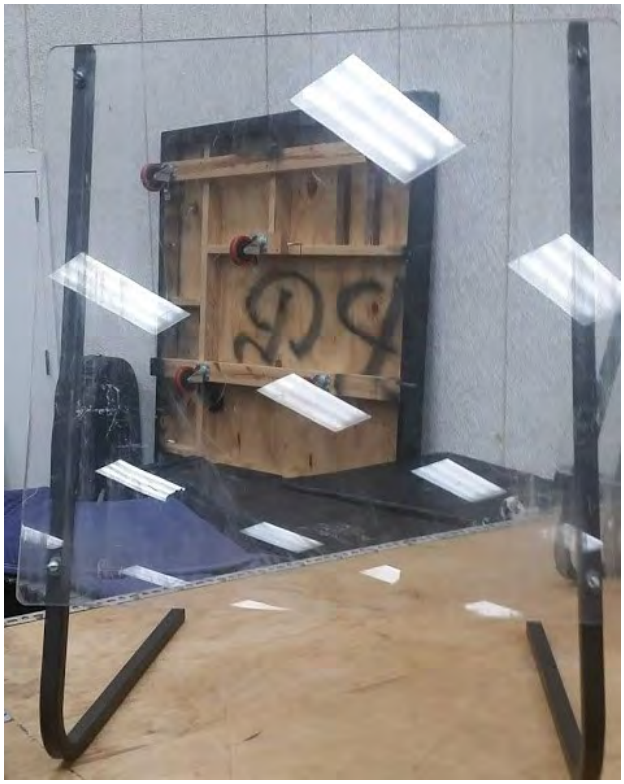
Horn image by Clker-Free-Vector-Images – Pixabay

Wes Branstine Reflector



he inset photo is a closeup of a knob to tighten the legs, which fold in when the knobs are loosened.

Back of the Branstine reflector.



You can see the only way to carry this plexiglass reflector is sideways. The legs do not fold, so they are constantly in the way when you move it. They are at least twice as heavy as the Dr. Branstine's reflectors.

Here is a photo showing a broken plexiglass reflector. This material is not suitable for touring groups.

Scoring

Trumpet parts in scores make sense; they are listed:

1 – highest
2
3
4 – lowest

Completely logical. Horns. However, are listed as:

1 – highest
3
2
4 – lowest

The 2nd and 3rd parts are reversed! How does that make sense??!! Time for another exciting episode of Horn History!

As remember from Chapter 18 Holding Positions, horns didn't have valves until about 200 years ago (sometime around 1815). You will also remember that horns could only effectively play in one key, so players used crooks to change the length and key of their instrument…that took time and meant that the horns couldn't play while changing crooks.

To speed things up, two pairs of horns were used, one pair crooked in the tonic key and the other pair in the dominant. Each pair had a high horn and a low horn, so you ended up with two high horns and two low horns. The tonic key horns typically played higher than the dominant key horns, so you ended up with:

1 – high horn in tonic
3 – high horn in dominant
2 – low horn in tonic
4 – low horn in dominant

The result was two separate horn sections, in pairs. This was typical of Classical orchestration – two of each woodwind, pairs of trumpets, even pair of timpani. Even though the Classical Period ended in 1820, we're still using this system of part assignments 200 years later.

Wagner tuba

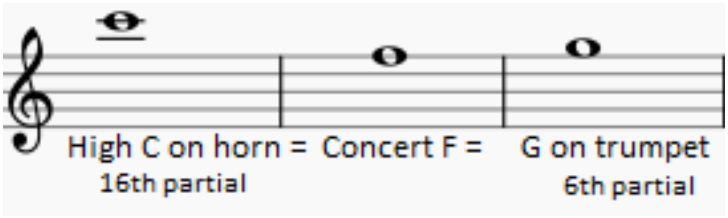
The Wagner tuba was invented by Richard Wagner for his Ring cycle operas to bridge the tone color between the horns and the trombones. Anton Bruckner also used them in his 8th and 9th symphonies. You won't encounter them in band music, but you need to tell your horn students that they are played by horn players using horn mouthpieces. Here's a video with four horn players from the Berlin Philharmonic playing Wagner tuba – Berlin Philharmonic Horns: Bruckner.

Mainz double Wagner tuba in F/Bb

Zanetta – Public Domain

Psychology

Horn players tend to have mental blocks about the high range and lip trills. My belief is that they fear high notes because they sound high (because they are high in the overtone series). In truth, there is nothing "high" about them.

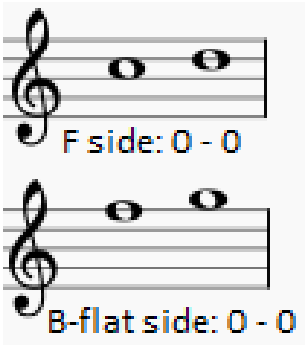


High C on the horn is F concert, which is G for trumpeters. ANY decent trumpeter can play a high C on the horn because they are physically and mentally accustomed to playing even higher. If your horn players have hang-ups with the high range or need more strength, you might have them spend time on the trumpet. (They need to keep the 2/3's upper lip mouthpiece placement so their muscles don't need to adapt.) Remember, Arnold Jacobs said "Strangeness permits change" – playing trumpet might help them mentally and physically. Will it hurt their horn playing? Not if they spend most of their time on the horn.

> FYI, drum corps used to have instruments pitched in G; they shifted to B-flat instruments to make life easier for their musicians transitioning back into their band programs. Even though it was only a minor third, the highest bugle parts were often higher in the overtone series and sounded higher than they did on B-flat instruments.

Lip trills are rapid lip slurs of a whole step. That's it – nothing more, nothing less. Unfortunately, due to the mistaken belief that lip trilling is a difficult, advanced technique, it isn't taught until students are much older, and that's where the hang-up comes in. "This must be hard!!! If it's easy, you would have taught it to me years ago!" Solution? Teach lip trills to your horn players at the same time they learn to play lip slurs. (This may need to be delayed a bit if the student's range is inadequate.)

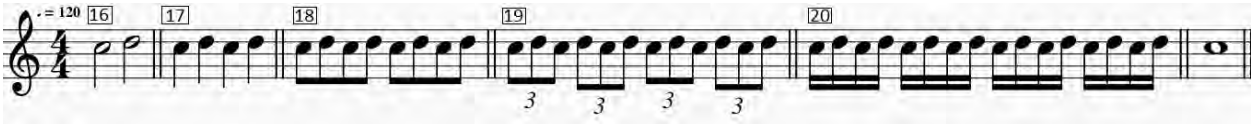
Lip trills are usually played on the F side because the higher harmonics occur a fourth lower than on the B-flat side. For example, the lowest lip trill played open on the F side is C to D. The lowest lip trill played open on the B-flat side is a fourth higher (F to G).



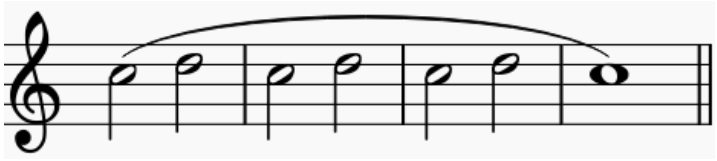
Learning to Lip Trill

How do you learn lip trilling? The same way you learn lip slurs – start slowly and use a metronome to speed up. What do you practice? Use the Arban lip slur patterns but change the intervals to whole steps.

The exercise below is a pattern or template for five exercises -- it is not to be played as written. (The "rehearsal number" references the comparable Arban lip slur exercise.)



Each measure should be repeated a minimum of three times before playing the whole note. In other words, the first measure (#16) is to be played:

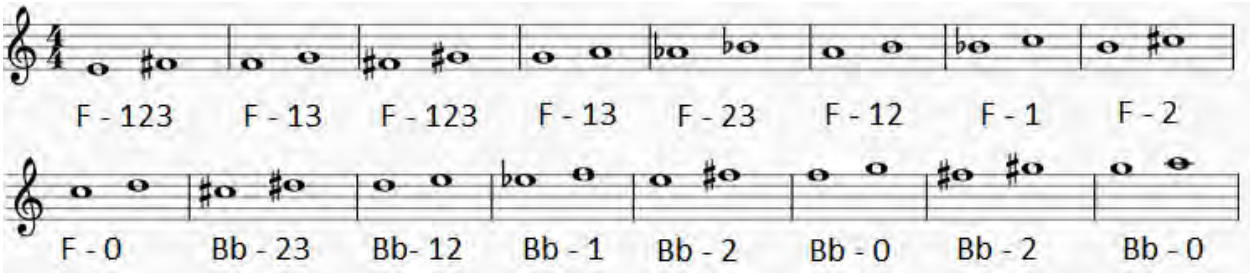


You must master #16 before taking on #17, master #17 before #18, etc., etc. INSIST that both pitches have a good sound and are in tune. The only way to do that is to play correctly, and that is the best way to make rapid progress.

The tempo of quarter = 120 is the end goal, not the starting tempo. How slow should you start? That depends on the person – only play as fast as it sounds superb. What you settle for playing slow speeds will be the way you'll play fast speeds.

Once you have mastered a tempo, increase speed by only a small amount, perhaps 5%. (Easy math – divide the tempo by 10 and divide the result by 2. For example, 80 divided by 10 is 8. Divide 8 by 2 and you get 4.)

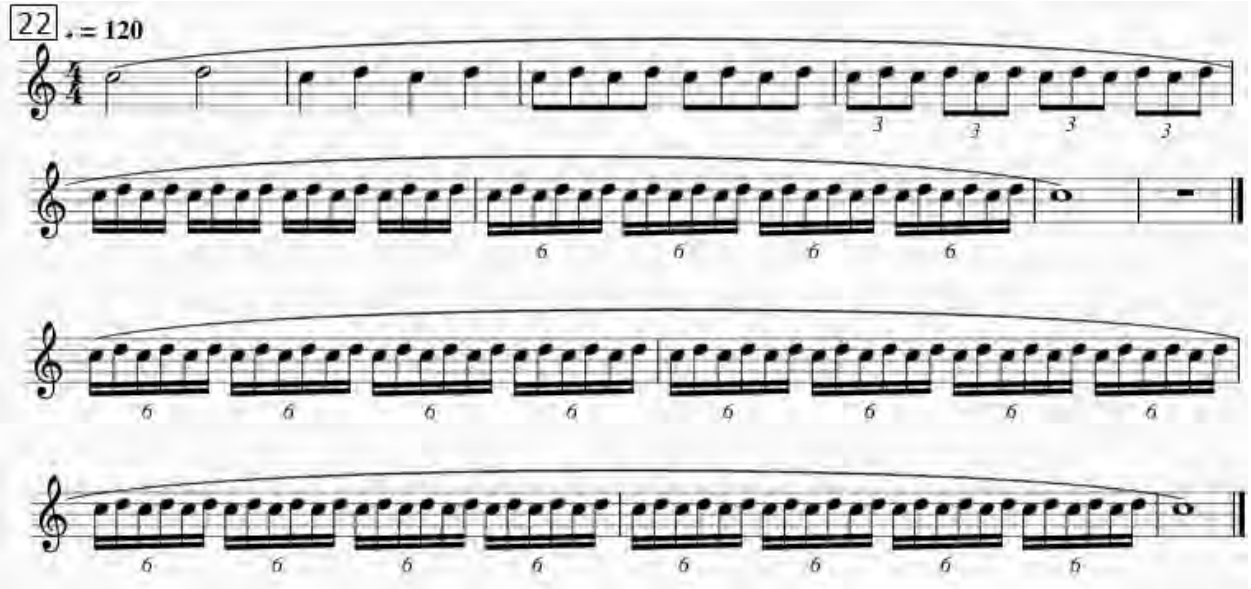
What trills should be practiced? As many as possible – here's a list:



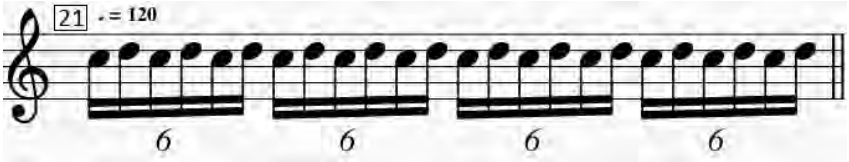
(I don't much care for the first two trills because they trill 7th to 8th partial. Remember, the 7th partial is FLAT!)

Don't worry if some of the trills are slower than others – in due time they will catch up.

Once you have mastered sixteenth notes at 120, you're ready for sextuplets (Arban #21)…probably not. Practice #22 first – it is so much easier to accelerate into the sextuplets than it is to start directly on them! Note that after the first two lines, you rest briefly and then play four measures of sextuplets (not in the Arban exercise). This is where you transform from trying to play lip trills to owning them.



Wait until you have mastered #22 before taking on #21:



Part IV

Equipment

Chapter 37
Instrument Care

Brass instruments are fairly tough (especially compared to woodwinds), but they do require care to function properly.

Putting the Instrument Together

Nothing to it – put the mouthpiece into the receiver and give it a slight turn which prevents it from falling out. Do NOT pop the end of the mouthpiece – it makes a really cool sound and can really get your mouthpiece stuck.

When it's time to put the instrument in the case, twist the mouthpiece in the opposite direction and it will easily come out. If it's stuck, you need a mouthpiece puller – there are other ways that work, but none as effectively and all pose risk to the instrument. (More in Chapter 39 Brass Instrument Repair.)

Setting the Instrument Down

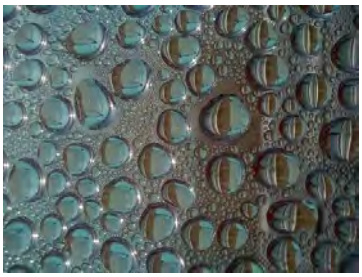
It is tempting to lay the trumpet down with the left hand – don't do it. Remember what we learned in the previous chapter. When you set the horn down, keep the valve levers on top. (This is the most natural way to set it down.)

Carrying the Instrument in the Case

Carry the case so it opens into your leg. If a latch fails, you can stop the instrument from falling out.

Spit/Water

When brass players dump spit, it is not spit – it is water that has condensed on the inside of the tubing, like water condensing on the outside of a glass of iced tea in the summer. (Brass players call it "spit" to gross out the woodwinds.)



Rupert Kittinger-Sereinig – Pixabay

Dumping the water on the trumpet is straight forward. Open the water key on the tuning slide and it will run out. You can blow air through the mouthpiece to encourage the water to come out.

The 3rd valve slide also fills with water, although not as rapidly. Most trumpets have a spit valve on this slide; Bach Strad trumpets do not – the end of the 3rd valve slide must be pulled out to dump the water.

Water can accumulate in the first and second valve slides; it normally comes out by blowing air through the trumpet and wiggling the valves up and down while dumping water from the tuning slide spit valve. On rare

occasions, this doesn't work, and it becomes necessary to remove the slide and dump it. Even more rare, you may need to dump water from the tuning slide. Remember this:

Rule: Water runs downhill.

If there is water in the 1st valve slide, you must point the bell up while you pull the slide. By putting the bell up, the water runs into the slide. If you leave the bell down, the water stays in the body of the trumpet when you pull the slide.

suhmobil –Pixabay

Some instruments seem to disobey the laws of physics. My flugelhorn frequently requires me to tip instrument upside down and run the "spit" out of the bell. It does not want to come out of the spit valve, aka, water key.

Okay, that was easy. Now we'll talk about the horn – it's anything but easy! First, there are 6 valve slides and two or more tuning slides. All of them seem designed to collect as much water as possible and prevent it from being removed. Note the arrow in the photo – you must unwind the horn from the water by turning it clockwise. If you turn it counterclockwise, the water will often stay in the tube and still be there when you put it back. Remember the rule!

It's even worse with water in the main body of the horn. Some horns have a spit valve near the leadpipe since that is where most water accumulates; most horns don't have this. There are three ways to remove this water:

1. Dump it out the bell. Remember the water will always be at the lowest part of the instrument, so you unwind the horn around the water. (You might want to wipe the bell off before you put your hand back…)

2. Dump it out the mouthpiece using the same process. If I were going to do this, I'd take the mouthpiece out before dumping. I wouldn't want that nasty, gross water on MY lips!

3. Dump it through the valve slides. This is a bit more complex; honestly, I didn't know about this procedure until students showed it to me. Here's an excellent video:
Pro Tips - Quickly Remove Water from Your Horn

Oiling Piston Valves

Oiling the valves daily accomplishes three things – they're faster, they don't stick, and they last forever!

Amazon

To oil trumpet valves, unscrew the top cap and pull the valve straight out until the valve body is exposed. (There is no need to pull them all the way out.) Put oil on the body of the valve – it is not necessary to drown them – all the extra oil ends up on the floor or on your pants. There is no reason to oil the valve stem or the top part of the valve – they don't touch anything. Put the valve back in, rotating it only a little to be sure the valve guide locks in.

Amazon

Let's talk about valve guides for a second. They're very important – they keep the valve ports aligned with the holes in the instrument body and prevent the valve from rotating while you play.

Some valve guides are plastic, some are metal, and they vary somewhat in design, but MOST of them ensure that there is only one way to put the valve in correctly: be sure to match the ends narrow and wide properly. The narrow end will drop into the wide slot, but the wide end won't fit in the narrow slot.


amazon.com

If you do it wrong, you'll know – the horn will be stuffy or impossible to blow through. If this is the case, you probably did not get the valve guide to lock into its slot in the valve casing, or you may have put it in backwards.

Note: I have seen a few valve guides that were poorly designed and could be put in either way…except you couldn't play with them in wrong. If this is the case, take the valve out, rotate it 180 degrees, and you should be back in business.

Note #2: It hurts when you put your valve in wrong and then try to play a loud or high note. It's like walking into a wall!

Valve Guide

One of the casing slots is indicated by the arrow. There is a second one, directly across the casing, but it doesn't show in this photo.

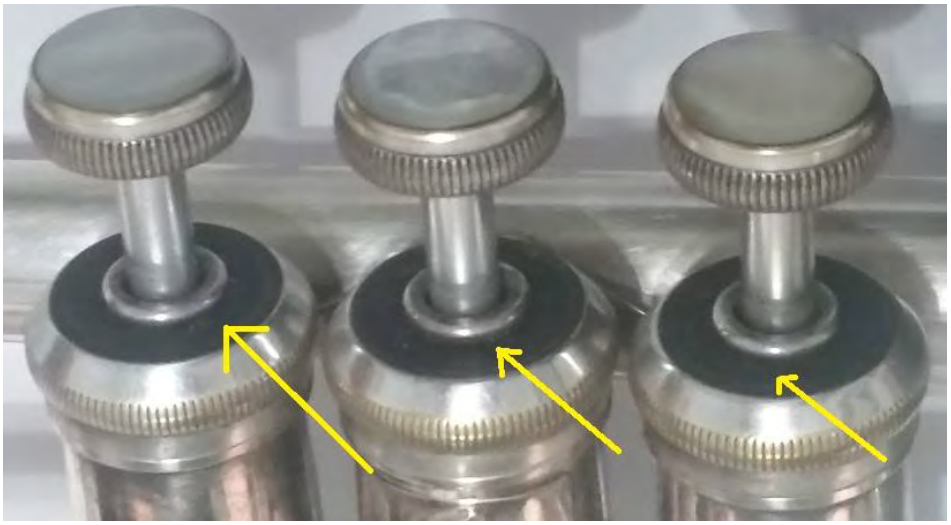
There are a lot of good valve oils, BUT…do NOT use oil with silicone. Period. Never. You WILL be sorry. How do I know?

> Dr. Swift warned me – he said silicone would deposit on the valves and cause problems. I followed his advice for years, but one day the only music store in town didn't have my favorite (Al Cass Fast Valve, Slide & Key Oil), so they sold me oil from Switzerland. The Swiss make excellent clocks, right? Wouldn't they know about oil for instruments? And it cost 50% more than Al Cass, so it had to be good stuff…
>
> WRONG!!! After a few weeks, my valves began sticking and I couldn't get them to stop. Neither could the music store owner, who was a fine repairman and a former student of mine. There was a silver lining, however – I was forced to learn correct finger motion. Any motion not perfectly straight up and down resulted in sticking valves. I abandoned the Swiss oil and went back to Al Cass. After about six months, the silicone wore off and my valves were fine.
>
> This was before Blue Juice was created – it helps remove silicone and cleans valves as well.

If you live in a small town without a music store, you can use unscented lamp oil while you're waiting for valve oil you ordered online. Sound crazy? It's not – valve oil is basically kerosene with the smell removed. (It's also similar to jet fuel.) I used lamp oil all the time for several years, but eventually my valves began to have problems, which I attributed to a build up from the lamp oil. Since then, I only use commercial oil.

After the valves are in place and the caps tightened, you're done. If the valve caps are not tight, you'll hear a clicking sound, so tighten them a bit more. (If the cap is tight and it still click, new felts are required.)

Oiling the valves is a good time to examine the felts to be sure nothing looks "squished." If you're in doubt, compare the 1st and 2nd valve felts with those of the 3rd valve. The first two valves receive MUCH more use than the 3rd valve, so the wear will be more noticeable.



Top "felts" – these are neoprene or something similar.

Inside Felt

Valve Springs

When you oil your valves, it's also a good time to check them for bounce – push the valve down and releasing it by quickly pulling your finger sideways so that valve comes up without hindrance. Watch and listen for any bounce. (Sometimes, I put the valve close to my ear so I can hear better.)

Over time, valve springs gradually weaken, getting easier to push but with two bad side effects:

1. A weak spring allows the valve to bounce on the up stroke. The valve ports (holes) don't line up properly, creating sloppy slurs and interfering with clean articulation.

2. The stronger the spring, the harder it is for a valve to stick. Therefore, the softer the spring, the more likely a valve will stick. (Imagine a pickup truck shock absorber spring on a valve – it would NEVER stick!! Even if you hadn't oiled the valve in 100 years! Of course, you might have a hard time pressing it down…)

When the valve comes up, it should immediately stop moving. If it bounces, the spring is too soft. The solution? Stretch the spring.

Rule: Easy does it when stretching springs.

If you stretch a spring too much, it's over. You can't push it back where it was, so it's better to stretch a little bit several times than one big "oops!" stretch. Stretch springs 1/3 at a time – grasp the bottom of the spring with one hand and with the other hand grab the spring about 1/3rd of the way up. Stretch the spring a little bit, making sure to stretch in a straight line.

Now grab at the 1/3rd and 2/3rd points to stretch the middle, and finish by stretching the 2/3 point to the top of the spring. Put it back in the valve and see if it bounces. It does? Bummer. Do it again. When there is enough stretch, the valve will not bounce. Yes, it's slightly harder to push, but your hand will adapt quickly, and you'll forget you ever stretched them. And, your playing is cleaner!

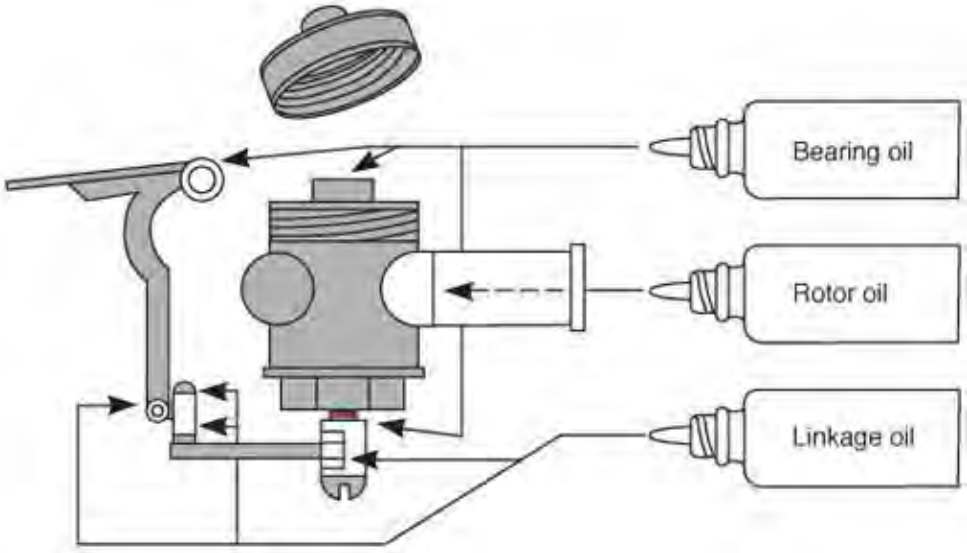
If you don't stretch in a straight line, the spring will still work, but it bends sideways while compressing and is noisy as it scrapes the sides of the valve casing. FYI, a spring should be able to stand straight up on a table; if it can't do that, you should replace it.

Once you know how far one of the valve springs needs to be stretched, the other two required the same amount of stretch. Note how far the spring sticks out of the valve before you put the valve stem back and then stretch the other two springs so that they stick out the same distance.

How many times can you stretch springs? Many times. At a certain point, they don't hold the new position very long before you must stretch them again. When you get tire of stretching so often, get new springs. FYI, new springs are often too weak and must be stretched to prevent bouncing.

There are a few instruments with springs on the bottom – I call them bottom sprung valves. The same process will work, except that to match spring lengths, you'll have to leave the first spring on your workbench so you do out so you can match the length of the other two.

Oiling Rotor Valves



Paxmon.co.uk

Rotor valves must be oiled in three places:

1. Remove the top cap and oil the top bearing with bearing oil.

   While the cap is off, check alignment – see below.

2. Bearing oil for the bottom bearing is applied in the space just below the bearing (marked in red).

3. The valve itself needs rotor oil. Do NOT pour oil directly down the slide tube, which will wash the grease coating the inside of the slide tube onto the valve. Instead, hold the valve slide upright (open ends up) and pour oil into it. Turn the horn so the slide can stay vertical, insert the slide into the slide tubes, and push the slide completely in. Invert the horn while wiggling the valve up and down so the oil can drain onto the rotor. Return the valve slide to its original position. (Remember the process from Chapter 31 Intonation.)

4. If the horn has mechanical linkage, it must also be lubricated on the bottom with linkage oil.

5. Lubricate the valve levers with bearing oil.

FYI, I have used valve oil instead bearing, rotor, and linkage oil and it has worked. Perhaps not the best solution, but a practical one, especially when a valve has problems right before a concert.

A more thorough discussion is available from Paxmon – Horn Care & Maintenance.

Check the strings for wear. See Chapter 39 Brass Instrument Repair for information on restringing rotor valves.

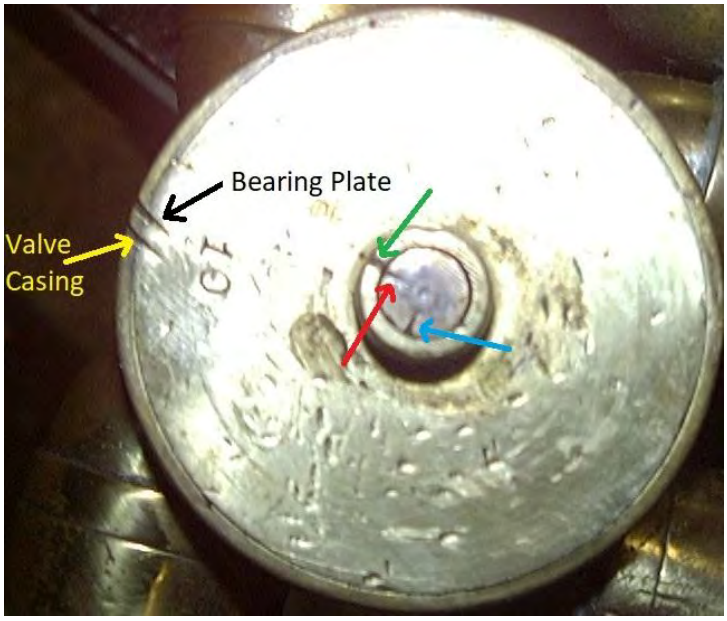
And, check the valve stops/bumpers for wear – if they are too thin, the valve will rotate too far, and the holes will not line up correctly. Since rubber bumpers are now used, this isn't much of a problem . In the old days, with cork bumpers, it was frequently an issue.

houghtonhorns.com

The bumpers in this photo are red – they are available in several different widths (which affects how far the rotor valve turns). Houghton Horns states they may should be trimmed with a razor blade to precisely align the valves.

Check Rotor Alignment

Step 1 – Check the notch on the rotor plate for alignment with the notch on the valve casing. If this is not aligned correctly, the following steps will also be wrong. (This picture is a tuba valve and has two notches.) You can see that the notches in the valve casing (yellow) are precisely aligned with the notches in the bearing plate (black).



thevillagetinker.com

Step 2 – Check the mark on the valve shaft (red) to make sure it aligns with the mark on the bearing plate (green). This looks slightly off – the bumper is probably a little too thick and the rotor cannot quite turn to the correct position.

Step 3 – Depress the valve. The valve will rotate ¼ turn. Check to see that the other mark on the valve shaft (blue) now aligns with the mark on the bearing plate (green).

Sticky Piston Valves

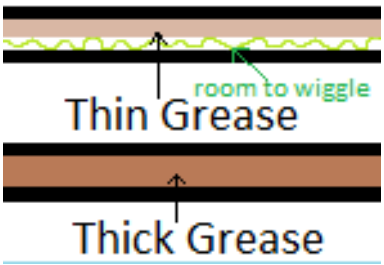
See Sticky Piston Valves in Chapter 39 Brass Instrument Repair.

Grease

All moving parts must be greased. (Except valves!!) Grease keeps slides moving smoothly and easily and it prevents corrosion which leads to parts sticking. You don't need a lot of grease – just enough to cover the entire surface. It is a good idea to loosen all the parts from time to time – I often do this in rehearsal when it looks like it will be some time before I play again.

How do you apply grease? Remove the slide and add a small amount of grease on the outside near the open end of each tube. Put one tube into the instrument – rotate it from side to side as you push it in. This will help distribute the grease. Remove the slide and repeat with the other tube. After each tube is done, insert both tubes into the instrument. If the slide needs to move quickly, you may add a drop or two of valve oil on each tube. Work it back and forth until it moves easily and quickly.

Vaseline works – I used it for years – but it's thinner than slide grease, which is all I use now. (Selmer Tuning Slide and Cork Grease). STP, the automotive oil additive, works equally well and is much cheaper per ounce ($4.00 for 15 ounces of STP vs $4.00 for 1.5 ounces of Selmer grease). The problem with STP is carrying it in an instrument case.



Short valve slides (like those on a D trumpet) or old trumpets may require a thicker grease (such as lanolin) on the 1st and 3rd valve slides

because the parts are worn. The thicker grease helps fill the space between the inner and outer slides.

Cleaning

More on this in the next chapter. For the moment: clean the mouthpiece weekly with a mouthpiece brush and give the instrument a bath monthly using a cleaning snake. FYI, there are two shortcuts:

1. Hold the instrument under a faucet – turn on the water to warm (not hot!!) and run it into the bell until water comes out the leadpipe. Once this happens, wiggle the valves, too. This should be done weekly to be effective. Longer than that and the gunk hardens and won't come out just by running water through the instrument.

2. Spitballs. I've never tried them, but students who have used them have been pleased. This also requires regular usage for to be effective. The cost (in 2020) is about $0.25 per spitball. There is one size for trumpets and horns and larger ones for trombones and euphonium that are slightly more expensive.

   I think it would be a good idea to have a snake on hand when you first try it – just in case it gets stuck!

Storing

If you're not going to play an instrument on a regular basis, oil the valves and grease everything before putting it away. This reduces oxidation and the likelihood of getting stuck. Reduces, not eliminates. Some advocate pushing the slides all the way in to reduce corrosion. I don't do this – I think that simply provides more surface area for the slide to get stuck.

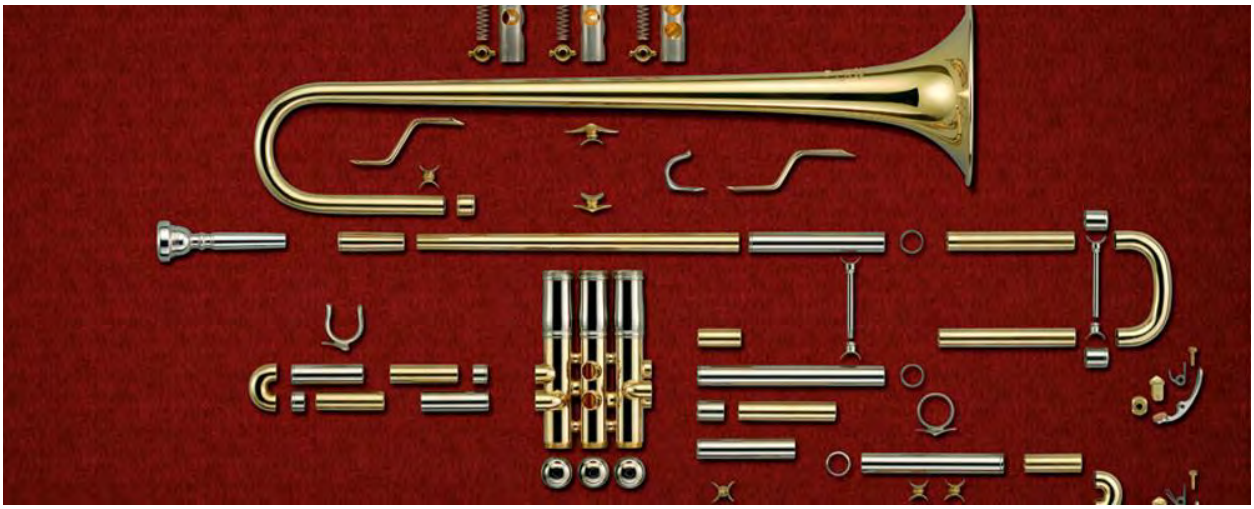
When you pull the instrument back out, you will need to oil the valves and may need to re-grease the slides, etc. If the valves won't go down, make a fist, and hit the valve buttons with the bottom of your hand. This usually loosens them to the point they move. If not, take the bottom valve caps off and poor some oil into the valve with the instrument upside down. Let it soak for a while and hit them again. Once the valves are loose, take them out and clean and oil them

(See photos in Chapter 39 Instrument Repair.)

Still don't work? I bet you wish you'd played it from time to time to keep things loose. Off to the shop.

marcktimemusic.com

Chapter 38
Cleaning the Trumpet



Yamaha

Okay, I admit it. The only brass instrument I've cleaned is the trumpet, but this process will work for all the brass instruments…except for rotary valves. Taking these valves apart is more complex – it's not that hard, but you need to know what you're doing. Rather than give you advice, I'll let you search this out if you're seriously interested. But, be careful!

> FYI, many years ago I taught all the brass instruments at Quincy University. A horn came back from the shop after being cleaned; the student playing it complained to me that something was wrong. I'm not much of a horn player, but I played it a little…the student was right! It was strange…the horn sounded fine and blew okay, but the fingerings were messed up. Open and 2nd valve were okay, but not the 1st and 3rd valves. Somehow, I determined that these two valves were acting backward – pushing both down made it play like the open combination and letting them up made it play like the 1-3 combination. Up was down…down was up…what was going on? I finally realized that the two valves had been accidentally swapped at the shop. I removed both and put them in the correct casing. Problem solved!
>
> You won't have a problem like this with piston valves – if they've in the wrong casing, it will be difficult or even impossible to play the instrument.

Why do we need to clean brass instruments?

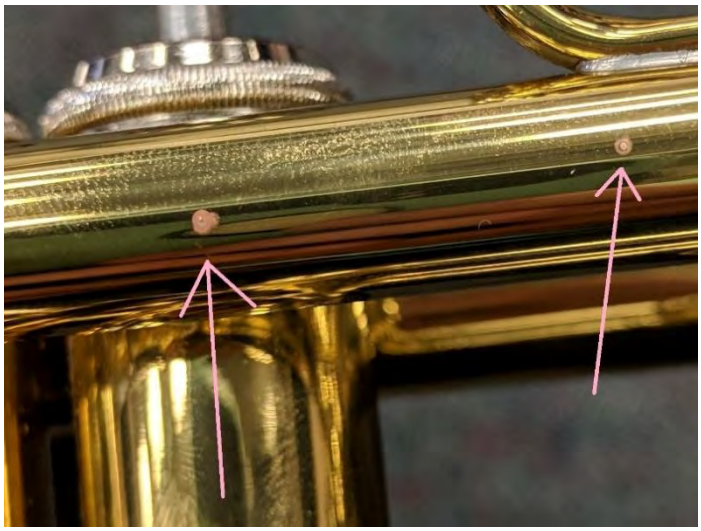
1. Intonation – If you remove the tuning slide of a trumpet that has not been cleaned for some time and look down the leadpipe, you'll see bumps on the inside. Leadpipes are designed to thousands of an inch, so what you're seeing distorts the leadpipe, changing its intonation.

2. Playing characteristics – Those same bumps change the way the horn blows. I'm probably paranoid, but if I need to clean my trumpet right before a big performance, I wait until after the concert. As the horn gets dirty, you gradually compensate by changing how you play. When the instrument is clean, you need to re-adapt to its new characteristics.

3. Health - Those bumps in the leadpipe are wonderful places for germs to hide and maybe even get into your lungs if you breathe back through the mouthpiece.

4. Function – A clean instrument works better mechanically. One summer, I cleaned my trumpet every week. It was fantastic – no valve or slide ever stuck.

5. Longevity – Have you priced a new instrument recently? They're expensive!! It's a LOT cheaper to clean your instrument than to replace it. If the instrument isn't cleaned regularly, you get dezincification – the zinc dissolves out of the brass alloy, weakening the instrument and eventually leading to a hole. On a trumpet, this particularly happens in the leadpipe and the main tuning slide. Once you get past those two areas, you won't find much that needs cleaning.



FYI, these are commonly called "pink spots" – on lacquer covered instruments, they are indeed pink, but on silver-plated instruments, they are dark in color; quite often the silver falls off.

How long does it take to clean a trumpet? Twenty minutes and about 30 more if you decided to polish it. (Better add another 20 minutes to let it soak. While you're waiting, you can read more of this book!)

Plenty of reasons to clean and it doesn't take a lot of time. How do we do it?

You need a few tools:

1. Bathtub, large sink, large plastic tub, etc. – large enough to fit the instrument.

2. Water and liquid soap – NOT hot water. Hot water is EVIL. Warm water is better than cold.

   Note: anti-bacterial soap kills bacteria; it does NOT kill viruses, like COVID-19.

3. Cleaning snake – snakes and mouthpiece brushes last a LONG time.

4. Mouthpiece brush – and they're not expensive – about $8 for both (2020 prices).

Cleaning Snake
Amazon

Mouthpiece Brush
Amazon

So, why is hot water EVIL? If you place a lacquer-covered instrument in hot water, the brass expands much faster than the lacquer can, so the lacquer flakes off. I doubt this would happen with silver, but I've never been willing to take the risk of finding out I'm wrong.

How do you know it's covered by lacquer? If it's not covered by silver or gold, then it's either lacquer or bare brass (which is discolored unless it's just been polished). If you see shiny metal that's not silver or gold, it's brass that was polished and then sprayed with lacquer to keep it looking good.

There's more to it than looks – bare brass is poisonous to the human body, so lacquer/silver/gold is a protection for you (as well as the manufacturer who doesn't want to be sued for endangering your health). I know there is some controversy over brass poisoning, but I was told this by Lloyd Fillio when he was Manager of Product Development for Selmer. He said Selmer refused to sell non-plated/non-lacquered brass instruments because of health concerns.

Time to clean!

1. Fill the bathtub, etc. with warm water.

2. Add liquid soap and stir it up a bit.

3. Take the trumpet completely apart. (Not as much as in the photo at the beginning of this chapter which shows parts before soldering.) Remove the valves and the tuning and valve slides. Take the bottom valve caps off. Leave the spit valves alone – they're awkward to put back together.

4. You can take the valves apart if you wish. Pay attention how they came apart so you can put them together again correctly, especially the valve guides that orient the valve properly in the casing. (Hint: take pictures with your phone as you go.)

   If you leave the valves together, remove the felts. When I was a kid, felts would compress over time until they were less than ¼th of their original thickness. The felts serve two purposes – they

remove the clacking sound of metal on metal, and they determine how far down the valves go and how far up they go. Modern felts have a cross weave integrated into them which makes them much less likely to compress. Still, I don't put them in water – why ask for trouble?

I also remove the finger buttons – I don't know if they would be damaged by water and soap…and I don't want to find out.

5. Put everything in the tub (EXCEPT the felts and valve caps). Put the mouthpiece in, too.

6. Let everything soak for 30 minutes or so.

   Note: As you go, dry each piece, and lay it where it can't fall to the floor.

7. Start with the leadpipe – it's usually the dirtiest, run the snake through several times. When nothing more comes out, run water through the leadpipe until only clean water comes out. Hold the trumpet toward a light and look at the light through the leadpipe – you should see nothing except a smooth surface. If you see bumps, you need to clean until they're gone. (It may require additional soaking.)

   WARNING: Don't be surprised if you get grossed out! Some of this stuff can be nasty! (Brushing your teeth before playing greatly reduces this problem.)

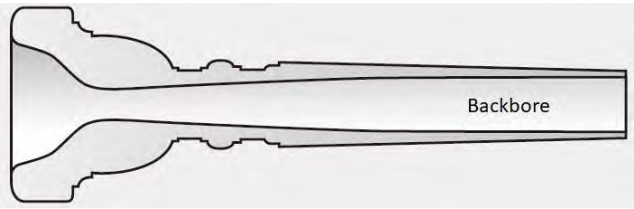
8. Run the snake through all the tubes of the trumpet body, especially the tube where the main tuning slide enters the 3rd valve. This can also be nasty.

9. Time for the tuning slide. Run a snake through it – with a little work, you should be able to get the snake completely through. (It's harder with a new snake, but the snake develops a slight bend, making it easier to use it in the future.) This is another prime location for dirt, so run the snake through until nothing comes out, and then run water until only clean water comes out.

10. Now the valve slides - some of the curves are too tight to get a snake all the way through, so run the snake through each tube of the slide – that's all you can do. Flush with water.

11. I use the brush part of the snake to clean the holes (ports) in the valves. If the instrument is seriously dirty, this area will need cleaning.

12. Run the mouthpiece brush through the mouthpiece several times. Run water through it, hold it up to a light, and look through the backbore at the light. It should be shiny and smooth throughout the length of the bore. If not, soak it more and clean again.



David Bolton – CCA Share Alike 2.0 Generic

13. If you are going to polish a silver-plated instrument, now is the time to do it. I've never seen any, but I've been told there are silver polishes with grit. Rub some of the polish between your

fingers – if it's anything other than smooth, DON'T USE IT! It will scratch the instrument.

If the tarnish is bad, use Tarnex. It doesn't smell great (it releases the sulfur in the tarnish, which smells like rotten eggs), but it works well. It is not a polish – it is a tarnish remover. If you want the instrument to shine, you need to polish it as well. Do NOT use Tarnex on satin silver finishes! (It has a soft, brushed look, not the bright shine of regular silver.)

Here are some recommended silver polishes: Amway, Flitz, Silversmith, Tarnishield, Twinkle, Wright's.

Connoisseurs Silver Wipes can make your trumpet shine. To maintain it, there is a Connoisseurs Ultrasoft Jewelry Polishing Cloth. I've used the Silver Wipes several times -- they do a good job. I haven't tried the polishing cloth, but I bet it also works well.

One of my college friends used Simichrome on his sliver-plated trumpet – after polishing it, he almost needed sunglasses because his instrument was so bright! He cautioned me against using Simichrome frequently because it removes a small amount of silver. That was 50 years ago – I just did an internet search and did not find that this is a concern. Perhaps they changed the chemicals in the product.

14. If you wish to clean the slides, use SOS or Comet. A brass polish can turn the silver black. DON'T use silver polish on the slides! Some polishes turn brass black and etch the metal. I've been told that Colgate Peroxyl, Colgate toothpaste, ether, and ginger root tea also clean brass.

15. Now we'll put the instrument back together – grease <u>everything</u> that moves. (Except the valves!!) Grease not only makes things move better; it prevents oxidation, which leads to stuck parts!
    a. Tuning Slide – Put grease on one of the tubes of the tuning slide. Put that tube in and move it in and out while twisting to spread the grease. Repeat with the other tube. Put the tuning slide all the way in and wipe off any grease that comes out. Pull the tuning slide to its normal position.

    b. Repeat the process with each of the valve slides.

    c. If your 1st or 3rd valve slide moves too slowly, put ONE drop of oil on each tube, move it and see how it's doing. If it's still slow, add another drop. If you use too much oil, the grease gets too thin and the slide hangs up when you use it.

    d. Put a dab of grease on the threads on the trumpet body where the bottom and top valve caps go (and on the finger buttons and valve stems if you took them apart). The grease will spread as you screw the parts together.

    e. Put the bottom valve caps back on. Wipe off any grease that comes out.

    f. This next step applies to Bach trumpets and others with similar valve guides:

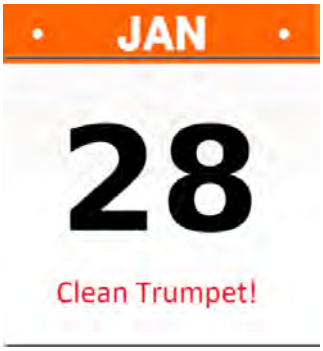
If you took the valve guides out, notice that there are two "T" shapes, one on each side. One of the T's is wider than the other. In most valves, the slots on the body of the valve prevent you from installing them incorrectly, but I have seen instruments that allow you to put it in the wrong way. If this happens, the holes will not line up and the trumpet will be REALLY stuffy, or you won't be able to get any air in the horn at all.

Amazon

g. Put the stems back in the valves, place the top valve cap over the stems, put the finger button on the stem, and screw the top valve caps on. Remove any grease that shows.

16. Oil the valves as you put them in. Do not rotate them except to make sure the valve guides catch.

How often should you clean the instrument? Every 3 months at a bare minimum. Once a month is better. Once a week would be awesome!



mi9 –Pixabay

Put a reminder on your phone or your calendar. It's amazing how fast 3 months passes!

Or you can send it to the shop, which isn't a bad idea. You'll be without an instrument for several days (depending how busy the shop is), and you're going to spend some money, but the shop has something you don't: an acid bath. The shop will take the instrument completely apart and soak it in a solution for 10 minutes that loosens dirt that will not come loose soaking in a bathtub.

If you don't want to do use the shop, clean your instrument on a regular basis, before the dirt has a chance to get this hard.

Truth in advertising: Shops no longer use acid, newer chemicals do the job just as well and are much less hard on the environment. This brings me to a couple stories about acid.

Amazon

thebandinstrumentrepaircompany.ecrater.com

The valve stem corroded and then snapped on a friend of mine's trumpet. The threads of the stem were left in the threads of the valve casing (the red arrow) with no way to mechanically remove them.

I was advised to get muriatic acid, aka, hydrochloric acid, from the hardware store. We poured enough acid to cover the threads into a glass jar and put the valve in upside down so that the acid could attack the valve stem metal.

It only took a few minutes, and the valve stem was eaten away. After flushing the valve with water to remove the acid, we put a new valve stem in – problem solved!

But what was going to do with the rest of the acid? Fortunately, I was loved on a gravel road, so I gradually poured the acid onto the rocks. That was when I realized how NASTY hydrochloric acid is! Smoke, hissing, bubbling – if you ever do this, be VERY careful. Wear rubber gloves, long-sleeved shirt, long pants, and safety glasses.

On the other hand, we could see the corrosion developing – if we had changed valve stems before it broke we could have avoided the acid.

At least that story had a happy ending. Not this one! (If you're wondering, no one was hurt.) A former student decided to become an instrument repairman; while learning, repair students worke on customers' instruments, just like beauty shop trainees work on people's hair, not wigs.

A trombone was brought in for cleaning. It was taken apart and placed in the acid bath. (This before modern chemicals came into use.) After it was clean, the trombone was removed and, since it was 5 pm, everyone went home.

The next morning, the student who had cleaned the trombone realized he had failed to remove the trombone bell from the acid. He went to the tank and pulled up on the plastic hanger holding the bell…and that's all that came out. Just the hanger, no trombone bell. During the night, the acid COMPLETELY dissolved the bell! I assume the shop and/or the repair student had to purchase a replacement bell – I bet that wasn't cheap.

This is a TRUE story!! It's a good thing that shops no longer use acid!

Chapter 39
Brass Instrument Repair

Some repairs are quick and easy; you should become proficient at them. Why send an instrument to the shop for days for a stuck mouthpiece if you can take care of it in a couple minutes?

On the other hand, you do not want to become too good at instrument repair or that's all you'll do. No score study, no practicing to improve your abilities, no improving as a musician. Quick and easy fixes are ok – I recommend that you leave it at that.

> FYI, if you've ever wondered why horns cost so much and why they are expensive to repair, watch this: Conn-Selmer French Horn Conn 8D Valve Section Assembly Sped Up!

Regular Cleaning

Be sure you clean your instruments regularly – it's much cheaper than buying a replacement! Plus, they function better, slides don't get stuck, and they play more in tune. This should be done a MINIMUM of once a year. More often would be better.

Horn Strings

> Warning: Scientists have determined that horn valve strings are most likely to break during a performance due to the high adrenaline level of the performers.

Okay, I just made that up. There is no scientific study, but I promise you that horn strings break during or immediately before the concert. You will NOT have time to deal with this – you'll be more than adequately stressed without this problem. Solution? Teach your horn players to re-string their horns! And make sure they keep string in their cases. I've even seen horn players tie string to their instruments so that it's always available.

You need to practice changing strings – it takes FOREVER the first time you do it, and then it gets better. I've watched experience horn players change strings – it takes them very little time. Since it's been decades since I did this, here's a good reference for you: How Do I Change the String on My French Horn? The accompanying video: Horn Stringing Tutorial. He makes it look easy – trust me, it's not! Another set of instructions: Helpful Horn Hints: How to String a French Horn Valve**. New teachers, my advice is to learn how to do this as soon as you have access to your band room.**

> **Note:** The string on thumb valves is typically reversed from that of the other three valves.

If you use a synthetic string, be sure it is pre-stretched. If it is not, it will stretch, and you'll have to tighten it up. (My recommendation is to use pre-stretched 40# nylon fish line.)

Repair shops have a device to hold all three valve levers at the correct height to simplify replacing all the strings at the same time.

wwbw.com

Mechanical Linkage

Some horns use mechanical linkage, eliminating the problem of strings breaking. They can be noisier than string. Here's an example

instrumentemuzica.ro

Rotary Valve Maintenance

Rotary valves need oiling on regular basis and the instrument needs to be thoroughly cleaned as well. Since I have not lived with a rotary valve, I suggest you do a little research on the internet. Much information is available, such as How To Service French Horn Rotors.

Be certain that the rotor bearings are correctly aligned and that the bumpers are of the correct thickness. See "Oiling Rotor Valves" and "Check Rotor Alignment" in Chapter 37 Instrument Care.

Breaking in Valves on New Instruments

Occasionally, a new instrument will be purchased that has valves that aren't seated properly. (Seating the valves is called "lapping.") I've only run into this one time, but it was a FRUSTRATING experience for the young lady who owned the trumpet.

> The valves kept sticking, even when she oiled them daily. I removed them – they looked dirty. I wiped my finger across the valve surface – my finger came up almost black. We found a clean piece of cloth and wiped the valves. That cloth was black when we finished!! We put the valves back in, oiled them, and everything was fine…until the next day when the valves started sticking again.

She wiped and re-oiled the valves. Glad that's done! Except that it wasn't – this process went on every day for several weeks. FINALLY, the valves finished breaking in, the cloth stayed clean, and the sticking stopped. I suppose she could have taken it to the local music store – except the town didn't have one.

Stuck Mouthpieces

Mouthpieces get stuck for all kinds of reason, most of them not very good. It doesn't take much to get a mouthpiece stuck; here are several ways to do it:

1. Hit it with your palm. It is such a cool sound!

2. Bump the mouthpiece into something while it's still in the instrument (a music stand, a wall, your friend – it doesn't matter).

3. Leave a mouthpiece in an instrument a LONG time.

4. Here's the "best" way – drop the instrument on the mouthpiece. This can be VERY bad – if it won't come out with a mouthpiece puller without too much trouble, send it to the shop. They have ways of getting things loose – torches and other things you don't have. BEWARE: The amount of damage YOU cause can quickly crease the cost of repairs.

   True story: While a student at Henderson, someone I'll call Bob (to protect the guilty) let a non-trumpeter look at an HSU cornet; the person proceeded to drop the instrument on the mouthpiece. In a panic, Bob got the school's Joe Thompson mouthpiece puller. It's a good tool, but it wasn't up to the job. Desperate, Bob grabbed the mouthpiece puller and gave it a good twist to loosen the mouthpiece.

   No, it didn't work, but he did twist off the entire leadpipe!! In today's money (2020), that would be about $200 for the leadpipe plus the repair work to the braces and installation of the new leadpipe. I'm sure that's another $100 minimum. So, $300 worth of damage. Cost of removing a severely stuck mouthpiece? Probably $30 or so.

FYI, the Thompson puller has a good reputation, but it's a tedious sorting through the collars to find the right size and then the other collar with the matching number. Here's a way to simplify your life:

Thompson mouthpiece puller – shopomatic.ru

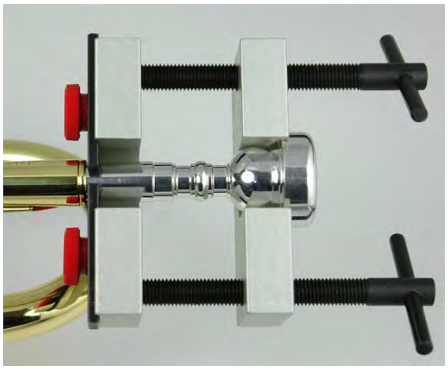
(There are also spit valve corks on the tip middle and the right, valve felts in the bottom middle, and horn bumpers on the bottom right.)

Rule: If a mouthpiece puller doesn't do the job easily, STOP!
Do not pass go. Do not collect $200.

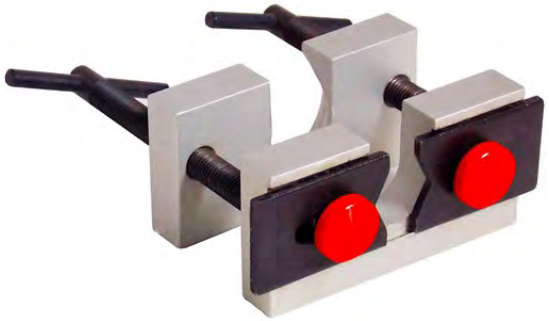
Go straight to the repair shop!!

This is the Bobcat mouthpiece puller – I've used it many times with close to 100% success. The few times I couldn't get a mouthpiece out, it went to the shop. No point in making things worse

From time to time, the mouthpiece gets wedged into the puller, but it's not hard to get it lose. As you can see from the front view on the next page, the red screws allow the "collars" to be adjustable – one size fits all.



ksmusicshoppersclub.com



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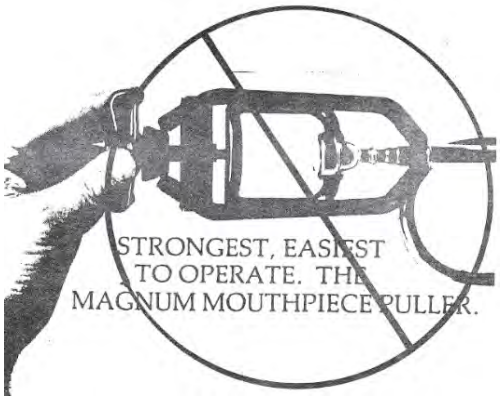

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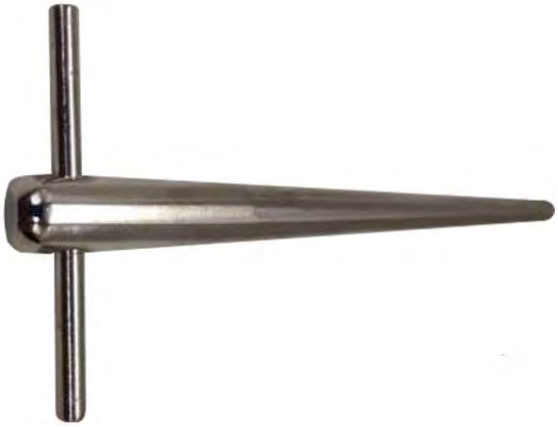
Do not use the Ferree Magnum mouthpiece puller – the jaws that grip the receiver quickly wear out, no longer gripping the leadpipe and rendering the tool useless.

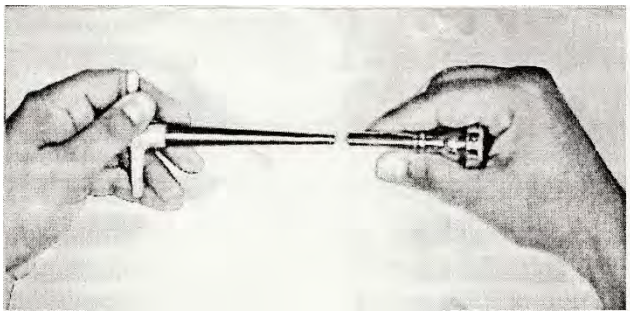
Mouthpiece Truing Tool

The mouthpiece truing tool is too wonderful to be without. EVERY band director should own one! It is used to round the shank ends of mouthpieces that have been flattened after dropping. Is that important? Only if you think playing in tune is important. Mouthpieces are designed to thousandths of an inch, so a flattened end will change its intonation and how it plays. (It also makes them more likely to get stuck.) Students are always sad when they drop their mouthpiece – a couple minutes of work and you'll have them smiling again!



amazon.com

To use it, put it in the backbore of the mouthpiece and push in while twisting the tool. This will quickly get 90-95% of the dent out. Quite often, it does not quite finish the job, so use a rawhide hammer, aka, chime mallet, to strike the mouthpiece with the tool inside. After this, it sometimes helps to put the mouthpiece in the receiver and rotate the mouthpiece while gently pushing. (Push too hard and it may get stuck!) You may not get it perfectly round, but it will be VERY close!



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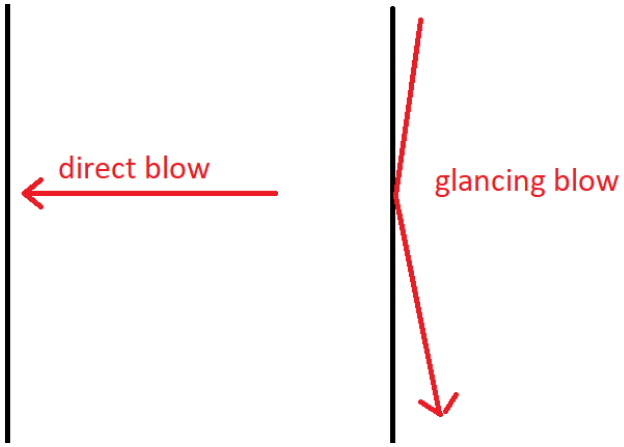
FYI, NEVER use a metal hammer – it thins the metal where you strike. Rawhide mallets do not do this. If you are in a jam, you can use a metal hammer ONLY if you use a glancing blow instead of hitting directly.



amazon.com

I've used two of these tools MANY times – they work great with trumpet, trombone, and euphonium mouthpieces but not so well with horn and tuba mouthpieces. The diameter is a little too large to get into horn mouthpieces; on the tuba, it frequently cannot go in far enough to do the job. Dr. Branstine cut off the end of a trueing tool, hoping in would work better with tubas, but he wasn't happy with the result.

Stuck Slides

Of course, the best way to handle stuck slides is to prevent them from getting stuck. ALL slides should be moved on a regular basis. Often, a little bit of muscle followed by greasing the slide will make all what follows unnecessary.

Slide Hammer

The slide hammer is another must-have tool. I have used one like the one pictured many, many times with a high rate of success. Here are four important things to know when using this tool:

1. If this tool doesn't get the job done, send the instrument to the shop. Admit defeat, go study scores, and avoid expensive damage to the instrument.

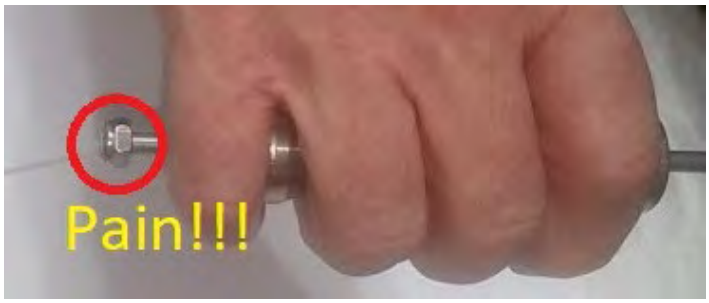
ferreestoolsinc.com

2. This tool should not be used directly on tuning slides – you must use a “paddle” to spread the force of the blow. There are two sizes of bumpers on the paddle so you can pick the one closest to the slide’s curvature.

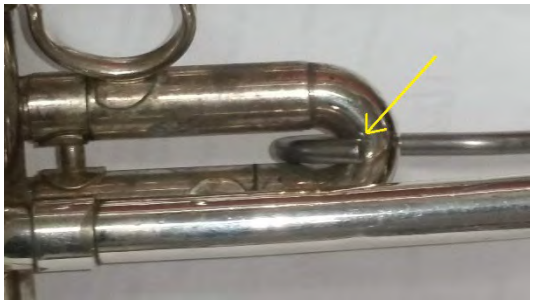
   The paddle is more awkward to use because the force is not transferred in a straight line to the stuck slide. In fact, it takes quite a bit of strength to prevent the paddle from moving with the hammer, reducing its effectiveness. (It’s easier with two people – one to hold the instrument while the other keeps the paddle in place with one hand and uses the slide hammer with the other hand.)

   In the next photo you’ll notice that I moved the eye screws closer to the protective rubber, making it easier to keep the paddle straight and transferring more of the impact into loosening the slide.

3. On the hand moving the hammer, keep your pinky out of the way! Beware the end of the nut in the red circle!!! The first time you don’t will be the last time – it REALLY hurts! Trust me! (The tool on the preceding page has a lip at the bottom of the hand grip to help prevent this.)



4. If possible, be sure the end of the hook is <u>away from</u> the instrument. If the end is toward the instrument, it strikes the instrument and dents it. (See yellow arrow.) If the slide is really stuck, you can end up with DOZENS of tiny little dents that YOU can't get out. Off to the shop…please don't ask how I know this. It's very embarrassing…



Below you can see the hook inserted correctly so the end cannot dent the instrument.

Here's another tool –Ferres Tuning Slide Removal Pliers:

ferreestoolsinc.com

Instructions: “Just fit the sharp edge of the plier into the gap between the inner and outer slide as far as possible. Set the safety screw so the tubing can't accidentally be crushed by hand pressure. Then, by tapping on the opposite side of the tool with a rawhide mallet, while applying pressure to the handles the slide will break loose and move. Penetrating oil, such as J88 Corrosion Cracker Oil, should always be applied to the affected slide area before any slide removal method is tried.”

Ferree's tuning Slide Removal Pliers demo (youtube)

And a 12-video series on slides:

How To Repair Stuck Tuning Slides – The Brass and Woodwind Shop (youtube)

Old School Methods

Before there were slide hammers, musicians used belts or rags to snap slides out. This can work, but they are not as effective as slide hammers which have a much sharper, more sudden impact.

You can also try penetrating oil, used to loosen rusted bolts, etc. If there is no visible damage to the instrument, it is probably stuck due to corrosion. In this case, penetrating oil should help. (I’ve heard that valve oil works – it probably depends on how bad the corrosion is.)

Truth in advertising: the one time I tried penetrating oil, it was unsuccessful. I suspect that is because the slide was REALLY stuck.

Dents

Dents don’t usually affect instruments much (unless they’re in the leadpipe), but there is a psychological advantage to a dent-free instrument. When the instrument looks good, you want to play well; when it looks bad, it’s easy blame the instrument and not expect much.

If the dent is more rounded, it can probably be removed without a trace. If the dent has caused a crease, it is almost impossible to remove it visually – you won’t be able to feel it, but you will still see it.

FYI, dents in instruments with a lacquer finish should be removed as soon as possible. When removing older dents, the lacquer tends to crack and fall off.

Trombone slide dents should be repaired at the shop -- this is the most challenging of repair jobs. Most slide problems are caused by dirt, so keep it clean!

Dent Balls

I've used dent balls a few times with mixed success to remove dents from tubing. You're probably better off sending the instrument to the shop.

ferreestoolsinc.com

Sticky Piston Valves

Sticky valves are caused by five things:

1. Lack of oil – easily fixed!

2. Dirt – if the instrument is dirty, the valves will stick. Here's how you figure it out:
    a. Oil the valve. If it continues to stick,

    b. Wipe the valve with a clean cloth and run the cloth through the valve casing – you can use a trumpet cleaning rod to help get it through the casing. Be certain that you wrap the cloth around the rod so that it doesn't scratch the inside of the casing. (I've used plastic pens to help get a cloth through the casing.) If the valve still sticks,

    Sometimes you will see a brown discoloration on the valve. Although it is very thin, it can make valves hang up. It can be removed with silver polish.

rettigmusic.com

    c. Wash the valve and casing with soap and water. If the valve stops sticking for a short time but starts sticking again,

d. Clean the entire instrument.

   If the instrument is only a little dirty, step B. will work, but if it's quite dirty, new dirt from other parts of the instrument soon get on the valve. You can repeat step b. over and over or try step c., but it's more time efficient to clean the entire instrument and be done.

   If the valve continues to stick, something is mechanically wrong.

3. Damage – check the valve casing for signs of damage, looking for a dent making the casing unround. (Is that a word?) Piston valves only work when everything is parallel – dents cause problems.

   Another possibility is a slide bent out of place or slide tubes are not correctly aligned – more on that later in this chapter.

4. Tip from Henderson alum John Webb: the valve stem should be centered in the valve cap hole. This can be remedied by pushing the stem into place.

Nick Stafford –Pixabay

5. Although this is rare, worn valve guides can cause a valve to stick. It is more common with low brass instruments.

amazon.com

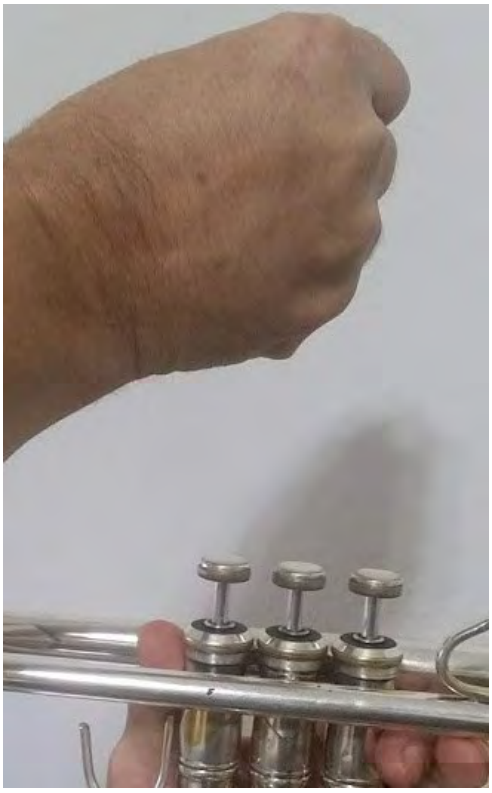
6. Silicone oil – okay, there are six things that make valves stick. (If you've forgotten about this, see "Oiling Piston Valves" in Chapter 37 Instrument Care.)

Stuck Valve

If you are not aware of damage to the instrument, proceed as follows. If you know it's been damaged, send it to the shop!

Valves Stuck Up. It's probably been too long since the valves were oiled. As we discussed in Chapter 37 Instrument Care:

> If the valves won't go down, make a fist, and hit the valve buttons with the bottom of your hand. This usually loosens them to the point they will move. If not, take the bottom valve caps off and poor some oil into the valve with the instrument upside down. Let it soak for a while and hit them again. Once the valves are loose, take them out and clean and oil them.



Valve Stuck Down. WARNING! WARNING! DANGER! This is probably due to damage – why else would it be stuck down??!! There is a solution that people try that is BAD, BAD, BAD!! Do NOT try this at home!! Trained professionals certainly won't do this:

> Unscrew the bottom valve cap, put a wooden dowel against the bottom of the valve, and hit the dowel with a hammer.

youtube.com

Big mistake! Huge! It might work if the valve were solid, but it's not!! The valve is hollow with a cap on the bottom end. When you hit the dowel, you'll bust the cap loose and knock it inside the valve. Oh, you already did that? Congratulations! You'll soon be the owner of a brand-new valve because you have ruined your old one.

However, there is something you can try, and it often works. Unscrew the top valve cap. This puts quite a bit of force on the valve, pulling it up. (Sometimes the valve cap unscrews at the same time; if this is the case, hold the valve cap so it can't rotate.) After the valve has come up, screw the cap back down, revealing a gap between the valve button and the top of the valve casing. Pulling up on the valve cap will usually free the valve. If this doesn't work, take the bottom cap off and put valve oil in the bottom of the casing. Keep the instrument upside down so the oil has a chance to soak in between the valve and the casing and then try pulling up on the valve cap again. If that doesn't do it, send it to the shop!

Slides Move, Valve Sticks

If the valve slides move without much trouble but a valve is having a problem, the slide may be bent out of place, warping the casing, and binding the valve. You may want to have this fixed at the shop, but if you can't afford the time or the money, aligning valve slides is a repair you can try yourself; it's best done watching TV – it's slow and tedious and can take quite some time. ***BE GENTLE!*** Twice I have broken off the tubes to the 2nd valve casing while working on a sticky valve. (I'm stronger than I look!)

Damage Assessment

OpenClipart-Vectors – Pixabay

It doesn't take much to bend a slide out of place, so most of the time you have no idea what happened. Put on your Sherlock Holmes cap and start figuring it out.

Begin by identifying likely angles where something might have caused the bend. Some angles are unlikely because the bell or the leadpipe would have been in the way. Another example: on the horn, the F valve slides protect the B-flat valve slides.

You can see in this view that is highly unlikely that the 1st or 3rd valve slides be hit from above – the leadpipe and bell protect them. The 2nd valve, however, is less protected. Laying the trumpet down on the 2nd wrong side is asking for trouble; forcing a case closed will also bend this slide.

The entire instrument is susceptible to damage from the bottom. All three valve slides and the tuning slide are exposed.

The second valve slide can easily be bent from this side. The first valve slide is also at risk. The 3rd slide is protected by the leadpipe and the tube entering the 3rd valve.

Note: if either of these two is struck, it can bend the 3rd valve casing with the same result as bumping the 3rd valve slide.

The 3rd slide is particularly vulnerable from this side; the 1st valve slide is fairly protected by the bell tubing, and the 2nd valve slide is totally blocked by the valve casings. (I was VERY careful with the 2nd valve slide while setting the trumpet down for this picture!)

Experimenting

Once you have determined a probable angle, gently push the slide back exactly 180 degrees from that angle while moving the valve up and down. If it gets better, you're on the right track. If it doesn't, consider a different angle.

Once you know which way to push – easy does it. Push a little bit and let go. The slide will spring back part of the way, so you'll probably have to push again. Repeat until the problem is solved. (Lots of small pushes are better than one big OOPS!! push.)

True confession: Almost 40 years ago, I kicked over my C trumpet while it was sitting on a trumpet stand. The 3rd valve was STUCK! I began this procedure and soon had the valve moving slowly, but it took two days of pushing one direction or another until the valve was as good as new.

Maybe you should just send it to the shop – you have more important things to do, like score study. The repair person probably won't snap a valve slide off; if they do, they can fix it.

Valves

The valves should not wiggle side to side. An easy way to check this is by removing the bottom cap and pushing side to side on the finger button. You should not see any motion in the bottom of the valve. If you do, the valves need replating…it may not be worth the expense. Using a heavier oil can provide a temporary solution. Fortunately, this is a rare condition; most valves are now made from monel which virtually does not wear out.

Noisy valves are usually caused by a loose valve cap. If that's not the problem, it's a worn or missing felt, which determine how far a valve goes down and how far it comes up.

> **Note:** Many instruments use a neoprene "felt" in the top valve cap. These do not compress and last a LONG time, although they eventually become hard and somewhat brittle and need to be replaced.

The 2nd valve downstroke is checked with the slide removed. Pressing the valve down allows you to see if the hole in the valve precisely aligns with the slide tubing attached to the casing. (It's harder to see the holes, but the 1st and 3rd valve downstrokes can also be checked this way.)

Valve in the up position – no air going into 2nd valve slide.

Valve partially down, showing misalignment.

Valve down – holes aligned. (Looks like it needs cleaning!)

The 2nd valve upstroke is checked by placing a dental mirror into the 3rd valve casing with a light shining onto the mirror to light up the 2nd valve openings. (The 1st and 3rd valves can be checked with the mirror and a light in the 2nd valve casing.)

With the 2nd valve is aligned, the assumption is made that the 1st and 3rd valves use felts of identical thickness. (Some musicians have their valve felt alignment professionally adjusted to ensure everything is lined up. I've only known one person who had this done; he felt it improved his trumpet.)

Susan Slaughter had a very practical method of finding out if your instrument is having issues – unscrew the top caps a little so the valves don't go down as far. If it plays better, the top felts need replacing. Unscrewing the finger button allows the valve to go down further. It this helps, the felts inside the valve casing need to be replaced.

Over the Top??

Is having your valves professionally aligned over the top? Along this same line is cryogenic treatment where an instrument is gradually cooled to 300° F below zero. After as much as 72 hours at this temperature, it is gradually brought up to room temperature. This is supposed to realign the molecules and relieve stresses introduced during manufacture, allowing the instrument to play better.

Does it work? There is no question that this process helps tools last longer, so perhaps it does. The problem with evaluating "frozen" instruments is that it is highly subjective. First, the instrument must be sent away to be frozen, there may be a delay at the company before it's frozen, there's the process itself, and finally it must be shipped back to the musician. At least several weeks have passed since the person last played their instrument. How accurate is their memory?? And, they WANT it to work, so their evaluation is likely biased. After all, they just spent several hundred dollars and went without their instrument for weeks – surely it MUST have made a difference!

Rule: If you think an instrument plays better, it does.

Valves Move, Slides Don't

For a valve slide to move easily, the inner and outer tubes must be exactly parallel. Here's how you find out what's wrong:

1. Remove the slide and look at the ends of the tubes on the slide and those coming from the valve casing – they should be perfectly round.

2. Remove the slide and replace one of the tubes, leaving the other tube off. The slide should move easily and smoothly. Swap tubes; the other tube should also work perfectly. If there are problems with either or both tubes, don't on to the next two steps until they do.

   I've had good success working slides dry – it's is best done watching TV because it takes a while:

   Wipe all the grease off the tube you're working on…oh, wait…there's grease inside the corresponding tube of the slide. Put the slide tube back on, remove it, and wipe off any grease transferred from inside the slide. Repeat until you don't see any more grease.

   Put the dry slide tube onto the other dry tube. Slide it back and forth while rotating side to side at the same time. When you think you've done enough (it's guesswork), put grease on the slide and see if it's working properly. If it is, on to the other tube! If it's not, wipe all the grease

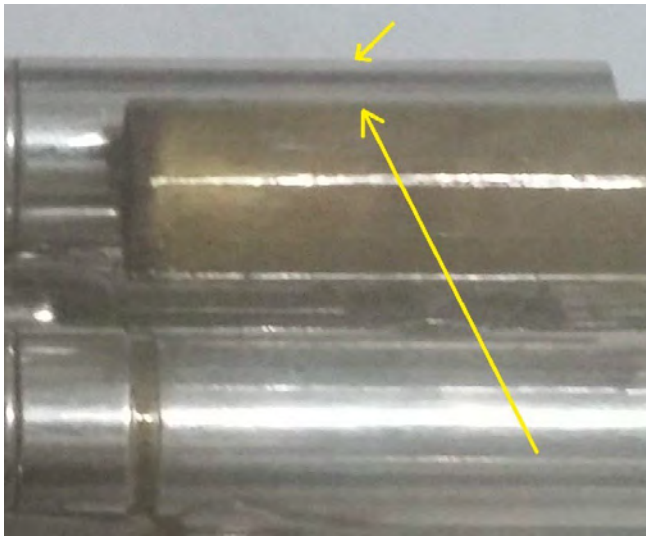
off…again…, work the dry tubes, and test it again. Sooner or later, you'll have success. (Maybe you'll need to watch a movie instead of a sitcom…the complete Lord of the Rings?)

When both tubes of a slide work smoothly, on to steps 3 and 4.

3. As you begin to replace the slide, the ends of the top and bottom tubes coming from the instrument should precisely align with the tubes on the slide. (They don't in this photo.)

   Before you get in a hurry and decide where the problem lies, be sure to consider that the slide could be out of alignment or it could be the tubes coming from the casing or it could be both.

4. Another way to tell is to remove the slide and put only one of the tubes back on (left photo). Rotate the remaining tube so that it is adjacent to where it should be (right photo). Hold the instrument toward a light and look to see if the tube of the slide is parallel to the tube coming from the casing. (The angle in the right photo is not enough – only a sliver of the slide in back should show, making it easier to judge parallel.)



5. Look for shiny spots on the slides; these are caused by additional wear on the slide.

Okay, you have a working theory about what's wrong. Now the fun begins…gently bend the tubing so that (you hope) it ends up more parallel. Be careful! It is generally best to bend a tube with the valve slide attached to that tube only (as in the photo on the left). This recommendation comes from a man at the Bach factory whose job was to align Bach Strad slides to work perfectly.

Valve Springs

See “Springs” in Chapter 37 Instrument Care.

Spit Valve Corks

Leaky spit valve corks can cause an airy tone. Replacing them used to be a bit of a process, but it is no longer. Simply remove old cork with a small screwdriver, remove any glue that may be inside the water key where the cork was, remove the paper covering the glue on the new cork, and press the cork in. Done! (FYI, corks come in different diameters, so be sure to get the correct size for the instrument you’re fixing.)

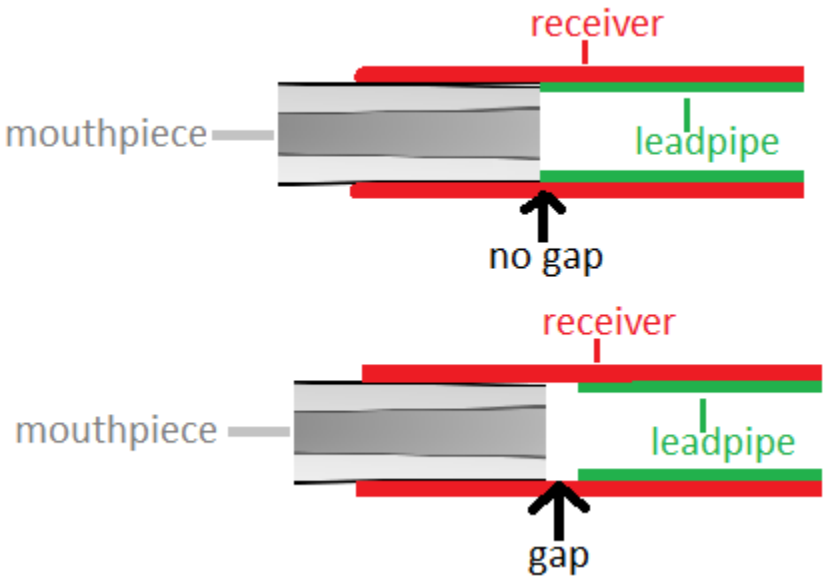
Test the cork to be sure it seats well – remove the slide with the water key, block one tube with your finger, and blow on the other tube with the spit valve in the closed position. There should be no leak; if there is, you need to try a different cork.

FYI, there are several other possible causes of an airy sound, such as a leak in solder joint at the mouthpiece receiver or at any other point in the leadpipe or tuning slide.

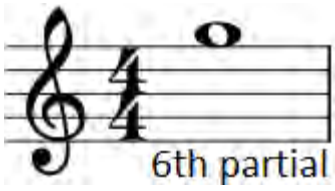
Or it could be the player. Long tones!!

Mouthpiece Receiver

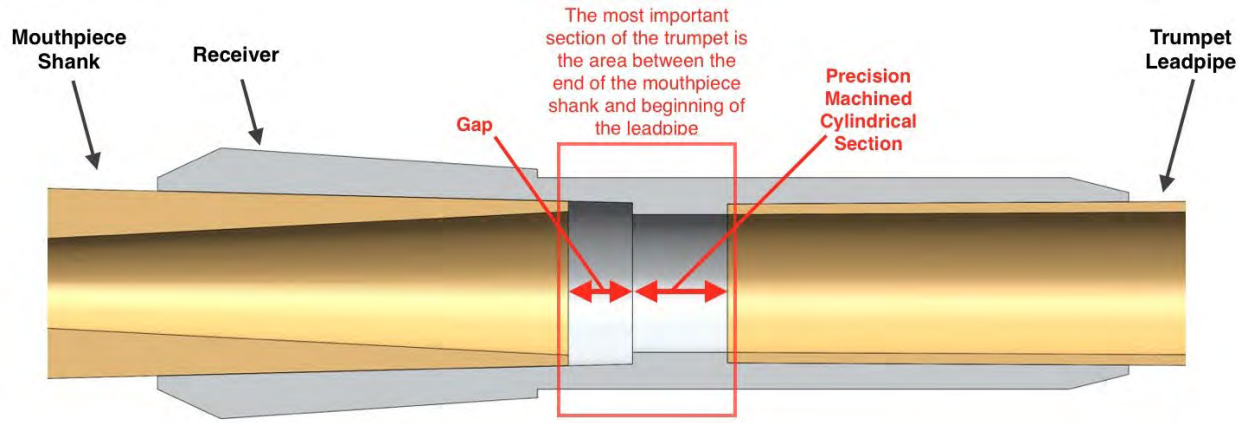
Mouthpiece receivers sometimes wear out and need to be replaced. (It’s happened to me twice.) This brings up an interesting debate – should the mouthpiece butt squarely against the leadpipe or should there be a gap?



Lloyd Fillio, former plant manager fir Bach, told me that the gap was necessary to bring down the pitch of the 6th partial (G above the staff) which tends to be sharp.



Here's Warburton's take on the gap:



Warburton email (2/23/21)

> Why does the Warburton Trumpet play so much better than the others?
>
> There are actually many reasons - however one of the big reasons is the Warburton "Slot Receiver". Many players already know about the "gap" and the role it plays with all trumpet/mouthpiece combinations. Careful attention paid to finding the range of gap measurement which works well for your particular mouthpiece and trumpet solves many issues some players never realized they were fighting against.
>
> Seeing the impact the gap has on playability, Terry Warburton decided further experimentation with this area of the trumpet's air stream was worth looking into. After examining and modifying many other horns, it became evident there was significant value in having a consistent cylindrical area between the gap and the beginning of the tapered leadpipe. This concept has evolved into the Warburton "Slot Receiver" - a standard feature exclusive to the Warburton Trumpet.
>
> One of the first things players notice about the Warburton Trumpet is how easily the notes slot into place, and the locked in feel of the note - throughout the entire range of the horn!
>
> > **Note:** I have played one of these instruments – I completely agree with the preceding paragraph!

Stomvi also advocates a gap – here's more information.

Renold Schilke insisted that the gap creates turbulence. Who's right? Since the debate continues, truth must be on both sides and it becomes a matter of personal preference.

Spit Valve Springs

Spit valve springs break from time to time. A short-term fix is to use a rubber band to hold the water key in place. Since it's flexible, you can still use the spit valve. This *could* be a long-term fix, but you'll have to put new rubber bands on from time to time AND the rubber band will TARNISH a silver-plated instrument. With some hard work, the tarnish will come off…but not without a fight.

bandrepairparts.com

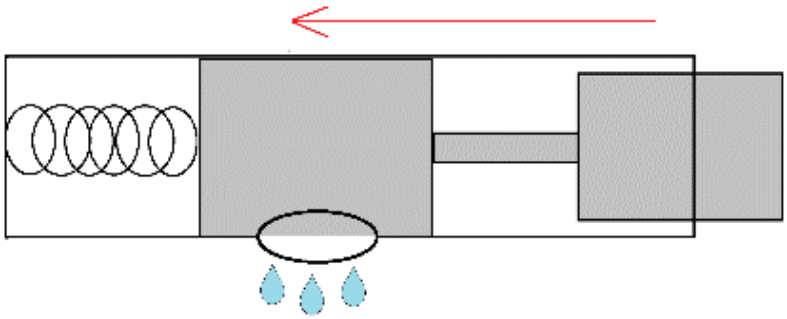
Look at other spit valve springs to be sure you put the new spring on correctly. The long ends of the new spring need to be cut AFTER the spring is in place. Regular wire cutters will be damaged by the spring steel, so be sure to use spring steel wire cutters.

I've been told that repair shops have a special tool to make installing a new spring easy. I've never used one – it's not that hard to make the spring go into the right place, but it can be a pain…literally, if you poke your finger with the end of the spring wire.

Amado Water Key

Sometimes Amado water keys get stuck open or closed. If it's stuck closed, a good, hard squeeze usually does the trick. If it's stuck open, you will need something small to push it back to the closed position. You may need to put some oil on it and let it soak for a bit to loosen it up. Penetrating oil is another option. Once you get the water key loose, work it back and forth. If you haven't already oiled it, do that, too. (This is one of the easiest repair jobs!)

amazon.com



Water droplets by Clker-Free-Vector-Images – Pixabay

If you're wondering how this key works, perhaps this drawing will help. Pressing the water key moves the piston to the left, opening the hole for the water to come out. When released, the spring moves the piston to the right, sealing the opening.

Chapter 40
Instrument Selection

There are a LOT of choices out there! And there's a LOT of hype!! How do you know what to buy??

Honestly, I cannot answer that – I suspect I would have to add 500 pages to this book to do an adequate job. Even that is pointless – we have different taste in instruments and none of us play the same way, so what I think is best may not be right for you or your students.

The best test is ALWAYS playing the instrument. Fortunately, most dealers will let you play an instrument before you buy it, but you must be VERY careful to keep it in new condition. As the old saying goes, "You drop it, you bought it." Expect to pay return shipping if you don't keep the instrument.

As far as hype, "let the buyer beware," especially if you're buying on the internet.

> **Note:** Some manufacturers talk about how precise their instruments are, carefully crafted for specific situations, so you need to buy a trumpet specifically designed for Mahler symphonies or whatever. I don't believe it – the number of people in the audience capable of hearing the difference is probably zero.
>
> Even professional conductors can't hear the difference – Gerard Schwarz played principal trumpet in the New York Philharmonic for several years before he gave up playing to become a conductor. (Better money, less practice. Schwarz said it took him two hours of practice every day just to maintain his level of playing. This was our loss – Schwarz was a FANTASTIC trumpeter!!!)
>
> In a clinic, Schwarz told us that one of his conductors objected to his use of a C trumpet and insisted that Schwarz play a B-flat trumpet. Schwarz had a C trumpet made that was proportioned the same as a B-flat; the conductor was satisfied.
>
> On another occasion, a conductor told Schwarz he wanted a passage played on flugelhorn. Not having a flugel with him, Schwarz picked up a D trumpet (even brighter than a C trumpet); again, the conductor was satisfied.

Student Models

Instrument manufacturers look for endorsement by professional musicians to help promote their products. Seems logical, but it is important to understand the professionals are not the best people to test instruments. After years of intense playing, they are much stronger than any beginner and they can make things work that a beginner can't. So, who do you trust? I'm not much help – I've been playing trumpet for 59 years, so I would advise talking to band directors who teach beginners. (Nevertheless, I do have suggestions for beginner trumpets – see below.)

When selecting beginner instruments, there are several factors to consider:

1. The instrument must be strong to withstand carelessness. Quite often, brass instruments are made with a heavier thickness of metal to provide this strength, even though it means the

instrument doesn't play as well as a professional model.

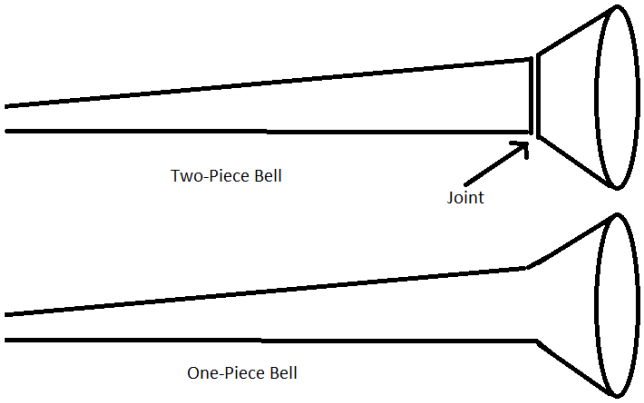
2. The instrument should not be too hard to blow (too stuffy) or be too wide open (sucking all the air out of their lungs, forcing a student to hold back, and creating tension). It's like Goldilocks – not too tight, not too open, just right!

3. The tone should be reasonably consistent throughout the instrument's range.

4. Intonation must be reasonably good, especially the 5th partial: 4th-line D and 4th-space E-flat and E natural. Use a tuner!

5. First and third trumpet slides must move smoothly.

FYI, beginner instruments have two-piece bells which are cheaper to manufacture than the one-piece bell of professional instruments



Buying locally will cost more than ordering online, but you will get better service. Parents are often hesitant to buy an instrument until they know their child is going to stay with it. (Mine were!!) Check with the local store to see if rental fees can be applied to the purchase price. They often have enough flexibility in their pricing to do this, and it makes parents feel like good about rental fees.

Non-name brand imports are often not good; the reason for this is surprising – the poor quality results from the importer specifying a cheap instrument. If they ask for a $100 trumpet, that's what they get – an instrument that's poorly designed, not well made, and frequently breaks. Ask the same company to make a $1,000 trumpet and you'll get a far superior instrument. Since the primary reason to buy a non-name brand foreign import is saving money, you are likely wasting your money and condemning a student to a difficult playing career. As the band director, you must convince parents they are investing in a quality instrument that will hold up for years, need little maintenance, keep their child off the streets, and open doors to college scholarships. Sounds like a no brainer to me!

Cornet

Young trumpeters should start on cornet. The most practical reason for this is that young people do not have the arm length or strength to hold a trumpet properly.

Equally important, the cornet tends toward a warmer sound. When the student switches to trumpet in high school, they maintain much of this sound instead of developing the harshness often associated with the trumpet.

Cornets are more conical than trumpets; as a result, flexibility is easier on cornet, a great advantage for beginners.

Beginner Instrument Recommendations	
Trumpet	Horn
Bach TR300, Bach CR 300 (cornet) Yamaha Olds (no longer in manufacture) King Cleveland	Since the school supplies these instruments, you will have to use whatever the school owns.

Eventually students outgrow beginner instruments. Many times, they (I mean their parents) buy a step-up or intermediate level instrument. DO NOT LET THIS HAPPEN!!!!!!!!!!!!! It is a waste of money!!!!

Yes, intermediate models are cheaper than pro instruments, but student soon outgrow intermediate instruments, especially if they major in music in college. Many of my college students come in with step-up trumpets; it's only a year or two before the instrument holds them back. That does NOT happen with professional instruments.

Quite often, the student/parents don't have the money to buy another instrument while the student is in college, so they're stuck playing an inadequate instrument for the entire time. When they graduate, they don't have money for a new instrument; in fact, it may be YEARS before they can afford a pro horn, maybe even decades if they have children.

And, it is a WASTE OF MONEY!!!!!!! I'm going to make up some numbers to prove my point:

	Intermediate	No Intermediate
Beginner	$ 500	$ 500
Intermediate	$1,000	-
Professional	$3,000	$3,000
Total	$4,500	$3,500

The money spent on the step-up horn is wasted. No stepping up – go straight to a top-line model!

Professional Models

The requirements for professional instruments are similar to those for beginner instruments:

a. Instruments should not be too stuffy or too open.

b. Reasonably consistent tone throughout the instrument's range.

c. Should be reasonably well in tune, especially 5th partial-D, E-flat, and E. Use a tuner!

d. Trumpet 1st and 3rd valve slides must move smoothly.

Carelessness shouldn't be an issue for older students. If they can't treat their instrument properly, they shouldn't be buying one – professional instruments are not as strong as beginner horns and trumpets.

There are additional considerations for professional models that don't have hard and fast answers:

1. The style of music to be played on the instrument.

   Classical players prefer instruments that "slot," locking onto a partial and tending to be very

solid on pitch. Jazz musicians, however, like instruments that don't slot, making it easier to bend pitches, an important part of jazz playing.

Students should purchase an instrument that sounds great in concert band; it will certainly be fine in marching band or jazz band. A bright instrument, often preferred in jazz bands, does not blend well in a concert setting.

2. The player's stage of development must be considered. Bach trumpets are less efficient than other trumpets and require more effort to play. Such an instrument is fine for high school students and older, but they are NOT good for beginners.

3. Professional instruments have many options, such as:

   a. Lightweight trumpets use thinner metal, but with the same interior dimensions as normal weight instruments. Lightweight trumpets are easier to play but have a brighter tone. Since they damage more easily, they are not recommended for young students.

   b. Instruments have different bore sizes (the diameter of the tubing). Trumpet bores are measured at the 2nd valve slide. Most trumpeters play medium large bore B-flats, which are around 0.459 inches. Some players prefer larger trumpets with a 0.468-inch bore. (That's only nine-thousands of an inch, not quite 1/100th of an inch, but you tell the difference!)

      FYI, large bore C trumpets blow very much like medium-large bore B-flats and their sound is more like the B-flats. If you're getting a C trumpet, get a large bore unless you play on using it mainly in situations where you need to play softly.

   c. Bells have different diameters, tapers, and throats. Relatively recent manufacturers are likely to have developed a system to describe these variables. Early manufacturers spent a lot of time, effort, and money on experimentation but did not have a clear plan in place. Vincent Bach is a prime example. The Bach Strad 37 bell is the most common, but there is also a 43 bell (advocated by Ray Crisara) which I prefer – it has a smoother tone quality than the 37, and the 72 bell, which has a beautiful, dark timbre. The most popular bells for C trumpets are 229 and 239.

      Looking at the B-flat bells, one is tempted to hypothesize that the bigger the number, the bigger the bell. This is not correct – the number is simply the model number, there was no master design plan in effect. The 37th bell Bach designed was give the number 37. Thirty-five experiments later, he labelled the bell 72. In between were 34 bells which varied greatly in design specifications.

      Much more detail on Bach bells at this link. If you're curious how Bach makes trumpets, watch Bach Trumpet Tour on Youtube.

      Schilke makes a unique one-piece bell by placing a bell mandrel into a solution and electro-plating the metal onto the mandrel, producing a one-piece bell without seams. (A bell mandrel is a piece of metal in the exact shape of the inside of the bell. Normally, the bell is shaped to the mandrel using hammers and other tools.)

Tuning bell trumpets are available. Instead of moving a tuning slide, the entire bell is moved. Tuning bells can be added to any trumpet, but it is a rather fragile arrangement. It is an expensive option, usually found on instruments played in two keys with two different bells, such as D/E-flat trumpets. The red arrows point to the two screws that must be loosened to change the tuning.

kanstul.com

In my college acoustics class, we were told that the material an instrument is made from does not make any difference in the sound; the only thing that matters is the interior dimensions of the instrument. Therefore, if you could make a trumpet out of paper with the precise inner dimensions or a brass instrument, they would sound the same.

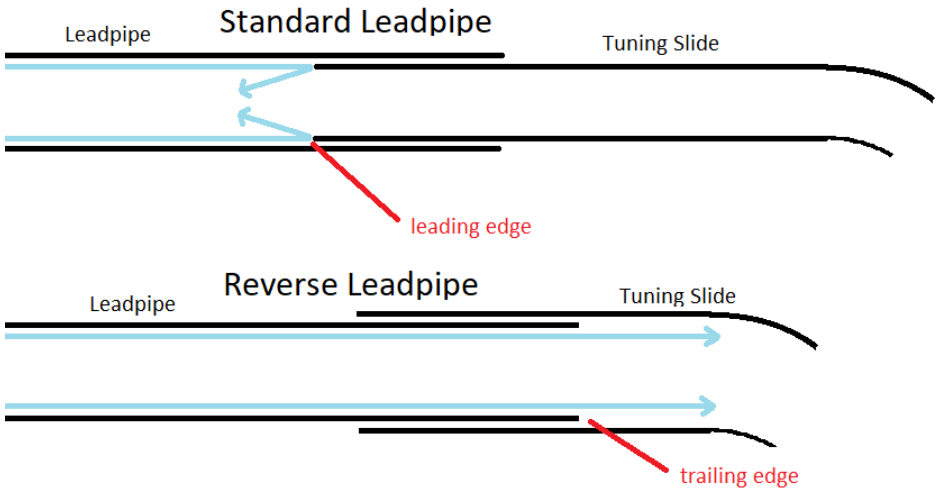
Renold Schilke said in a clinic I attended that he experimented with bells to prove or disprove this theory. He made two bells: one from steel and one from lead. He said that their interior dimensions were IDENTICAL. He asked the audience which bell they thought would be bright and which would be dark. Everyone agreed that the steel bell would be bright, and the lead bell would be dark.

Everyone except Mr. Schilke who explained that the steel bell vibrated so much and so easily that it canceled the overtones in the sound – it was very dark in timbre. The lead bell, however, didn't vibrate at all so the overtones were very strong. It was BRIGHT in tone color!

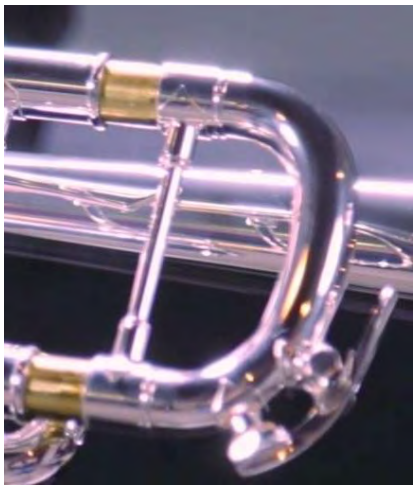
I guess that should have been the first episode of MythBusters!

If you're curious, here is information from Getzen about how bells are made.

d. Trumpets are also available with reverse leadpipes – the tuning slide goes over the leadpipe instead of inside to minimize disruptions to the air flow caused by the leading edge of the tuning slide. Reverse leadpipes are easier to blow and provide less resistance.



e. The shape of tuning slide also affects how the instrument blows. Most Bach Strad trumpets have two rather sharp corners in the tuning slide, increasing resistance and contributing to the trademark sound of these instruments. Tuning slides with more gentle curves are easier to blow and have less resistance.



youtube.com
Standard Bach Strad Tuning Slide

wwbw.com
Rounded Bach Strad Tuning Slide

NOTE: That being said, too little resistance is not good – it will suck the air out of the player so fast that they have to hold back on the air, creating isometric tension between the blowing and inhaling muscles.

The ovate tuning slide starts with a gentle bend, tightens considerably in the middle, and opens up again; it is supposed to combine free flowing with enough resistance to create compression.

kesslermusic.com

f. You'll notice the "wide" braces on this trumpet. If you look closely, the bottom caps are heavier than normal. Sometimes you'll see valve buttons that are thinner than normal. All these

changes make a difference in the sound and the way the instrument plays. Personal preference! How do you know? Experimentation. The question is which will happen first –going crazy or going broke??

g. There are three different brass alloys (made from copper and zinc) used in making instruments:

1. Yellow brass –the most common. It is 70% copper "which produces a bright and direct tone that 'cuts through', making it perfect for those trumpet fanfares."

2. Gold brass – 85% copper "gives the instrument a broader, fuller tone whilst still retaining a good level of projection."

3. Red or rose brass – 90% copper "gives a warmer and mellower tone but doesn't project as well as alloys with higher zinc content as it is a softer metal. It is often used for the leadpipe (the main tube nearest to the mouthpiece) of student instruments as it helps to prevent 'red rot', a corrosion caused by the build up of acidic dirt / saliva inside the tubing." Yellow Brass, Gold Brass, Red Brass: What's the difference?

4. "Nickel can be added to copper and zinc to produce nickel-silver-a whitish, shiny alloy. Nickel-silver offers better rust-[i.e., corrosion-] resistance than brass and produces a deep, sonorous sound." Choosing on the basis of the material and the coating

   Nickel is frequently used in the construction of horns.

h. The finish of the instrument affects the cost, sound, and longevity of the instrument:

Bare brass is poisonous to humans, although its effect varies greatly between individuals. It tarnishes and does not have an attractive appearance without continual polishing. Many companies will not sell instruments in raw brass out of concern for their customers' health as well as potential lawsuits.

The least expensive way to cover raw brass to prevent human exposure and oxidation is by spraying it with lacquer. Raw brass instruments are highly polished before spraying with lacquer. In addition to preserving the beauty of the instrument, lacquer darkens the tone. It wears off rather easily; people with highly acidic skin quickly destroy lacquer.

Silver is a more expensive option that usually lasts much longer than lacquer. It tarnishes with exposure to air but can be restored with silver polish and elbow grease. The silver is electro-plated to the instrument after it is highly polished. People with highly acidic skin make rather short work of silver finishes.

Gold is the best (and most expensive) option for people with high acidic skin because gold is chemically inert. It must be worn off – the person's body chemistry will not affect it. Gold does not adhere to bare brass, so the instrument is highly polished, plated with silver, and then the gold is applied over the silver. Gold tends to be a bit darker than silver.

Horns are sometimes made from nickel silver, which is an allow of brass with nickel added. It tends to be brighter and is often sprayed with lacquer.

How do you deal with all these options?? Unless you are a very experienced player, I think it is best to follow Dr. Branstine's advice: go with standard specifications. On a percentage basis, they're most likely to be the right ones for you.

Plastic Instruments

I have limited experience with plastic instruments. They sound quite good considering their construction, but not as good as brass instruments. However…

A plastic trumpet costs about $150 (in 2020).

A Bach Strad costs around $3,000 (2020 prices).

The Bach costs 20 times more than the plastic trumpet, and it sounds better, but not 20 times better!! Dollar for dollar, plastic wins.

Ultimate Test

The ultimate test is how a player sounds on an instrument. When trying out instruments, Mr. Didricksen said, "You should sound like you." In other words, the instrument should be transparent to your musical desires.

Bernie Glow said that he was in a trumpet section backing up Harry James, the fantastically popular trumpeter of the 1940s. Harry was playing a new trumpet that he said was the BEST he had ever played. Bernie and the other three trumpeters tried Harry's trumpet; they all said it was a DOG! But Harry loved it!

Mr. Didrickson told me that he purchased a C trumpet but decided he didn't like the way it played. He knew someone who preferred equipment like this – the man tried it out and bought it on the spot.

Many years ago, long before COVID-19, I watched a special on PBS about a hypothetical pandemic that had run its course. The doctor at the end stated that no single virus could wipe out the entire human race – we are genetically too diverse. Remember from Chapter 15 Embouchure that there is also great diversity in facial muscles. Considering this, is it any surprise that some instruments work well for some people and not others??

Personal preference is a huge factor in these decisions!

The best way to purchase a new instrument is to try out four identical instruments. Except that they're not identical…small variations in manufacture make a difference! Typically, when you try four instruments you will find:

- A real dog.
- Two horns that play well.
- The one you love.

The best place to try multiple instruments are the annual trumpet, horn, trombone, and low brass conferences. Dealers show up in droves with many, many instruments. Music stores in large metropolitan areas are far more likely to have multiple instruments to test than small rural music stores. Online stores will frequently let you play test instruments for several days. You will have to pay return shipping for any instruments you don't keep and have a credit card with a large enough balance available that all the instruments can be charged.

FYI, I tried two "identical" Bach Strad trumpets with 43 bells. Both sounded great, but I could not play one of them in tune from 2nd line G to tuning C. The other instrument played quite well in tune…and that's the one I bought.

Testing

During a visit to the Bach factory, I met one of their instrument testers. He explained to me that he was a trombonist, but he was testing beginner trumpets – if he could play a chromatic scale from low F# to high C, it passed. The Bach Stradivarius trumpets, however, were play tested by a skilled trumpeter. If an instrument did not play to their satisfaction, it was sent to the person who assembled it to make changes.

That explains part of the higher cost for professional instruments.

Professional Instrument Recommendations	
B-flat Trumpet	Horn
Bach Strad 37 ML, 43ML, 72 ML (dark) Yamaha Xeno Jupiter XO Schilke	Holton Farkas 179, 189 (newer), Merkermatic Conn 6D, 8D ("elephant horn" because of its large bore) Yamaha Geyer Kruspe Lawson

Used Instruments

In the early 1990s, Dr. Branstine and I arrive at formula for what we considered to be a fair price for a used instrument: 30% of the current list price. Our rationale was:

New instruments can normally be purchased for 60% of the list price.

A used instrument is worth half as much as a new instrument, so it should sell for half as much.

Half of 60% is 30%.

Exceptions need to be made for instruments that play unusually well, have significant historical value, or show significantly less wear than most used instruments.

Horn

Horn players disagree on whether beginners should start on the single horn in F or in B-flat. I tend to support the arguments for the F side:

- The F side has a more typical horn timbre.

- Yes, the longer tube poses greater accuracy challenges, but that helps the student develop their ear to a higher degree.

Some horn players advocate beginners starting on the double horn but not using the B-flat side until they are proficient on the F side. (One way to prevent this is to remove the B-flat valve slides. When you are ready to teach them the B-flat side, return the B-flat valve slides and take the F slides. It's the old "sink or swim" principle.)

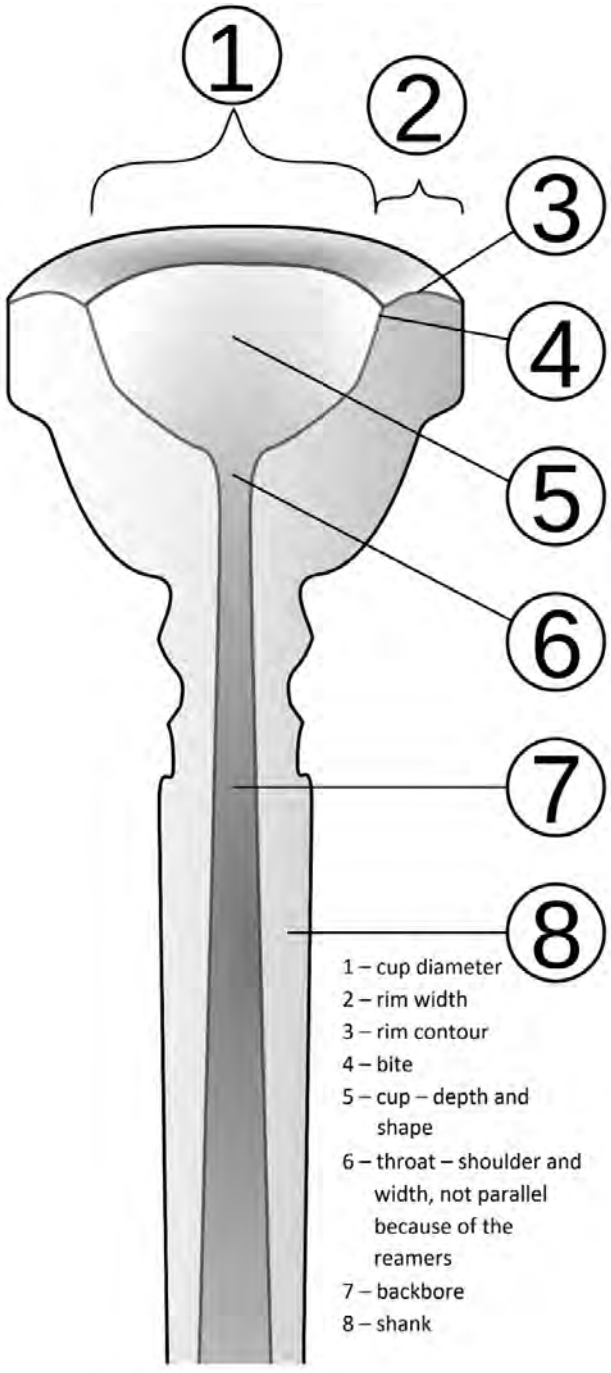
Considering the typical school budget, I don't believe any of this is much of an issue – you'll use the instruments your school already owns. If you're able to buy new instruments, talk to several of your friends whose opinion you trust to see what they recommend. Don't be surprised if they disagree – personal preference is a major component in horn playing and teaching.

What about marching mellophones? The best-sounding instruments I've ever heard were in B-flat; however, the vast majority of mellophones are in F. Again, you're probably stuck with what the school already owns.

What about the mellophone mouthpiece? Personal opinion: I think the mouthpiece that is cup-shaped and looks like an over-size trumpet mouthpiece sounds better than horn mouthpieces with adaptors. HOWEVER, I don't like horn players changing mouthpieces – remember: lips physically adapt to the mouthpiece, so when you go inside for concert band, their mouths must re-adapt. If possible, keep them using the 2/3's upper lip no matter what mouthpiece they play.

Chapter 41
Mouthpiece Components

As you can see, there are many components in a mouthpiece. We'll go through them one by one.



all drawings edited from David Bolton,
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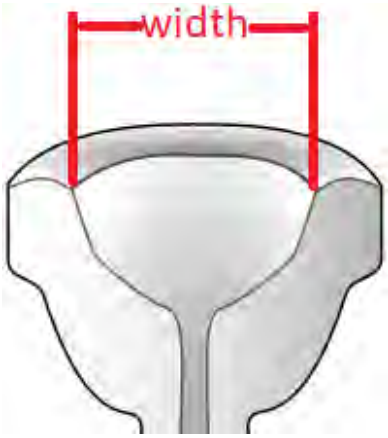
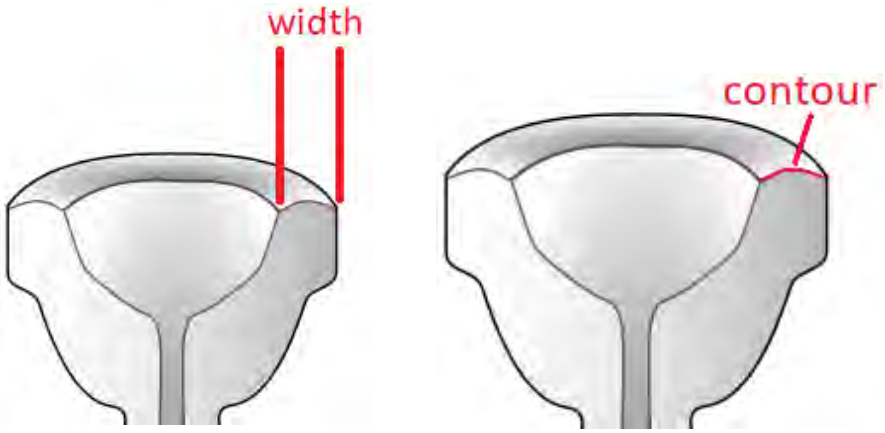
Cup Diameter



The diameter of the mouthpiece has great effect on sound, flexibility, range, intonation, and endurance. The range in trumpet mouthpieces is from to 0.720" to 0.591" (18.29 mm to 15 mm), which is only 1/8th inch. Although this doesn't sound like much, on the lips it feels enormous!

Rim Width and Contour

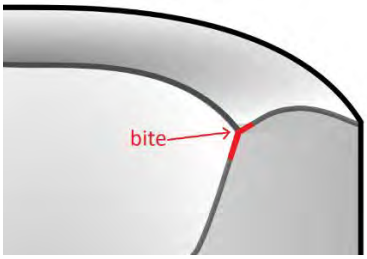


The mouthpiece rim affects endurance and flexibility. The wider the rim, the greater the endurance because mouthpiece pressure is distributed over a larger area. The more rounded the rim, the greater the flexibility; unfortunately, this decreases endurance since mouthpiece pressure is concentrated on the high spot.

The player's perception of rim with is not of the actual diameter – it is felt as the distance between the highest point in the contour on each side of the mouthpiece. A mouthpiece with the high point more toward the edge (green) will feel wider than a high point more in the center (red) even though the cup diameter is the same.

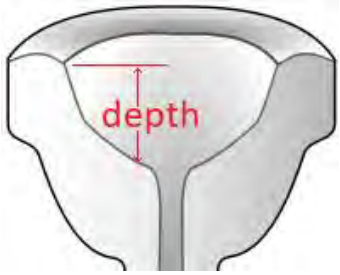
This is the flattest rim I've ever seen. I bet it wasn't' fun to play!

Bite



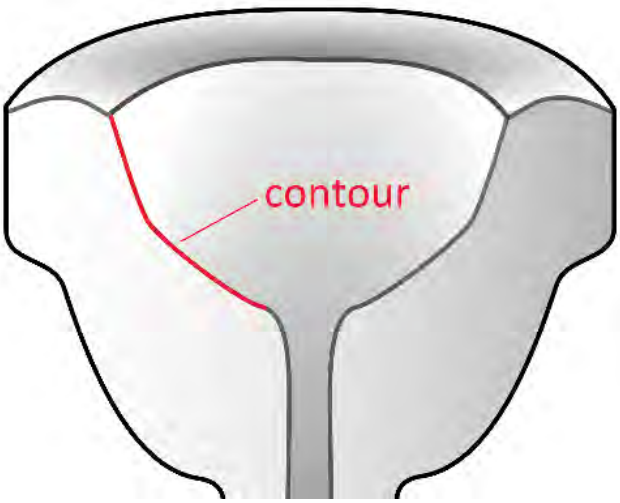
The sharper the bite, the better the articulation. The more rounded the bite, the better the flexibility and the more comfortable it feels to the player.

Cup Depth

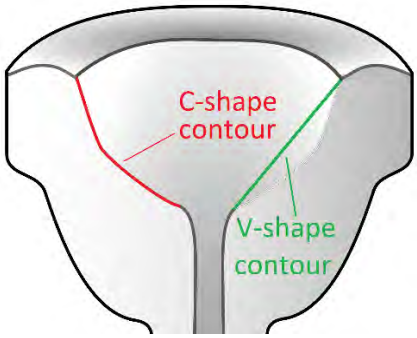


The deeper the cup, the darker the sound and the better the low range. The shallower a cup is, the brighter the sound and the easier the upper range. Projection increases with a shallow cup.

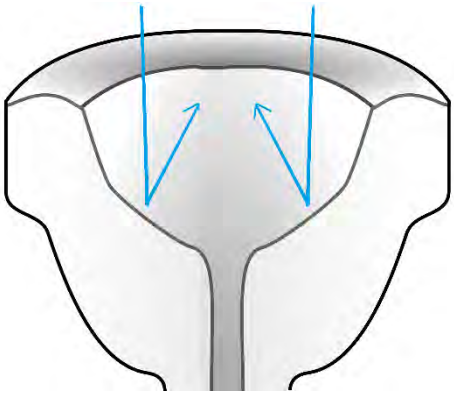
Cup Contour



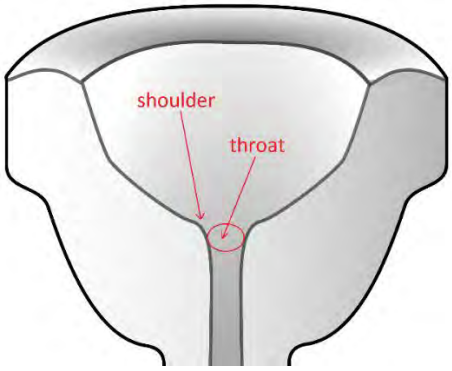
Cup contours come in two basic shapes: C and V.



V-shape cups tend toward easier air flow and provide less resistance for the player. C-shape cups tend to be a bit brighter and encourage stiffening against the back pressure of the air, almost as if it's bouncing back at you.



Throat and Shoulder

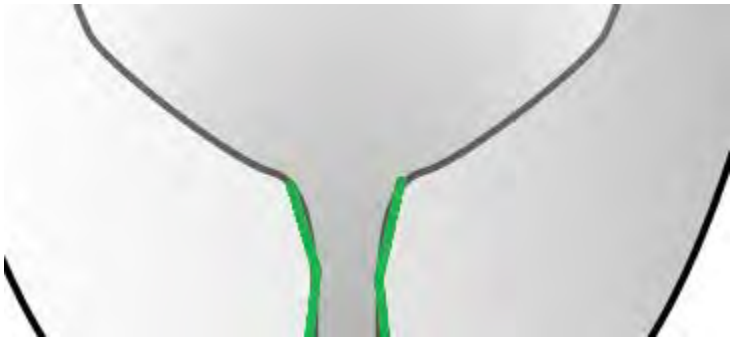


The throat is the opening at the bottom of the cup; the shoulder is where the cup curves downward into the throat. The wider the throat, the easier the air moves into the instrument…to a point. If the throat is too large, it sucks all the air out of the player and creates tension to prevent all the air from going through at once. The principle is like leaning against a wall – the wall basically holds you up; remove the wall and your muscles become very tense to prevent you from falling over. Enlarging the throat also changes the intonation tendencies of a mouthpiece. Bach trumpet mouthpieces typically have a #27 throat; Schilke mouthpieces use a #26 throat as standard (slightly larger).

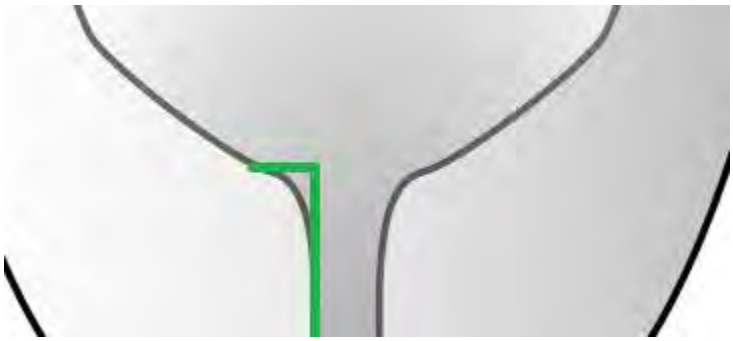
Advanced players frequently drill throats out to make a mouthpiece more free blowing. (I used to do this quite often, but it has been years since I have found a student requiring this.) One word of caution

– once the throat is opened up, it can't be made smaller – you must buy a new mouthpiece and try again. Easy does it!

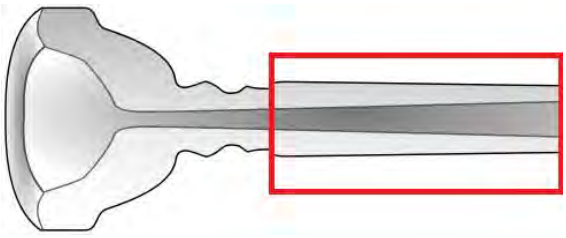
Before CNC (computer numerical control), mouthpieces were made with reamers (imagine a drill bit shaped like the inside of a mouthpiece cup and another shaped like the inside of a backbore). The openings created by the reamers met in the throat. As a result, the walls of the throat were not parallel (as shown below). I don't believe this is the case with CNC, but I don't know this as a fact.



Nineteenth-century trumpet mouthpieces tended to have a very sharp angle at the throat (left); modern mouthpieces tend to be more rounded to aid air flow and relaxation right).



Shank and Backbore



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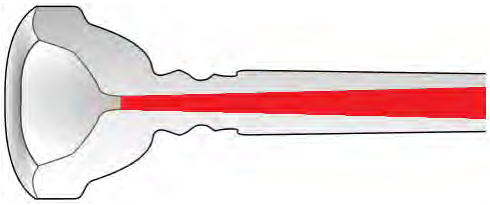
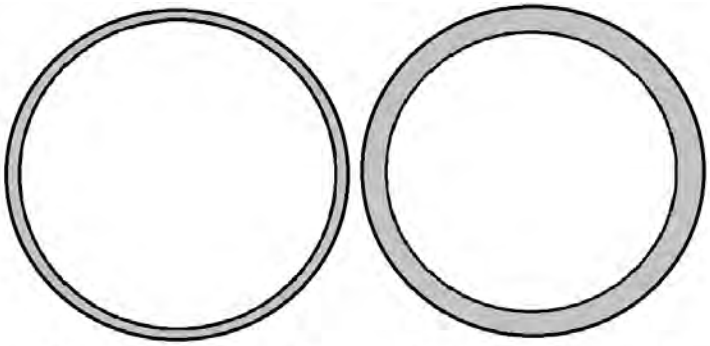
The shank is the part of the mouthpiece that goes into the mouthpiece receiver on the leadpipe.

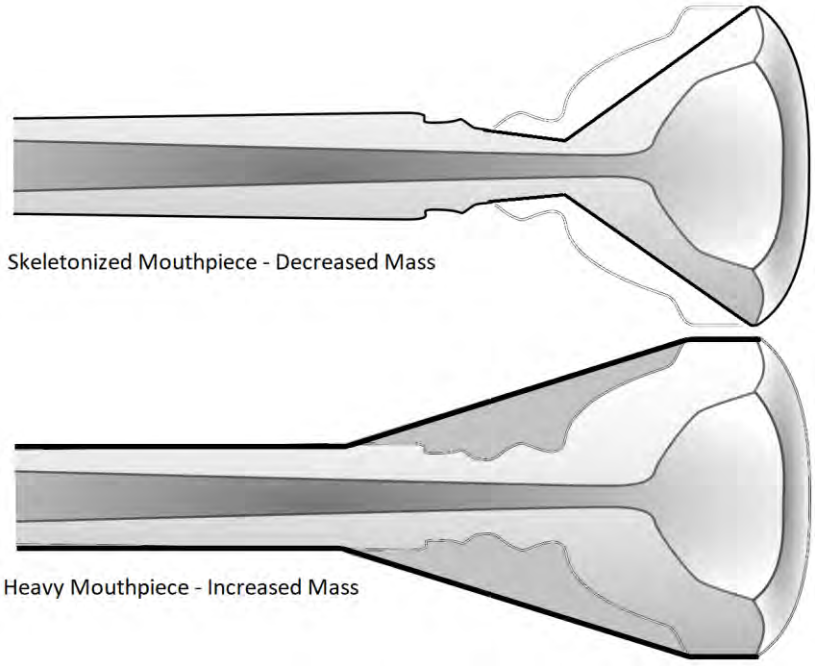


The backbore is inside the shank. It can be very tight (little metal removed) which favors high range and bright tone or more open (more metal removed) favoring low notes and a dark tone quality.

It is difficult to see inside the backbore of a mouthpiece, but you can get an idea of whether the backbore is tight or open from the thickness of the metal on the end of the mouthpiece. Tight backbores have a much thicker end than open backbores.



Mouthpiece Mass



In the 1970s, there were experiments with skeletonized mouthpieces in which the walls of the mouthpiece were thinner than normal. These mouthpieces were supposed to have a quicker response and be easier to play.

Heavy mouthpieces have additional mass – the metal surrounding the cup, throat, and backbore is much thicker than traditional mouthpieces. (FYI, Warburton makes two-part mouthpieces; the weight is added around the shank.) These mouthpieces "slot" better in the upper range (make you more likely to hit the partial you intend), have a darker tone, and handle louder volumes with less distortion.


deniswick.com

It is important to note that the interior dimensions are not altered; the only difference is the thickness of the metal around the cup, throat and backbore.

Denis Wick manufactures mouthpiece "boosters" which slide onto a regular mouthpiece to give additional mass. Formerly called "sound sleeves," they are effective.

Conclusion

There is a LOT more to this than I've described, but at least you have an idea of the factors involved in mouthpiece design and the necessity of finding a balance in components to create a mouthpiece that can be used in most musical situations. There is no perfect mouthpiece that does everything equally well!

Chapter 42
Mouthpiece Labeling Systems

There are several mouthpiece labeling systems – we'll look at two of them; once you understand how they work you'll be in good shape to figure out other systems.

Bach

Vincent Bach trained as an engineer in Germany; this strongly influenced his mouthpiece labeling system based on the English wire gauge and letter system used for drill bits. It is counterintuitive:

> Numbered drill bits range from #1 (0.2280") to #107 (0.0483") – the bigger the number, the smaller the bit diameter.
>
> Lettered drill bits range from A (0.2340") to Z (0.4130") – the later a letter is in the alphabet, the bigger the drill bit.
>
> In other words: 80 (smallest)…1…A…Z (biggest)

Bach mouthpieces normally have a number and a letter, like 7C or 3C. The number indicates cup diameter; the letter indicates cup depth (and implies shape).

The Bach 1 is the widest trumpet/cornet mouthpiece and the Bach 22 is the smallest. (The Bach 10½ is the smallest you'll likely find, and even these are rare.)

Cup depth is designated by letters – A is the deepest and F is the shallowest. The deeper the cup, the more V-shaped it is; the shallower the cup, the more C-shaped it is.

A – deepest cup – V shape – great for cornet
– 2nd deepest – V shape
B – middle deep – V shape – theoretically for B-flat trumpet, but normally used on C trumpet
C – middle shallow - cup shape – theoretically for C trumpet, but normally used on B-flat trumpet
D – middle shallowest – D trumpet
E – shallowest – E-flat trumpet
F- extremely shallow – F trumpet – likely to bottom out with any pressure (the lips touch the bottom of the cup and stop vibrating)

There is also a flugelhorn cup marked FL; it is much deeper and more V-shaped than the trumpet/cornet mouthpieces.

The standard throat diameter is 27. If different, the throat size is stamped on the mouthpiece shank. Many trumpeters alter the throat size themselves; this is never stamped on the mouthpiece. The only way to know is by checking the throat with wire gauge drill bits.

Mouthpieces with a W have a wider rim to distribute mouthpiece pressure over more area.

Bach manufactures heavy mouthpieces under the name Megatone. It is simply a heavier mouthpiece blank with the same interior dimensions as the standard mouthpieces.

More information is available in the Bach Mouthpiece Manual.

Schilke/Yamaha

Renold Schilke began manufacturing mouthpieces 30 years later than Bach. He clearly saw the need to use a more intuitive labeling system that also indicated rim contour and backbore.

Schilke mouthpieces use up to four labels which alternate numbers and letters, like 14A4a. The first number indicates cup width, the first letter indicates cup depth, the second number refers to rim contour, and the second letter refers to backbore size:

Cup width – The bigger the number, the greater the cup width. Schilke trumpet/cornet mouthpieces range from 6 to 24.

Cup depth – The later a letter is in the alphabet, the deeper the cup. Schilke uses A to E (upper case):

A – shallow
B – less shallow
C – standard cup depth
D – deeper
E - deep

Rim Contour – The larger the number, the flatter the rim:

1 – very round
2 – less round
3 – standard curvature
4 – moderately flat (used by many lead trumpeters)
5 –flattest (but not as flat as this mouthpiece: flattest rim)

Backbore – The later a letter is in the alphabet, the larger the backbore. Schilke uses a to e (lower case):

a – tightest backbore (used by many lead trumpeters)
b – less tight backbore
c – standard backbore
d – larger backbore
e – largest backbore

The standard throat size is 26, slightly larger than Bach. (One of my Schilke mouthpieces had to be drilled out – the silver plating was too thick, reducing the throat diameter. Once the proper throat size was restored, it played much better.)

Most players find Schilke mouthpieces more comfortable than Bach because the bite is more rounded, facilitating slurring but making sharp tonguing more difficult. Mr. Didricksen was very knowledgeable concerning mouthpiece; he said Bach mouthpieces "flow" better than Schilke mouthpieces –air moves more easily through Bach mouthpieces, encouraging relaxation.

Shorthand

Schilke uses as few numbers/letters as possible, so you may encounter 13 or 15B. Originally, labels were hand-stamped on Schilke mouthpieces. (I don't know if this is still true; I doubt it.) To save manpower, he developed a "shorthand" using just enough labeling to indicate variations from normal (C3c).

Note: a standard label is not omitted if followed by a non-standard label.

For example:

15 indicates 15C3c.

14D indicates 14D3c.

17C4 indicates 17C4c

Since Mr. Schilke designed Yamaha mouthpieces and trumpets, Yamaha mouthpieces use the same labeling system.

More information is available in the Schilke Mouthpieces for Brass manual.

Comparison Charts

Many mouthpiece comparison charts are available on the web. This is a particularly good example from mouthpieceexpress.com.

Chapter 43
Mouthpiece Choice

Mouthpiece design is a series of compromises – components that help the upper range hurt the low range, factors that aid slurring hurt articulation, etc., etc. Because of this,

Rule: There is no "perfect" mouthpiece.

Don't waste your time looking for it – find something that does a good job for you, stick with it, and focus on practicing to improve your playing.

Rule: No two players are alike, so a mouthpiece will not respond the same for everyone

Plating

Most mouthpieces are made from brass, although there are exceptions. As we discussed in Chapter 40 Instrument Selection, brass is poisonous to the body, therefore, brass mouthpieces must be plated. Silver plating is by far the most common. Gold plating costs more; players often describe it as feeling warmer than silver.

FYI, Dr. Swift ALWAYS wiped his silver-plated mouthpiece with a handkerchief before playing. It looked great! The reason he did this was because he felt some of the brass molecules migrated through the silver and made him more susceptible to fever blisters. Constant polishing of the mouthpiece solved the problem. It may actually have been the lead in brass, which is very hazardous. Why is lead present in a mouthpiece? It makes the brass much easier to cut. Here's more information from Denis Wick: Our new warning label – what it means: learn about lead in brass.)

Rules for Choosing a Mouthpiece

There are two conflicting schools of thought in choosing a mouthpiece:

1. Classical – use the largest mouthpiece suited for the type of playing and development of the individual. The goal is a huge, dark sound.

2. Jazz – use the smallest mouthpiece YOU can. The goal is a bright sound with easy range and endurance. (This advice came from Mike Vax. He said for some people, it's a Schilke 6A4a and for others (like me) it's a Bach 1C.

These are the advantages of bigger mouthpiece (larger diameter and greater cup depth):

1. Fuller sounds – a bigger cup produces a bigger sound.

2. Better flexibility – more lip in the mouthpiece and more room to move.

3. Better intonation – more lip in the mouthpiece and more room makes it easier to lip pitches in tune.

4. More correct production of upper range – the rim is so far from the small opening in the lips that pressure is ineffective and does not help high notes come out.

5. Quicker recovery time – you're using less pressure, so you bounce back faster

The only negative is that you must practice more to maintain your endurance. How is that a bad thing? You should be practicing anyway!

There are several advantages to smaller mouthpieces (smaller diameter and shallower cup):

1. The sound is brighter; it projects better and sounds louder, so yo u don't have to play as loud to be heard.

2. I'm not sure about modern microphones, but in the past, a brighter sound recorded better.

3. The upper range is easier.

4. Since you don't have to play as loudly and range is easier, you have better endurance.

I need to clarify "use the smallest mouthpiece you can." The important word in that phrase is "you." For some people (like me), the smallest mouthpiece that works is quite large; for others, it's quite small – Vincent Bach played principal trumpet in the Boston Symphony on a Bach 6 and Bill Chase played a Schilke 6A4a, which is <u>really</u> small! (Bill didn't start with this mouthpiece, but he trained himself to use progressively smaller and smaller mouthpieces to arrive at this size. In a clinic shortly before he was killed in a plane crash, Chase said he had finally reached the point that double high C was just another note. He said he could play it in any context, loud or soft, fast or slow. Not many people have ever reached this level!)

Interestingly, Baroque trumpeters played extensively in the upper range and used mouthpieces with very large cup diameters.

School Setting

Naturally, you're going to want your brass sections to blend within themselves, so you may decide to specify the equipment your students use, and that's ok… to a point. It's fine to impose similar equipment, like "Everyone must play a Bach mouthpiece" or Schilke mouthpiece or whatever. It is NOT okay to say, "Everyone MUST play a Bach 3C." That makes as much sense as saying everyone must wear a size 9E shoe. You must allow for individual variations.

> Which reminds me of a story – while teaching high school, the famous band director William Revelli sawed the legs off his student's chairs so that their heads would all be at the same height. You can go too far!

I knew a band director who started his trumpet beginners on Bach 3C mouthpieces, which are much too big for young students. When I brought this up, his response was, "Well, they don't kn ow any better, so

it won't bother them while they grow into them." That makes as much sense as making young kids wear their parent's shoes -- they're too big!

Mouthpieces for Young Players

Mouthpieces for young students should have:

1. A full, pleasant sound.
2. Reasonable high and low range.
3. Good flexibility.

They should be as comfortable as is practical.

Young trumpeters often use "cheater" mouthpieces with a cup that is too shallow as a substitute for correct playing in the upper range. (Remember, for most trumpeters, range is EVERYTHING!) What they do not understand is that shallow mouthpieces are designed for seasoned players who can overcome the inherent problems in these mouthpieces to make the upper range less difficult. These inherent problems include:

1. Low range that is sharp.
2. Low range that may be non-existent.
3. Tone is bright and edgy and does not blend with the rest of the band.

Mouthpieces that are too shallow may ritard a student's progress in the long run. You're going to have to convince them that RANGE ISN'T EVERYTHING!

There is nothing wrong with using different mouthpieces for concert band and jazz band. If possible, however, maintain the same cup width. The lips adapt to a specific diameter and it takes time for them to adapt to a new diameter. Rare among brass players, there is almost universal agreement that temporarily changing cup diameters leads to missing notes. (This is more extreme, but Mr. Lillya told me that only 1 in 200 trumpeters can successfully play different brass instruments and maintain their trumpet playing.)

FYI, cup depth and backbore affect airflow, not the lips – it is very easy to adjust to changes in these areas.

Also, the shallow mouthpieces that you'll most likely encounter are the Schilke 13A4a or 14A4a and Jet Tone mouthpieces. My recommendation is to take these mouthpieces away from your students.

One more thing – some people are exceptions and can change mouthpiece diameters without problem. Most people can't do this.

Changing to a New Mouthpiece

Sooner or later, a student will tell you they want to change mouthpieces. (Quite often they just show up with a new mouthpiece; I recommend telling students that you have final approval of any mouthpiece used in your group and they need to talk to you first.)

When students ask me about a different mouthpiece, my first response is, "Why do you want to change?" Quite often it's because their friend got a new mouthpiece, but it could just as easily be caused by something they read on the internet. There is a ***LOT*** of hype about mouthpieces on the net!

Wanting a bigger sound is a valid reason to change mouthpieces. Wanting a different tone color is also ok. Increasing their range is not a good reason unless the student is already doing things correctly.

Sometimes a student will start splitting notes for no reason. They haven't changed anything in their playing, they're practicing as much as before, but they are missing notes. This is normally because their muscles have grown, and the mouthpiece is now too small. If you think this is the case, the student shouldn't increase too much in cup width to minimize the impact on their playing:

If they're playing a Bach 7C, have them try a Bach 5C.

If they're on a 5C, try a 3C.

If they're on a 3C, try a 2C or 1C.

Disclosure: I played a Bach 6 (slightly wider and deeper than a Bach 7C) until my senior year of college and went directly to a Bach 1½ C without problems. I probably should have changed much sooner.)

There is a pitfall lurking in this process – the "magic mouthpiece." When you try a new mouthpiece, you think, "Maybe this mouthpiece will let me…" play higher, have more flexibility, whatever. Since you are mentally focusing on better range or flexibility, you send better instructions to the muscles and…

You're right! This IS a better mouthpiece….for about three weeks. By then the newness has worn off, your old mental habits return, and you play the same as before, maybe even worse if the new mouthpiece wasn't right choice.

This shows the importance of mind over matter and Self I over Self II. (See Chapter 33 Psychology.)

Rule: When you try a new mouthpiece, give it 3 weeks before deciding if it's better or not.

There is a big profit margin in mouthpieces. While I'm certainly not saying that quality manufacturers don't deserve a good profit, this profit margin tempts many into the market to make money with inferior products. Beware the hype that is on the web – just because you read it doesn't make it so! FYI, I read in a dissertation on Bach, Schilke, and Geyer that Bach and Schilke would have died wealthy men if they had stuck to mouthpieces and not invested so much money in instrument design.

If you find an old Bach mouthpiece you really like, DO NOT LOSE IT! In the old days, mouthpieces were made from mouthpiece blanks (a solid piece of brass that looked like a mouthpiece but had no holes in it). Reamers shaped like cups were used to ream out the cup and reamers shaped like backbores cut into the other end to ream out the backbore.

On a tour of the Bach factory, I got to watch this process. Talk about a boring job: the man stood by a machine; when he pulled a lever, the reamer cut into the mouthpiece blank. When he pulled it again, the reamer pulled back and a new blank rotated into place. Repeat, repeat, repeat. When all the blanks were reamed, the man put new blanks in the machine and started over.)

Eventually, the reamers got dull. Schilke replaced them and had a marvelous reputation for consistency. The Bach company, however, sharpened the reamers, making them smaller in the process. Over time, the reamers got smaller and smaller, and so did the openings in the mouthpiece. If you had a Bach 3C trumpet mouthpiece made with a new reamer, it's interior dimension would differ from a 3C made with an old reamer. In other words, not all 3C's were alike! If you found one that played really well for you, there was no guarantee you could replace it.

This is now a moot point – mouthpieces are now made with CNC (computer numerical control) machines that are fantastically consistent. This includes Bach.

Conclusion

Ultimately, it comes down to personal preference. Use what works for you.

High Brass Mouthpiece Recommendations			
Trumpet		Horn	
Beginner	Bach 5B, 5C, 6B, 6C, 7B, 7C (THE standard)	Beginner	Bach 7 or 11
Advanced high school/early college	3C (THE standard), 2 ½ C	Advanced high school/early college	Holton MDC
Professional/advanced college	2B, 2, 1½C, 1B, or 1C (THE standard)	Professional/advanced college	Holton MDC, MC, DC

Trumpet Mouthpiece Brand Recommendations		
Recommended		Not Recommended
Bach Bob Reeves Conn Denis Wick Giardinelli GR Mouthpieces	Laske Marcienkowicz Monette Purviance Schilke Warburton	Jet Tone Parduba anonymous (no name on mouthpiece)

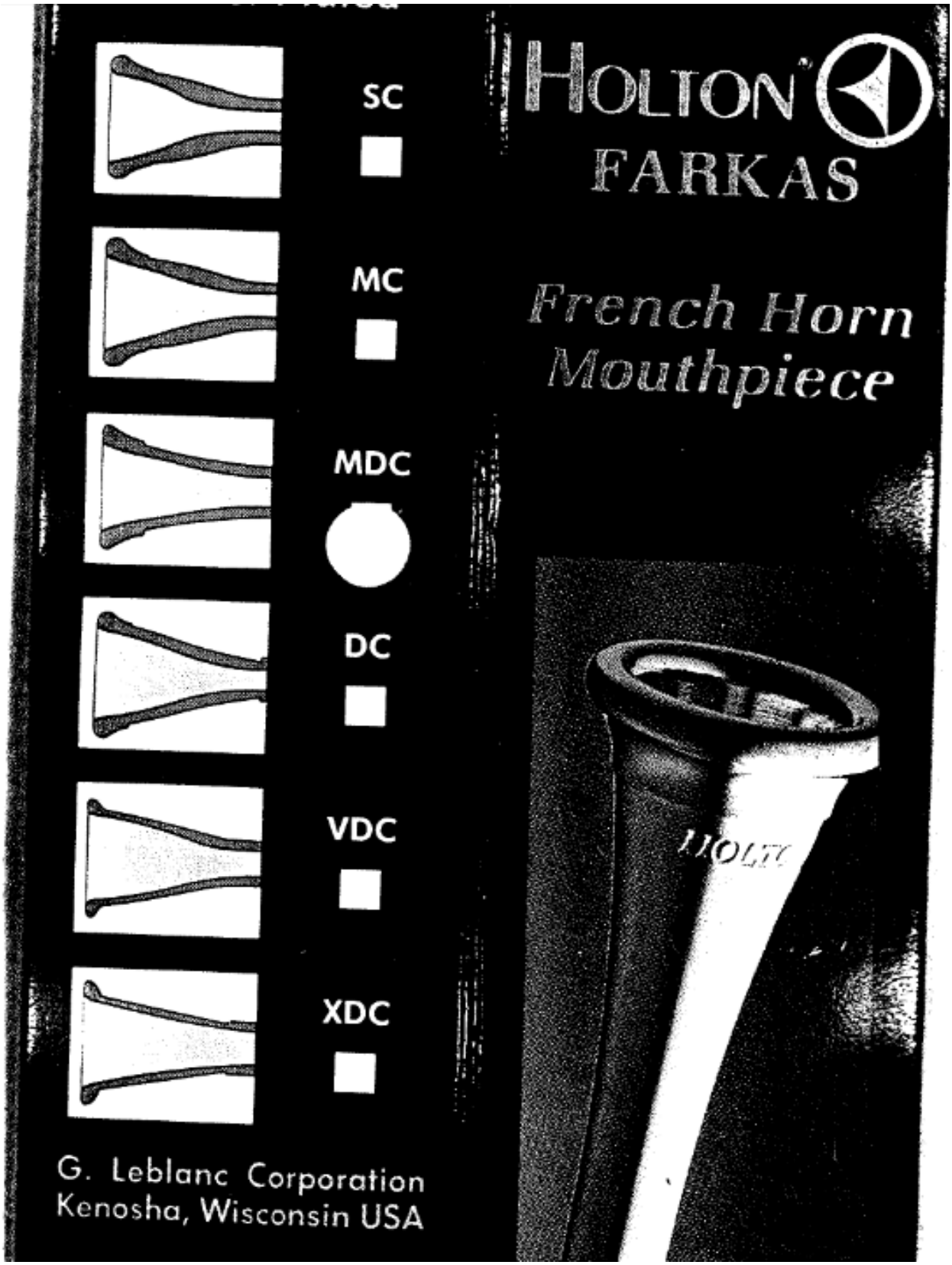
I'm not a low brass person, but I'm including the recommendations given me when I was a student:

Low Brass Mouthpiece Recommendations					
Trombone		Euphonium		Tuba	
Beginner	Bach 12	Beginner	Bach 7	Beginner	Bach 22
Advanced high school/ early college	Bach 6, 7	Advanced high school/ early college	Bach 6, 6½AL	Advanced high school/ early college	Bach 18
Professional/ advanced college	Bach 6, 6½AL	Professional/ advanced college	Bach 6, 6½AL	Professional/ advanced college	Bach 18

Bach 6 – medium big
6 ½ A – slightly narrower, deeper cup
6 ½ AL – even deeper cup, bigger throat and backbore

Farkas Holton Horn Mouthpieces					
Model Suffix	Cup Depth	Rim Shape	Cup Diameter Inside	Cup Diameter Outside	Throat Diameter
SC	shallow	medium-wide	16.87mm (.664")	24.80mm (.977")	4.32mm (.170")
MC	medium	medium-wide	16.81mm (.662")	25.20mm (.992")	4.62mm (.182")
MDC	medium-deep	medium-wide	16.21mm (.638")	24.33mm (.958")	4.62mm (.182")
DC	deep	medium	17.07mm (.672")	24.64mm (.970")	4.83mm (.190")
VDC	very deep	narrow	16.71mm (.658")	23.16mm (.912")	5.23mm (.206")
XDC	extra-deep	medium-narrow	16.94mm (.667")	24.20mm (.953")	5.23mm (.206")

holtonfrenchhorn.com



from a Holton horn mouthpiece box in my office

Chapter 44
Mutes

There are a LOT of mutes! Woodwind and Brasswind currently (2020) lists 316 brass mutes! All brass instruments use mutes, but none to the extent of trumpeters, primarily because of their extensive use in jazz.

Note: Although everyone should own the mutes they use, it is rare for non-trumpeters to do so.

Default Mute

In ensemble playing, if the music says "mute," it is assumed to mean straight mute. Solo playing leaves much greater latitude – if the part doesn't specify which mute to use, the player may use the mute they think sounds the best.

Intonation

Mutes normally make an instrument sharp. If time is available, it is best to pull the tuning slide to compensate. How much should it be pulled? It depends on the mute and the instrument – you'll have to use a tuner to find out.

If there is not enough time to pull the tuning slide, the player must lip the pitch down as best they can. Trumpeters have another option – extend the first and third valve slides, dropping the pitch of everything except open and 2nd valve notes.

Corks

Mutes are held in by corks. It is best to press the mute in and turn it slightly to lock the mute in place. The process is reversed to remove the mute. Careless brass players can make a lot of noise putting mutes in; the secret is to place one cork against the bell and then slide the mute into the bell.

Mutes falling out make a dreadful sound! Be sure your students place them in tight enough that they don't fall out, but it can be overdone. One of my college friends put a harmon mute in during the middle of a jazz concert. He pressed in too hard and twisted too much; the solder joints gave out and he put a corkscrew turn in the bell. The repairman did a masterful job repairing the damage, but it should not have happened!

If a mute goes in too far, it makes the instrument go sharp. If it doesn't go in far enough, it make s the instrument flat and low notes sound fuzzy.

You can adjust cork thickness to improve intonation, but before adjusting a new mute, insert it tightly in bell overnight so the corks are compressed. Corks can be reduced in thickness with sandpaper but remember that you can't put it back, so don't overdo it.

Corks occasionally fall off – the mute does not need to go to the repair shop. Use epoxy glue to put them back on; it's usually very easy to tell where the cork is supposed to go. I've had success with white glue repairing cardboard mutes, and I've also used it to seal leaks in metal mutes that have been damaged.

Dried and glazed corks can be renewed with light mineral oil.

Materials

In general, metal mutes have the best sound and last the longest. Plastic mutes break more easily and don't sound as good. I do not recommend cardboard straight mutes – they don't hold up well. However, parents prefer them because they are the least expensive. You need to convince them that cardboard mutes are a bad investment – a metal mute will last decades; cardboard may not last a week.

Cup mutes were only made from carboard until the last couple decades. Metal cup mutes are now available, but they do not produce the traditional sound, which I prefer.

Some students will want to buy combination mutes – straight mutes with a plunger that can be attached to produce a cup mute. Their tone is not as good as separate mutes and it is more difficult to make rapid mute changes.

Trumpet

A few notes on trumpet mutes:

- Tom Crown straight mutes have 3 bottoms – aluminum, brass, or copper. Each has its own tone color.

- "Harmon mute" typically means "wah-wah" mute. Harmon is a brand name, just like Kleenex; Harmon also make straight mutes, combination mutes, and metal plunger mutes.

Martinroell - GFDL and CC-License

The wah-wah mute has a metal tube which can be played in three positions:

Tube all the way in (as pictured) – this is the sound typical of the 1930s; it is the most effective way to produce the "wah-wah" and it allows the greatest volume.

Tube fully extended – the "wah-wah" is effect is much less pronounced, and it's not as loud as when the tube is all the way in.

Tube removed – this has been the preferred sound since the 1950s because of cool jazz and the influence of the Stan Kenton Orchestra. Players must be very loud to be heard.

Wah-wha mutes tend to fall out; the best prevention is breathing on the interior of the trumpet bell to provide a bit of moisture before putting the mute in. Rotate the mute slightly while pressing in, but don't overdo it!

- Plunger – Trumpeters use a sink plunger and trombonists use a toilet plunger. It is a very effective wah-wah mute, but if it covers the bell too tightly, it will make the instrument flat.

- Hat mute – Many years ago, Frank Fisher (1st trumpet in the Don Glasser Orchestra) told me the secret to playing with a hat mute: play with the bell ½ in the hat and ½ out to keep more of the trumpet sound and so you can be heard. Modern musicians rarely own these mutes and point their bell into the stand instead.

- Felt hat – George Gershwin specified this mute in his piano concerto. It is the cheapest mute: go to Goodwill or similar store and buy a felt hat. Cut off the rim and remove the lining (if any). Cut a slit in the hat so it hangs on the trumpet bell. It has a great sound and, best of all, makes NO noise when you drop it! (Do you know what's in the boxes by the trumpet?? LP's – long-playing records.)

- H.O.B. – Hand Over Bell. Well, this mute is even cheaper than the felt hat! Place your hand across the bell, making sure that it is cupped, not flat – if you close the bell too much, you will go flat. I've only seen "H.O.B.: in brass band music, but this "mute" has been used since the beginning of jazz. (In a sense, horn players have done this ever since they moved from the fox hunt to the orchestra!)

Horn

Horn players sometimes must make quick mute changes; it is difficult to do unless you add a loop of string to the end of the mute (see picture in the photos below). Your hand goes inside the loop and the mute hangs from your wrist until you need the mute. A quick flick of the wrist lets you grab the mute and put in the bell. When you pull the mute out, just let go of it and it will hang from your wrist.

Stopping does not work well on low notes and it can be quite challenging for people with small hands. A stopping mute solves both problems. Most stopping mutes raise the pitch a half step, requiring the player to transpose down a half step, just like hand stopping. Non-transposing stopping mutes are available.

Mute Designations

English	Italian	French	German
muted	con sordino	sourdine	mit Dämpfer
take off mutes	via sordino	enleves les sourdines	gedämpft (horns) Dämpfer weg
without mutes	senza sordino	sans sourdine	ohne Dämpfer

Mute Recommendations

Type	Trumpet	Horn	Trombone
straight	<u>metal</u> Denis Wick (loud) Jo-Ral Tom Crown aluminum – lighter sound brass – darker sound copper – darkest sound TrombCor (in tune!) Vacchiano	Stone-Lined	<u>metal</u> Denis Wick (loud) Jo-ral Tom Crown Vacchiano
cup	Denis Wick Stone-Lined TrombCor (adjustable cup)		Stone-Lined
harmon/wah-wah	Harmon Jo-Ral Leblanc Tom Crown bubble Note: MANY older harmon mutes have problems producing the lowest pitches; newer mutes do not have this issue.		
plunger	sink		toilet
practice mute	TrombCor Yamaha silent brass		

Note: Stone-Lined mutes made by Humes & Berg
Vacchiano mutes made by Leblanc

You may notice that I indicated "Dämpfer" as German for mute, not "dampfer," which is how we usually spell it in English-speaking countries. It is very easy to ignore diacritical marks, like umlauts, accents, etc., but we shouldn't. They change how a word is pronounced…and that changes what it means. Here is a great story from Mr. Cichowicz:

Mr. Cichowicz traveled to Germany to present master classes. He said he liked to use words native to the country when he could, so he told a student to use a "dampfer" (pronounced

"DAMP-fer"). The entire audience chuckled. As the day progressed, the audience continued to chuckle each time he referred to "dampfer." At the end of the class, his host explained to him that the correct pronunciation was "DEMP-fer," which is why the umlaut is used: dämpfer. By saying "dampfer," Mr. Chicowicz told the students to put a "steamboat" in their instrument!

Sound of Mutes

The most important thing about mutes is that they change the sound of the instrument. Here's a video demonstrating the main trumpet mutes: Dr. Brian Shook - Trumpet Mute Demonstration.

Mutes

tomcrownmutes.com
Tom Crown trumpet straight mutes - aluminum, brass, copper bottoms

wwbw.com
Denis Wick trumpet straight mute – Mr. Cichowicz said this was the loudest straight mute.

humesandberg.com
Humes & Berg Stone-Lined cardboard straight mute

wwbw.com
Bach plastic straight mute

Early plastic mutes were not strong.

wwbw.com

Humes & Berg Stone=Lined cardboard trumpet cup mute

Mr. Lillya, my teacher at the University of Michigan, told me that adding a piece of cloth inside the cup of a cup mute would soften the tone quality a bit. I have frequently done this – it works very well. The tone is a bit more like a bucket mute and is quite pretty.

It also reduces the volume and projection of the cup mute, so I rarely use this in ensemble setting.

Any piece of cloth will work – in this picture, the cloth is the sleeve from an old t-shirt in a folded figure-8 pattern.

amazon.com
Bach plastic cup mute

wwbw.com
TrumCor Cup Mute

amazon.com
Harmon “wah-wah” trumpet mute

wwbw.com
Jo-Ral Trumpet “bubble,” “harmon,” “wah-wah” mute

TrombCor has the reputation of having the most in-tune wah-wah mutes.

digitaltrombone.com

Trumpet/trombone plunger mute

Trumpets use sink plungers

Trombones use toilet plungers.

FYI, toilet plungers are too large for trumpets and frequently catch on the bell when doing wah-way effects.

wwbw.com

Humes & Berg Stone-Lined trumpet “Velvetone” bucket mute
Most trumpeters play into the stand when a bucket mute is called for.

wwbw.com

Jo-Ral trumpet bucket mute – note the fibers inside the mute

humesandberg.com
Humes & Berg trumpet/trombone derby (or hat) mute

midbellmusic.com

wwbw.com
Humes & Berg Stone-Lined Cleartone/Solotone trumpet mute

hickeys.com
Humes & Berg Stone-Lined pixie trumpet mute- used with plunger mute

wwbw.com
Denis Wick practice mute

wwbw.com
Yamaha Silent Brass practice mute

unknown
Humes & Berg Stone-Lined horn straight mute with string added

siegfriedscall.com
Tom Crown horn transposing stopping mute – note the added leather loop

bestbrass.com
Potstop non-transposing horn stopping mute with added loop

Part V

Other

Chapter 45
Transposition

Although band musicians rarely need to transpose their parts, the ability to transpose is a necessity for orchestral trumpet and horn players, and it is a requirement for band and orchestra conductors. Even if you're not a trumpet or horn player, you must be able to transpose rapidly to facilitate score study.

FYI, when I was in college, concert pitch scores were just starting to come out. I was excited that I wouldn't have to transpose –score study would so much easier! It turned out to be a short-lived trend – on the podium, directors want to see what their students are seeing, making it easy to understand technical issues the students may face. Transposed scores are still the norm.

Interval and Direction

Before you can transpose, you must know the interval and direction. Ask two questions:

"What is the key of the trumpet I'm playing?" (The horn is always in F.)

"What is the key of the part?"

The interval difference between your two answers gives you the interval of transposition. ALWAYS start with the key of the instrument you're playing in determining the interval.

How do you know the direction? This chart will help for trumpets:

B-flat Trumpet	C Trumpet	D Trumpet	E-flat Trumpet
Transpose UP Trumpet in F Trumpet in E Trumpet in E-flat Trumpet in D Trumpet in C Trumpet in H	Transpose UP Trumpet in F Trumpet in E Trumpet in E-flat Trumpet in D	Transpose UP Trumpet in F Trumpet in E Trumpet in E-flat	Transpose UP Trumpet in F Trumpet in E
Trumpet in B-flat	Trumpet in C	Trumpet in D	Trumpet in E-flat
Transpose DOWN Trumpet in A Trumpet in A-flat Trumpet in G Trumpet in F alto	Transpose DOWN Trumpet in H Trumpet in B-flat Trumpet in A Trumpet in A-flat Trumpet in G	Transpose DOWN Trumpet in C Trumpet in H Trumpet in B-flat Trumpet in A Trumpet in A-flat Trumpet in G	Transpose DOWN Trumpet in D Trumpet in C Trumpet in H Trumpet in B-flat Trumpet in A Trumpet in A-flat Trumpet in G

Piccolo trumpets always transpose down unless it is a piccolo trumpet part in C played on B-flat piccolo, which would be up a major second. If played on the A picc, it would be up a minor third.

For horn, see the “Horn Transposition Reference Chart” at the end of the chapter.

Here are several examples:

1. Trumpet in F played on a B-flat trumpet:

   The key of the trumpet is B-flat.
   The key of the part is F.
   B-flat to F is up a perfect fifth.

2. Trumpet in E played on a C trumpet:

   The key of the trumpet is C.
   The key of the part is E.
   C to E is up a major third.

3. Trumpet in D played on an E-flat trumpet:

   The key of the trumpet is E-flat.
   The key of the part is D.
   E-flat to D is down a minor second.

4. Trumpet in D played on a B-flat piccolo trumpet:

   The key of the trumpet is B-flat.
   The key of the part is D.
   B-flat to D is down a minor sixth. (It may be easier to think of this as up a major third and down an octave.)

5. Horn in E-flat:

   The key of the horn is F.
   The key of the part is E-flat.
   F to E-flat is down a major second.

6. Horn in D:

   The key of the horn is F.
   The key of the part is D.
   F to D is down a minor third.

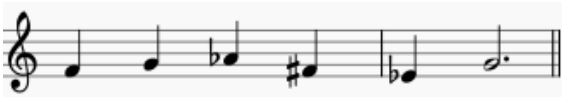
Methods of Transposition

Transposition may be done in three different ways. I sometimes use all three in the same piece.

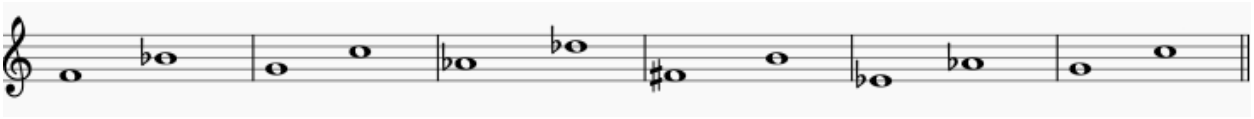
1. Interval

The most common is by interval; once you’ve determined the interval and direction, each note is transposed accordingly.

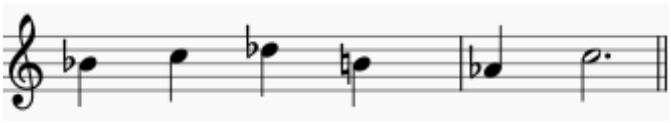
This is the melody that is to be transposed up a perfect fourth:



Each note is transposed up a perfect fourth, one by one:

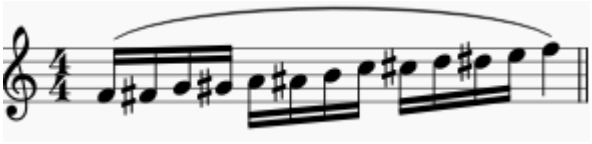


The result is the transposed phrase:

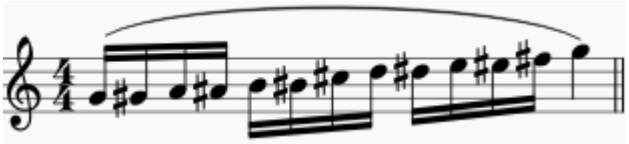


2. Pattern

Transposition by pattern requires looking for patterns in the notes – once you have the starting note, you simply play the pattern in the new key. The easiest example is a chromatic scale – start on the new first note and play chromatically.

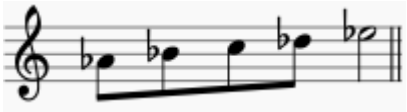


The original is a one-octave major scale starting on F.

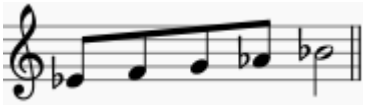


To transpose up a major second, start on G and play a one-octave chromatic scale.

A scale or scale fragment is also easy, such as playing up the first five notes of a major scale starting on the new tonic.

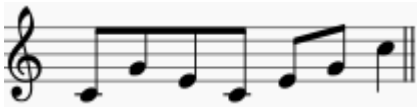


The original is the first five notes of the A-flat major scale.

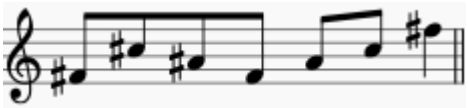


To transpose down a perfect fourth, start on E-flat and play the first five notes of the E-flat major scale.

Arpeggios work the same way.



This is just a major arpeggio, but it's a little tricky: the first interval is up a fifth, but after that it's simply down the triad and back up to the root.

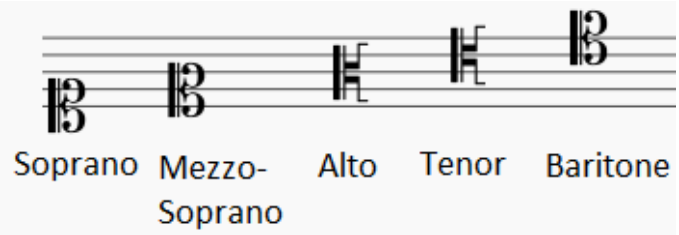


Thinking a tritone above each of the original notes is much harder than simply repeating the pattern in F-sharp. (You must know the F-sharp chord for this to work!)

3. Clef

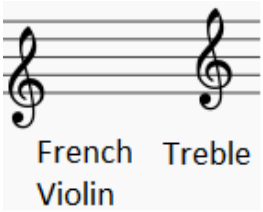
The third method involves mentally changing clefs and key signatures. Using the G, F, and C clefs, it is possible to read any line or space as C.

The five C clefs designate which line is middle C on the piano as follows:



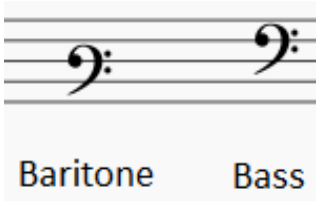
Soprano – 1st line (bottom); it also makes the fourth space a C
Mezzo- Soprano – 2nd line
Alto – 3rd line
Tenor – 4th line
Baritone – 5th line (top) ; it also makes the first space a C

The two G clefs specify which line is the G above middle C:



French violin – 1st line (bottom) – makes the 2nd space a C (same as bass clef)
Treble – 2nd line; makes the 3rd space a C

The two F clefs determine which line is the F below middle C:

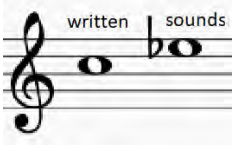


Baritone – 3rd line; makes the first space a C (same as the Baritone C clef)
Bass clef – 4th line; makes the 2nd space a C (same as the French violin clef)

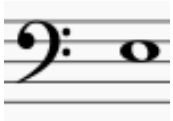
This may not make sense to you; it certainly didn't the first time it was explained to me. Let me give you an example – you're playing C trumpet on a part written for Trumpet in E-flat. Here's something important:

Rule: The name of the part or the instrument sounds on a written C.

Playing a written C on a Trumpet in E-flat part means that you must produce an E-flat concert:



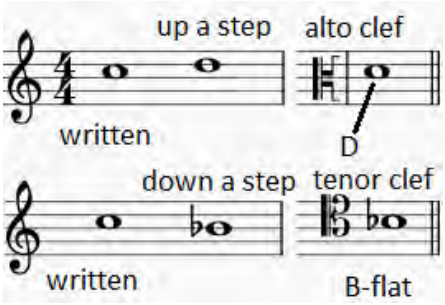
The question is, "Which clef puts E on the third space?? Bass clef:



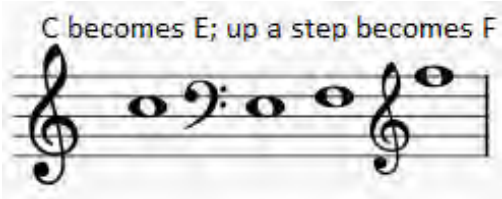
Is it an E natural or an E-flat? That depends on the key signature you use. For Trumpet in E-flat, add 3 flats to the key signature. If it's Trumpet in E, add 4 sharps.

How do you add to the key signature? If you add sharps to a flat key, they cancel the flats. Adding 4 sharps to a key signature with 2 flats removes the flats and leaves the new key with two sharps. Conversely, adding flats to a sharp key signature removes the sharps. If you add 2 flats to 3 sharps, you end up with 1 sharp.

Reading a treble clef part in bass clef shifts the music by a third. Reading a treble clef part up a step is the same as reading it in alto clef; reading a treble clef part down a step is the same as using tenor clef.



You can combine methods as well – put a treble clef part in bass clef and then transpose up a step results in transposing up a fourth.



There is a prerequisite to this method – if you can't read the clef you need, it won't work. Probably most of you are comfortable reading bass clef, so that is an excellent place to start.

Fourth Method of Transposition

Okay, there's a fourth way – enter the part into Finale, Sibelius, MuseScore, or whatever and transpose the part. If you rarely transpose, this is probably the most expedient method. If you must transpose on a regular basis, it is MUCH faster to transpose mentally…after you learn how.

Teaching Transposition

Beginning

The sooner you teach transposition to students, the better. (After they consistently play with a good sound, that is.) It's like learning a new language – it's much easier for young people than old.

So, give the students something from *The Rite of Spring* and have them transpose it up a tritone. Guaranteed disaster awaits you! Instead, do this:

- Give them something simple, right out of their beginner band book.
- Stay with the same transposition until they master it before learning a new transposition.

- Insist that the students play with a good sound; it is SO EASY to forget about tone when you're first learning to transpose, but you've opened the door to BAD HABITS!!

- Transposition requires two simultaneous tasks – adjusting the interval and dealing with accidentals. It is surprising how quickly you learn to adjust the interval; it's the blankety-blank accidentals that make it challenging.

Advanced

After the student is comfortable transposing easy music, you can switch to Robert Getchell's *First and Second Books of Practical Studies* and etudes by Sigmund Hering followed by Reginaldo Caffarelli 100 Melodic Studies for Transposition and Ernst Sachse 100 Studies For Trumpet. The most challenging transposition books change the interval of transposition every measure or two. Why would anyone do this??

> Wagner wrote highly complex music, constantly changing keys. Strangely, he wanted the trumpet and horn parts to look like they could be played on natural instruments. To do this, he did things like writing a few measures transposed for trumpet in B-flat, then a few measures notated for trumpet in E-flat, then he switched to notating C trumpet, etc., etc. It is challenging!
>
> FYI, in the 1800s, many composers continued to write trumpet and horn parts as if valves didn't exist; they had no clue what musicians were playing! Surprisingly, this lasted into the late 1800s – most of Brahms' music was written as if for natural instruments; notes requiring valves are rare in his music.

Low Brass

Bass clef instruments do not transpose and are always written in concert pitch, regardless of the key of instrument used to play them.

> This is not true in brass bands where almost everything is written as B-flat instrument parts (in treble clef, up a whole step from concert pitch) to make it easy for players to switch instruments. E-flat soprano cornet, E-flat tenor horn, and E-flat tuba parts are all in treble clef and are transposed by the composer. The only exception is the bass trombone which is notated in the bass clef at concert pitch.

In addition to bass clef, trombonists play music written in alto, tenor, and treble clefs. In non-brass band music, the treble clef music is written in concert pitch.

When written in bass clef, euphonium parts are in concert pitch. Just like the trombone, euphonium players are expected to read tenor, alto, and concert pitch treble clef.

> Many years ago, it was common to see treble clef baritone parts (transposed up a major ninth from concert pitch). This was done to make it easy to transfer trumpet players to the baritone – as soon as they adapted to the mouthpiece and lower register, they could play as well as they had on the trumpet. There was no need to learn a new clef or new fingerings, thanks to the transposed treble clef parts.
>
> Yes, euphonium and baritone parts in the brass band are transposed a major ninth as well.

Since the euphonium is relatively new, it does not have a large amount of solo repertoire. To remedy this situation, euphonium players frequently perform trombone, tuba, trumpet, and horn music, giving it the largest repertoire of any brass instrument! (The trumpet and horn solos must be transposed.)

Tuba parts are always concert pitch (except in the brass band), regardless of the key of tuba being played. Rather than transposing, tuba players have chosen to learn new fingerings for each tuba. (I don't know how they keep them straight – I've seen it cause momentary problems that instantly disappear when the player realizes they were using the wrong fingering for that instrument.)

Trumpet Transposition by Interval from B-flat Trumpet

Trumpet in F	Transpose up a perfect 5th (add 1 sharp)
Trumpet in E	Transpose up a tritone (add 6 sharps)
Trumpet in E-flat	Transpose up a perfect 4th (add 1 flat or read in bass clef up a step, add 1 flat)
Trumpet in D	Transpose up a major 3rd (add 4 sharps or read in bass clef, add 4 sharps)
Trumpet in C	Transpose up a major 2nd (add 2 sharps)
*Trumpet in H (B natural)	Transpose up a minor 2nd (add 7 flats or read as written, add 7 sharps)
Trumpet in B-flat	Read as written. (Sounds down a major 2nd)
Trumpet in A	Transpose down a minor 2nd (or read as written, add 7 flats)
*Trumpet in A-flat	Transpose down a major 2nd (add 2 flats)
*Trumpet in G	Transpose down a minor 3rd (add 3 sharps)
*Trumpet in F alto	Transpose down a perfect 4th (add 1 sharp)

*rare

Trumpet Transposition by Interval from C Trumpet

Trumpet in F	Transpose up a perfect 4th (add 1 flat or read in bass clef up a step, add 1 flat)
Trumpet in E	Transpose up a major 3rd (add 4 sharps or read in bass clef, add 4 sharps)
Trumpet in E-flat	Transpose up a minor 3rd (add 3 flats or read in bass clef, add 3 flats)
Trumpet in D	Transpose up a major 2nd (add 2 sharps)
Trumpet in C	Read as written (Sounds as written)
*Trumpet in H (B natural)	Transpose down a minor 2nd (add 7 sharps or read as written, add 7 flats)
Trumpet in B-flat	Transpose down a major 2nd (add 2 flats)
Trumpet in A	Transpose down a minor 3rd (add 3 sharps)

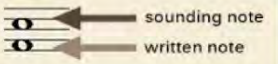
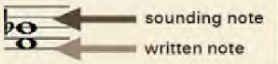
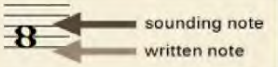
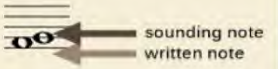
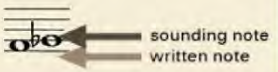
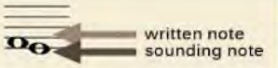
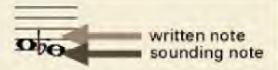
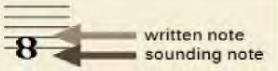
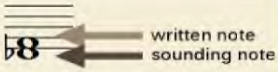
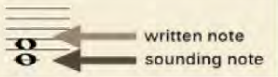
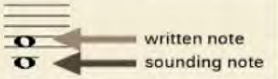
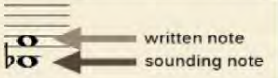
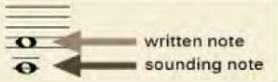
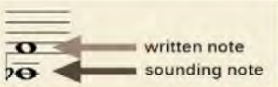
*Trumpet in A-flat Transpose down a major 3rd (add 4 flats)

*Trumpet in G Transpose down a perfect 4th (add 1 sharp)

*Trumpet in F alto Transpose down a perfect 5th (add 1 flat)

*rare

Horn Transposition Reference Chart

KEY	INTERVAL*	OCCURRENCE	EXAMPLE*
Horn in C (alto)	up P5	Rare	
Horn in B-flat (alto)	up P4	Less Common	
Horn in A (alto) A – *German*; La – *French, Italian*	up M3	Less Common	
Horn in G G – *German*; Sol – *French, Italian*	up M2	Less Common	
Horn in F-sharp Fis – *German*; fa dièse – *French*; Fa diesis – *Italian*	up m2	Extremely Rare	
Horn in E E – *German*; Mi – *French*	down m2	Common	
Horn in E-flat Es – *German*; Mi bémol – *French*; Mi bemolle – *Italian*	down M2	Common	
Horn in D D – *German*; Re – *French, Italian*	down m3	Common	
Horn in D-flat Des – *German*; Re bémol– *French*; Re bemolle – *Italian*	down M3	Very Rare (symphonic) Rare (operatic)	
Horn in C C – *German*; Ut – *French*; Do – *Italian*	down P4	Fairly Common	
Horn in B-natural H – *German*; Si – *French*; Si basso – *Italian*	down TT	Rare	
Horn in B-flat (basso) B – *German*; Si bémol – *French*; Si bemolle – *Italian*	down P5	Fairly Common	
Horn in A (basso) A – *German*; La – *French*; La basso – *Italian*	down m6	Very Rare (symphonic) Common (operatic)	
Horn in A-flat (basso) As – *German*; La bémol – *French*; La bemolle basso – *Italian*	down M6	Very Rare (symphonic) Common (operatic)	

* *Based on a valved horn pitched in F.*

- Bruce Hembd - hornmatters.com

Chapter 46
Lip Problems

Martin Kopta - CCA3.0 Unported

When it comes to injury, the lips are of the most forgiving part of the body. In a clinic, Mr. Jacobs related the story of a tuba player who had been using a chain saw which kicked back, cutting his lip. Yes, you're reading this correctly, he cut his mouth with a chain saw! Mr. Jacobs said that the tuba player was making good progress toward being able to play well again. (I've often wondered if a trumpet or horn player would have the same result because of the much smaller size of the mouthpiece.)

Pimples and Surface Sores

If you can ignore the pain, you can play well despite pimples and other surface sores on the lip.

Canker Sores

Canker sores occur inside the mouth on the soft tissues of the lip or gum. I've had them most of my life – they hurt, especially when they're under the mouthpiece! Fortunately, they are not contagious and normally heal on their own in 7-14 days. Canker sores can be prevented by maintaining a healthy lifestyle. (For me, stress is a major contributing cause!)

If you can ignore the pain, you're fine.

Maksim – CCA-Share Alike 3.0 Unported

Cold Sores/Fever Blisters

Cold sores, aka, fever blisters, form on and around the lips. After the blister breaks, a scab forms; healing usually takes 2-3 weeks. Unfortunately, they are contagious and are caused by the herpes simplex virus 1 which stays in the body forever. They can make brass playing quite difficult, as you can see from the photo on the nest page.

Symptoms manifest when the immune system is weakened due to stress, poor lifestyle, etc. Prevention can be maximized by taking take better care of yourself and reducing stress. Vitamin B helps – take L-Lysine, which is available at Wal-Mart in the herbal supplements. Other aids include Colgate Peroxyl, ginger root tea, and ethyl ether. Orajel and Mouthaid help reduce the pain.

Jojo – Public Domain

Chapped Lips

Chapped lips can be caused by cold weather or sun exposure. While they may be painful, they do not prevent you from playing, although the response can be more sluggish.

If you are in cold weather, do not lick your lips outside, no matter how dry they feel. Licking them in cold weather greatly increases the likelihood of chapped lips. Instead, roll your lips in so that the red tissue is not visible. This reduces chapping and helps you resist the urge to lick your lips.

Several products are available – based on the advice I've received, Chapstick, Pucker Ups, and Chop Saver are good. Products that do not help brass playing include Daily Conditioning Treatment, Blistex, and Carmex (which contains camphor).

Tired Chops

It happens – you've played a lot in the last few days and now you can hardly play. This is a result of working too hard for too long. (We discussed this in Chapter 24 Upper Range.) If possible, you should back off for a few days, focusing on easy warmup materials to make sure your air is working correctly

and that you are producing a beautiful tone. (Many people say you should skip a day – I hesitate to say that because it opens the door to skipping even more days. However, Maurice André would take a day off following several days of heavy piccolo trumpet recording sessions. Who am I to argue with him??)

Bruised Lips

Too much mouthpiece pressure for too long can result in bruised lips. They are tender and hurt and they may even have a bluish tint. Not good!! Healing can take days, and sometimes several weeks, resulting in a major setback to your progress.

Prevention is best – don't hurt your lips and you have nothing to worry about. If (or should I say when?) you overdo it, use the ice treatment – see "Damage Control" at the end of Chapter 29 Mouthpiece Pressure.

Split Lip

Great…you wake up in the morning and the inside of your lip is split. Not only is it painful, it's right under the mouthpiece and it HURTS when you play! This is caused by too much pressure and sleeping with your mouth open. You can play well if you ignore the pain.

Health Forecast

Remember, your lip forecasts your health, giving you a three-day heads up on when you may get sick. See #5 under "Basic Approaches to Learning to Play in the Upper Range" in Chapter 24 Upper Range.

Overall Physical Condition

Your lips are connected to your body, so a tired body causes tired chops. Even worse, a tired body has a tired brain, making it difficult to play well. (Remember, the brain tells the body what to do and how well to do it.)

When you're tired, there isn't much you can do about it except do the best you can. Better yet, get some rest!

In Canada during the 1960s, a study tested the effect of aerobic training on muscular strength, specifically the muscles used in pushups. At the beginning of the study, subjects were asked to do as many pushups as possible; for the next six weeks, they did no pushups, but they consistently did aerobic exercise.

At the end, the subjects were again asked to do as many pushups as possible -- the result was that they were able to do more pushups than six weeks earlier. The only variable was aerobic exercise, so it must have been responsible for the increase in strength and endurance.

If it works for upper body muscles, it should work for face muscles!

Chapter 47
Wisdom Teeth

Wisdom teeth can be a problem for you and your students. It is extremely likely that they will be removed while the student is in high school, and they will NOT be able to play for at least two weeks after the surgery. Talk to your students' parents so they don't schedule surgery two days before the biggest contest of the year!!!

Before wisdom teeth are removed, they cause pain which increases with volume and range –the harder the cheek muscles flex, the more the press against the gums and teeth.

This no longer seems to be a concern, but many years ago dentists were sometimes careless removing impacted wisdom teeth. (Impacted means there is not enough room for the teeth to come through without forcing other teeth out of alignment.) A simple slip of the knife, and the nerve to the lower lip is cut. Through another nerve, the lip still responds to the brain, but the person can no longer feel this lip. (One of my teachers had no feeling in her lower lip; I suspect this was the reason. Despite that, she played very well.)

There is no repairing a cut nerve! It is wise to discuss this with the oral surgeon before the teeth are removed.

Oral surgeons recommend no playing for at least two weeks to allow the empty sockets to heal properly. (The increase in air pressure due to playing can force air into the empty sockets, causing pain and slowing healing by as much as another week.) The recent trend is no playing for three weeks.

FYI, in the 1970s, dentists said only one week off. Greater concern for patients (and avoiding lawsuits, I'm sure) has led to the increase in layoff time.

Be sure to flush the empty sockets with saltwater using a syringe with a curved tip; if food gets into the sockets, it is PAINFUL! Tea bags can help with dry socket, if it develops.

Getting Back to Playing

Another thing you can discuss with your oral surgeon is the possibility of doing isometrics with your embouchure after the pain from surgery has decreased. (See 12. Isometrics under "Specific Approaches to Developing the Upper Range in Chapter 24 Upper Range.")

No matter what, you can always work on your breathing, like *The Breathing Gym* exercises (which Pat Sheridan co-authored with Sam Pilafian) or the Arnold Jacobs breathing exercises in Chapter 13.

When it is time to begin playing again, ease into it by playing lower and softer and with lots of rest. Focus on tone, relaxation, and musicianship. Remember, the goal is not to play like you did before, it's to play like you SHOULD have played!

In the meantime, look forward to guilt-free time off the horn. That doesn't happen very often!

Appendix

Part 1 – Fingering Charts, Music

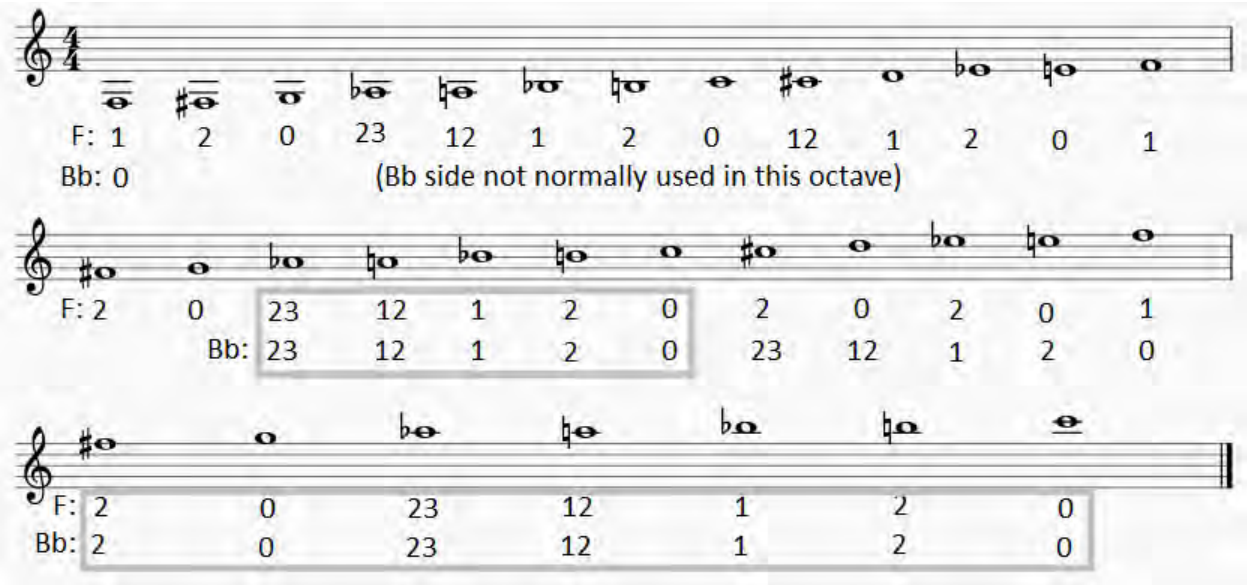
Horn Fingering Chart

Horn fingerings on the F side are identical to those of the trumpet If you imagine the horn notes up an octave.

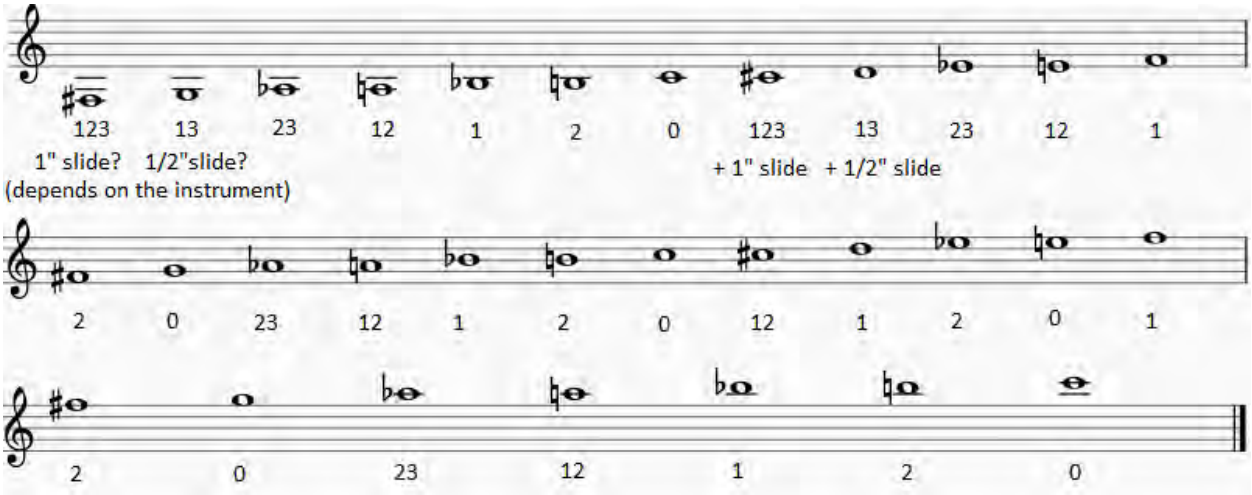
The horn has an additional octave lower than shown in this chart.

Note that horn fingerings are identical for the F and B-flat sides for the notes in the boxes.

The notes in the 1st box (2nd line G-sharp to 3rd space C) are normally played on the F side when ascending and on the B-flat side when descending. Anything higher than 3rd space C is normally played on the B-flat side.

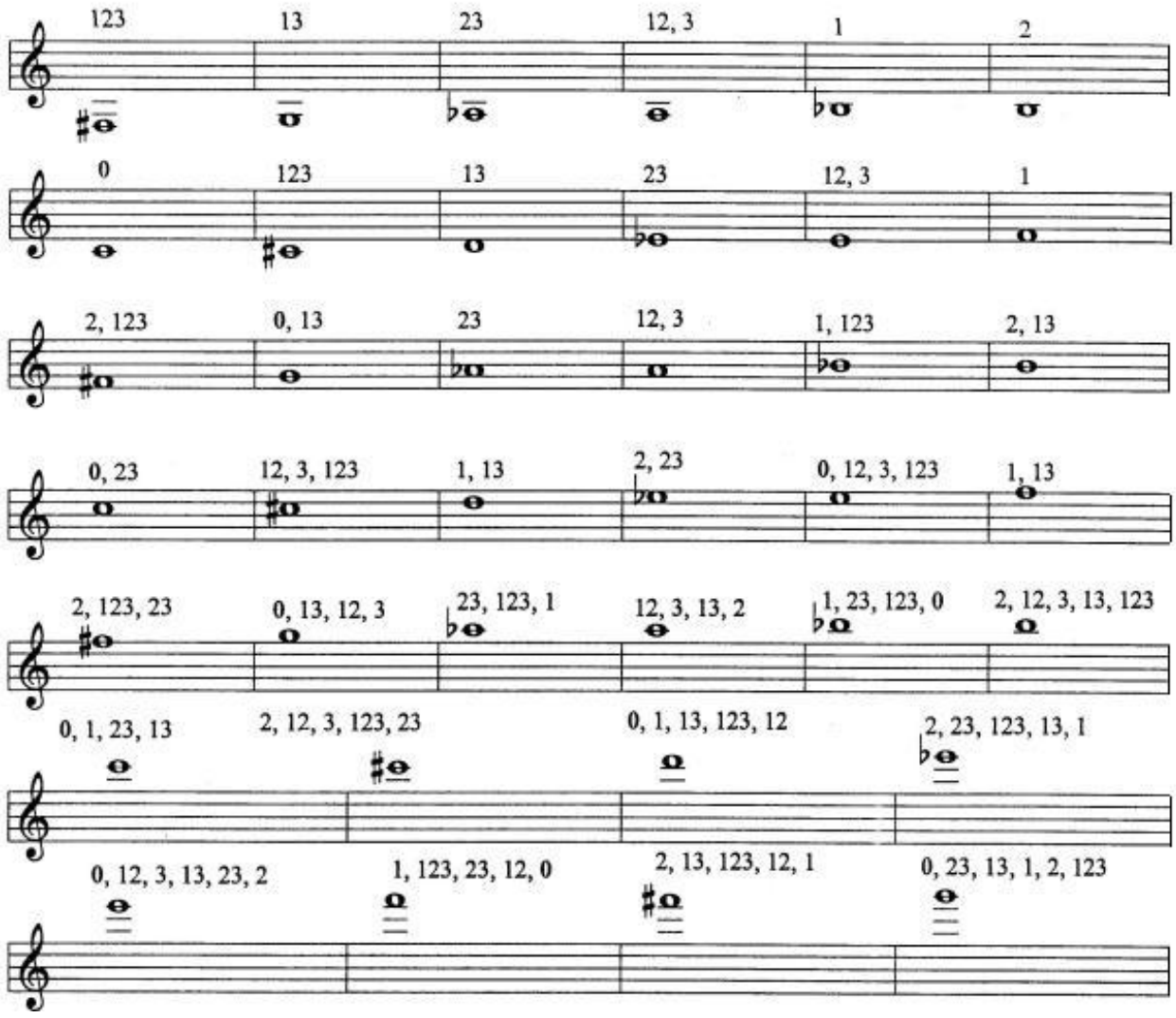


Trumpet Standard Fingering Chart



Complete Trumpet Fingering Chart

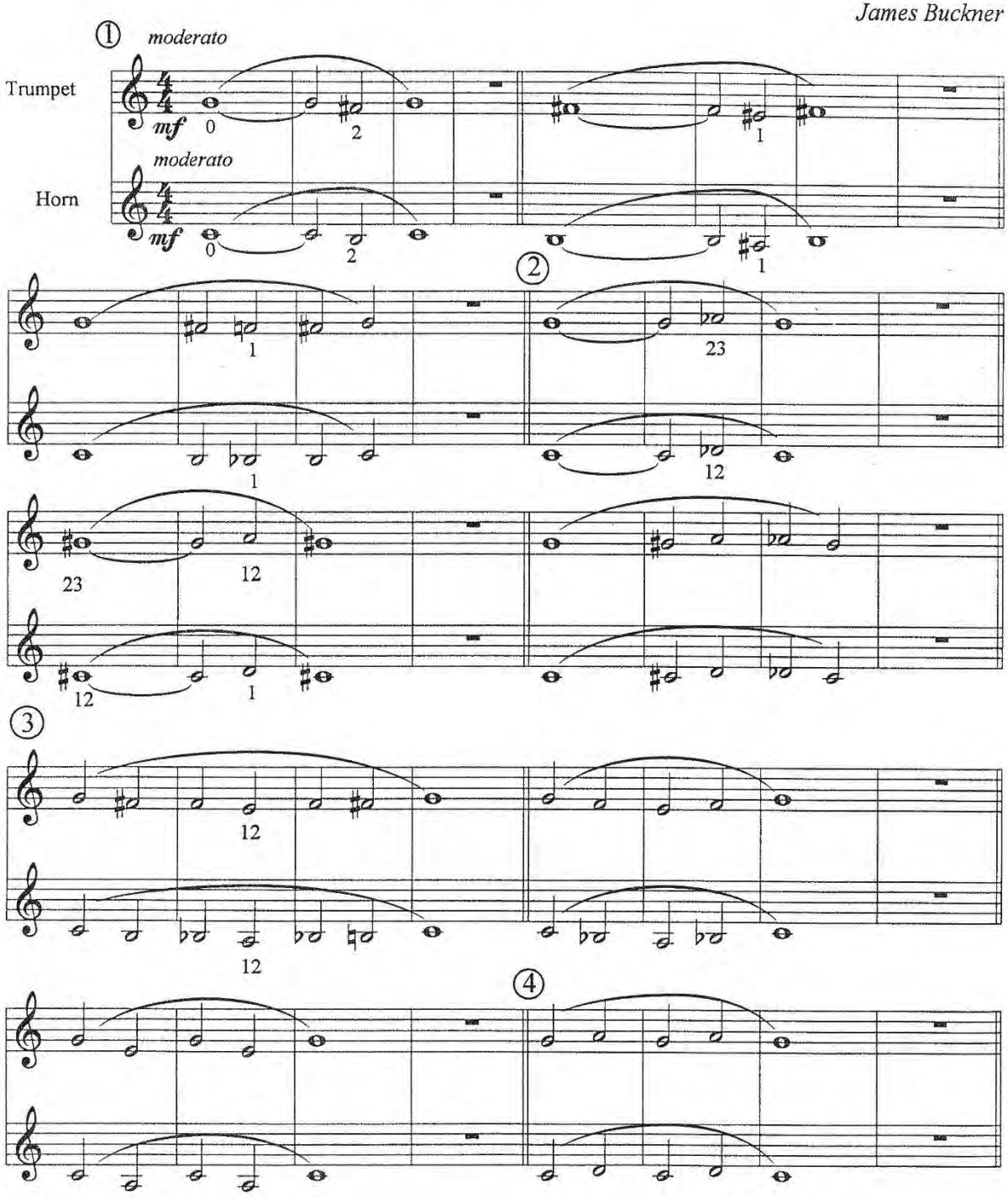
Fingerings Listed in Order of Preference

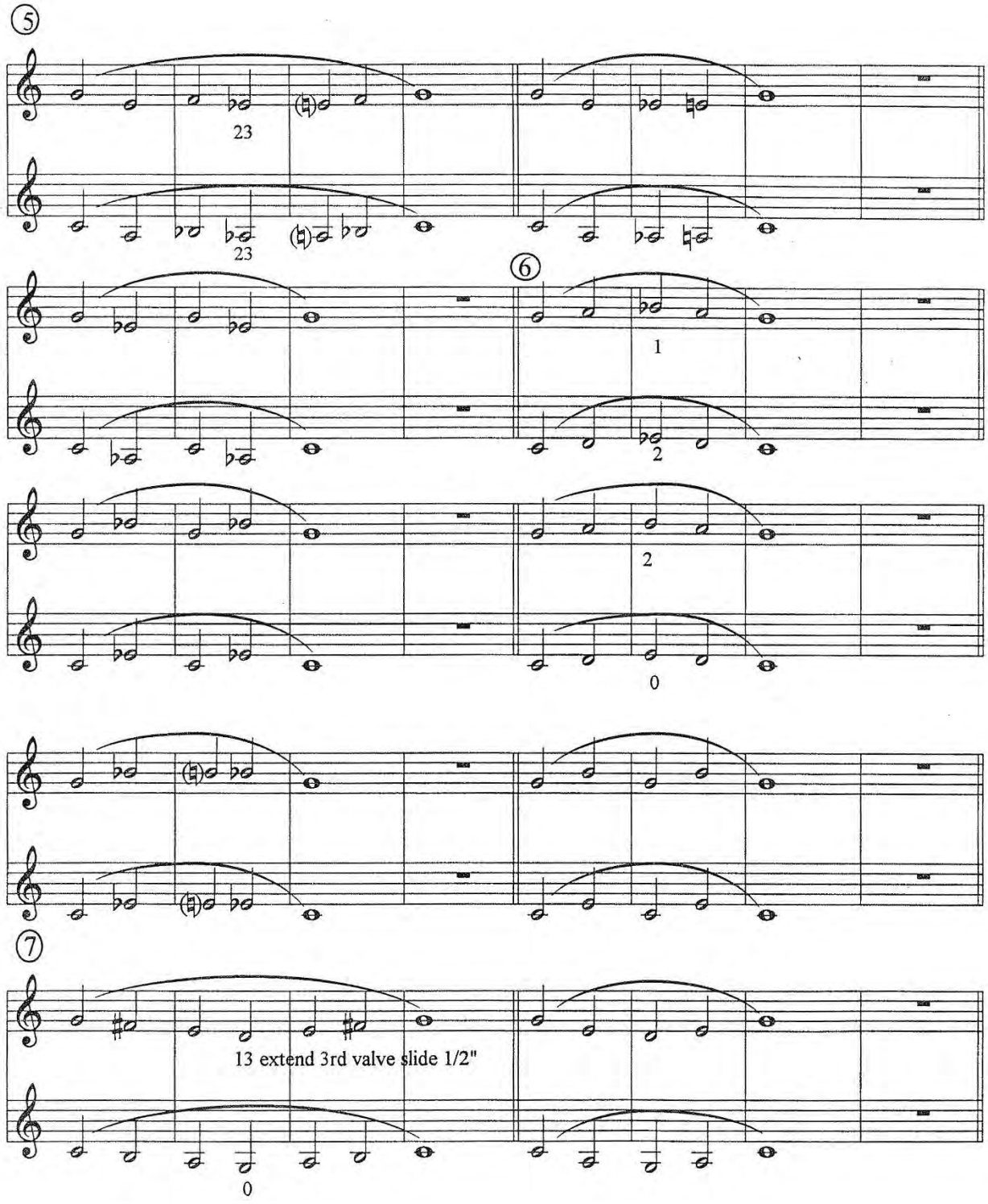

123
13
23
12, 3
1
2
0
123
13
23
12, 3
1
2, 123
0, 13
23
12, 3
1, 123
2, 13
0, 23
12, 3, 123
1, 13
2, 23
0, 12, 3, 123
1, 13
2, 123, 23
0, 13, 12, 3
23, 123, 1
12, 3, 13, 2
1, 23, 123, 0
2, 12, 3, 13, 123
0, 1, 23, 13
2, 12, 3, 123, 23
0, 1, 13, 123, 12
2, 23, 123, 13, 1
0, 12, 3, 13, 23, 2
1, 123, 23, 12, 0
2, 13, 123, 12, 1
0, 23, 13, 1, 2, 123

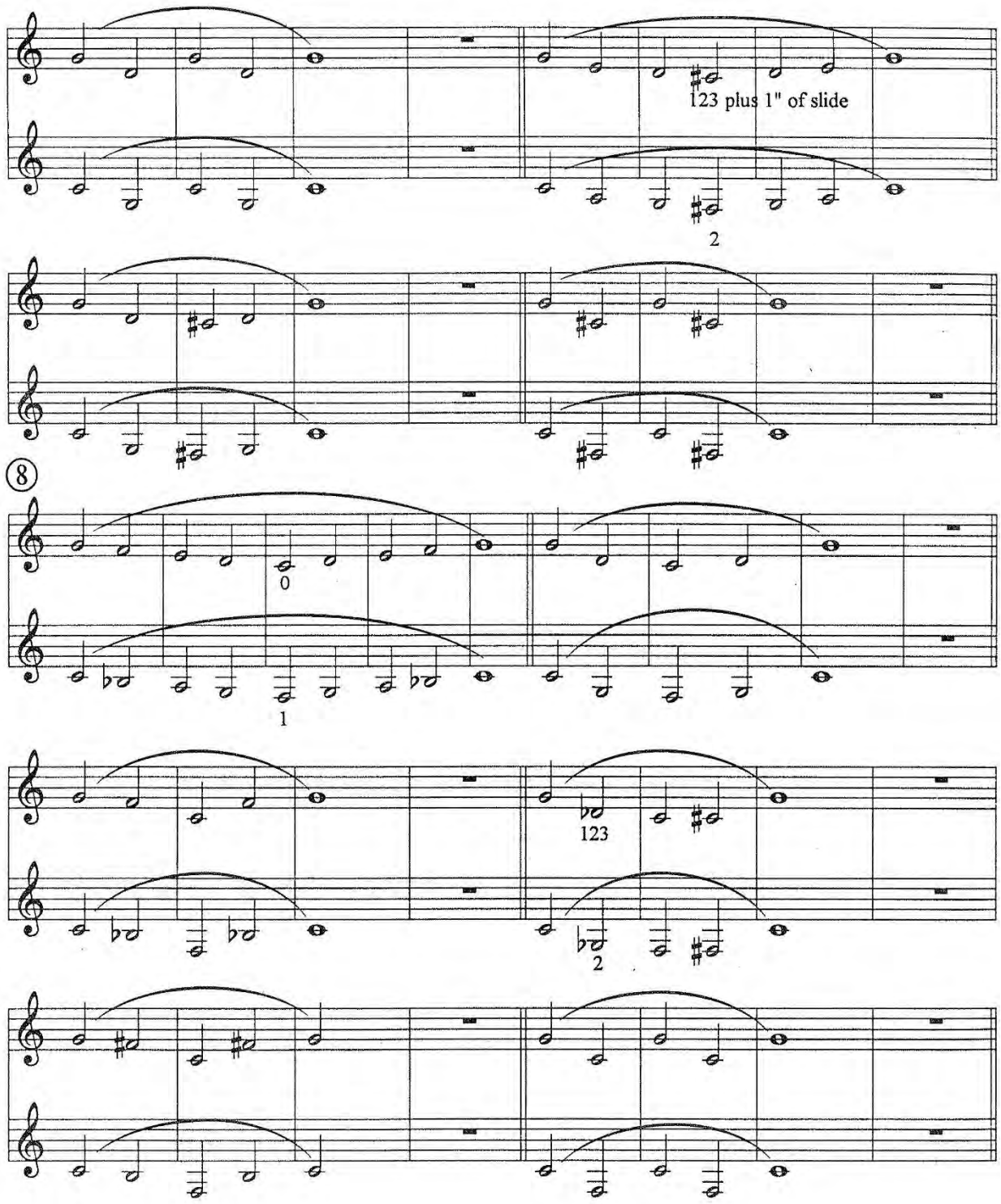
These were written to start with minimal embouchure movement, gradually increasing to octave slurs. Everything is slurred to ensure good air flow. They serve as a prelude to the exercises in Scott Whitener's *A Complete Guide to Brass*.

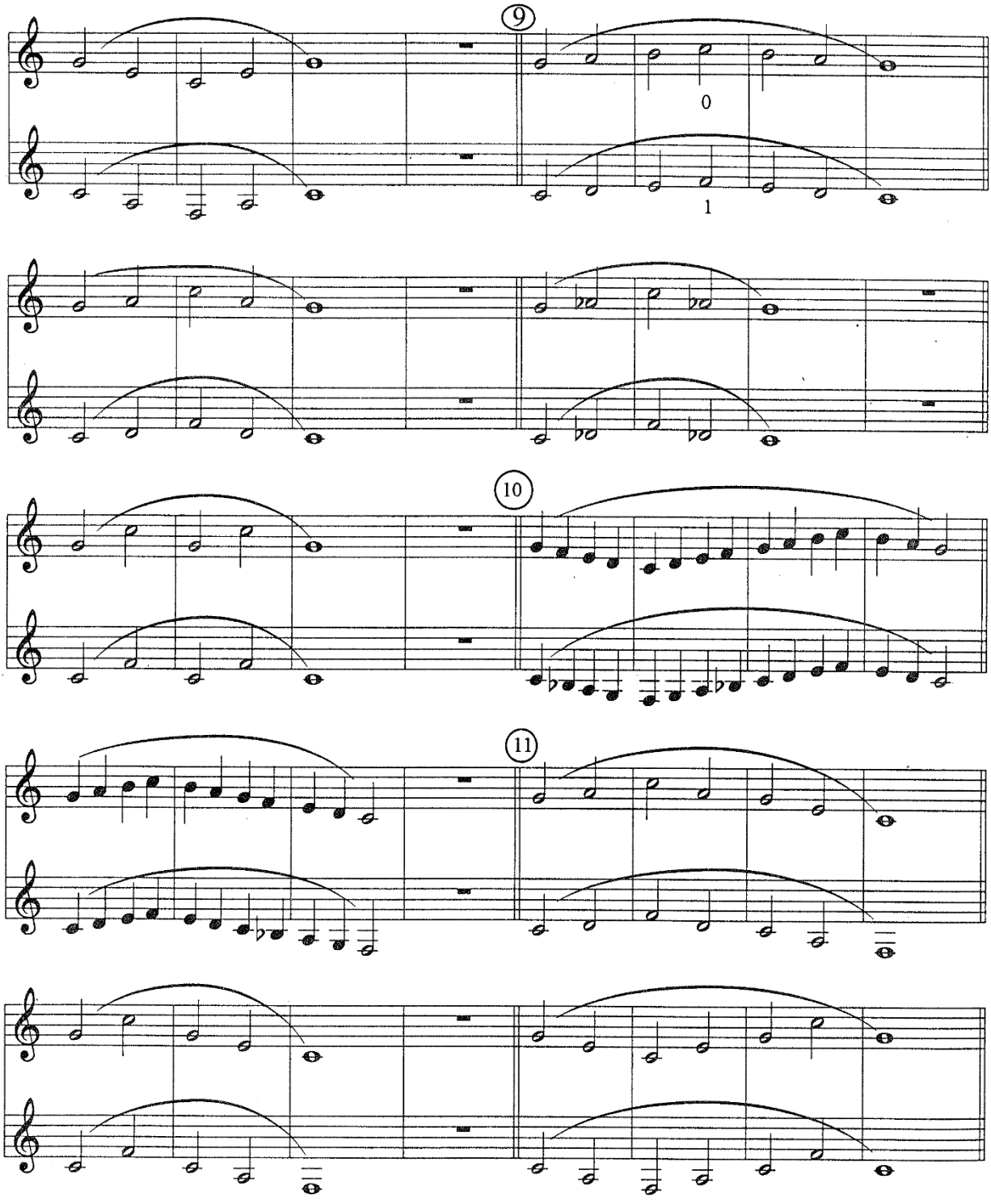
Brass Class Introductory Studies

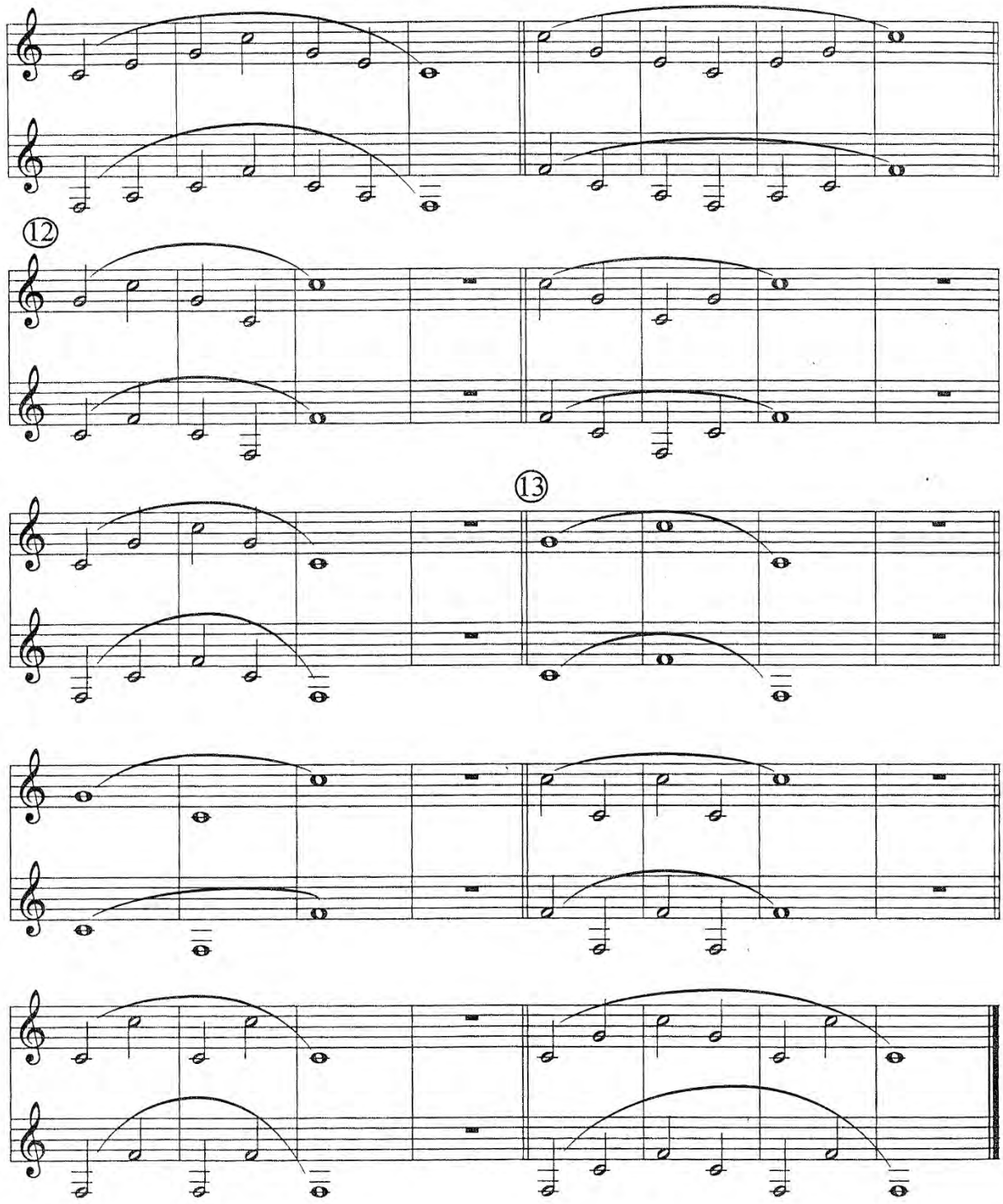
James Buckner




⑤
23
23
⑥
1
2
2
0
⑦
13 extend 3rd valve slide 1/2"
0


123 plus 1" of slide
2
8
0
1
123
2


9
0
1
10
11

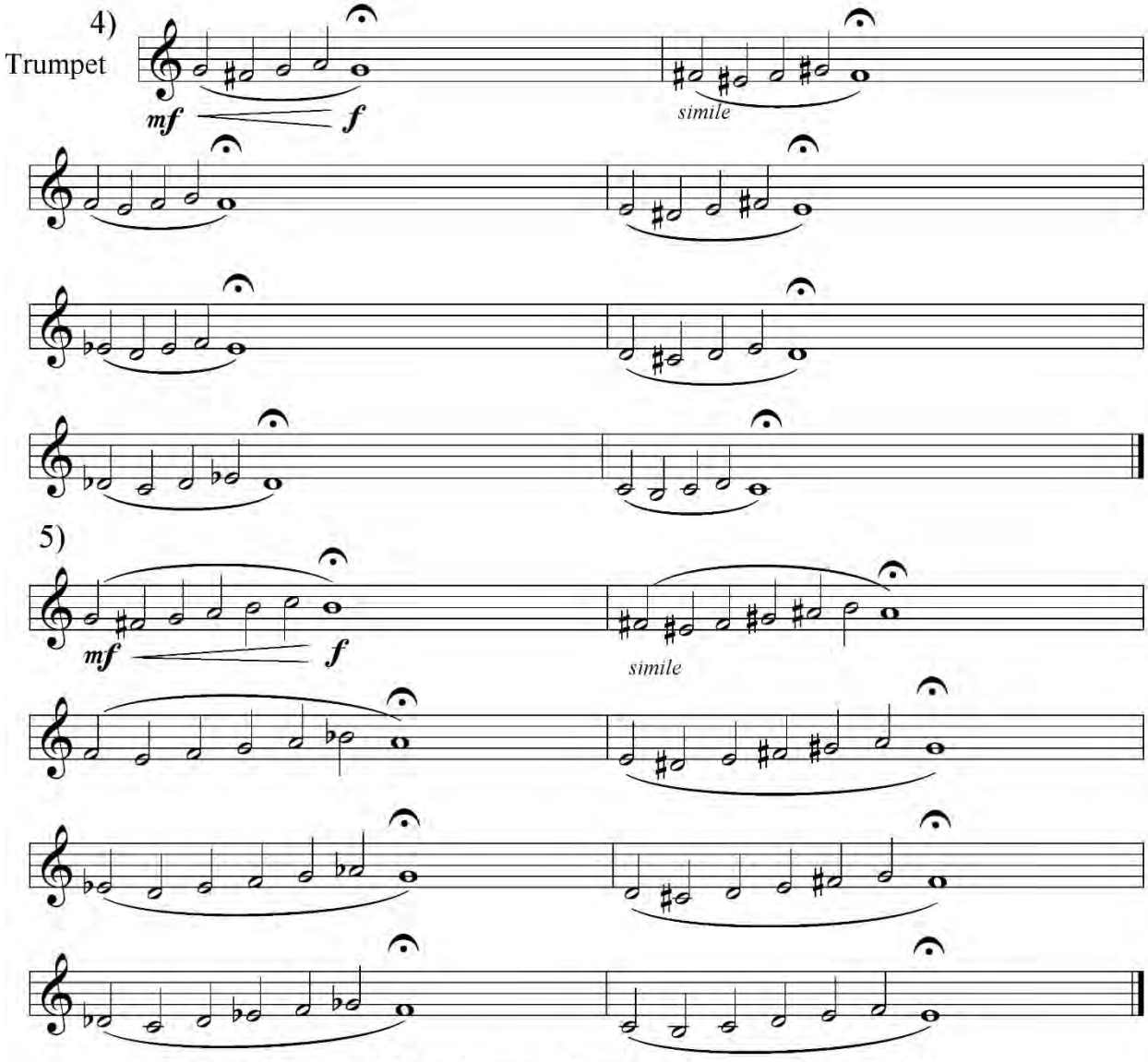

12
13

Tone Studies, Part 1

Vincent Cichowicz

Goals: Beautiful Tone and Smooth Connections

1) 2-3 Deep breaths
2) Mouthpiece: Practice Leak-and-Seal
3) A) Sirens -- work up to at least 2 octaves
   B) Melodies -- at least 2 minutes



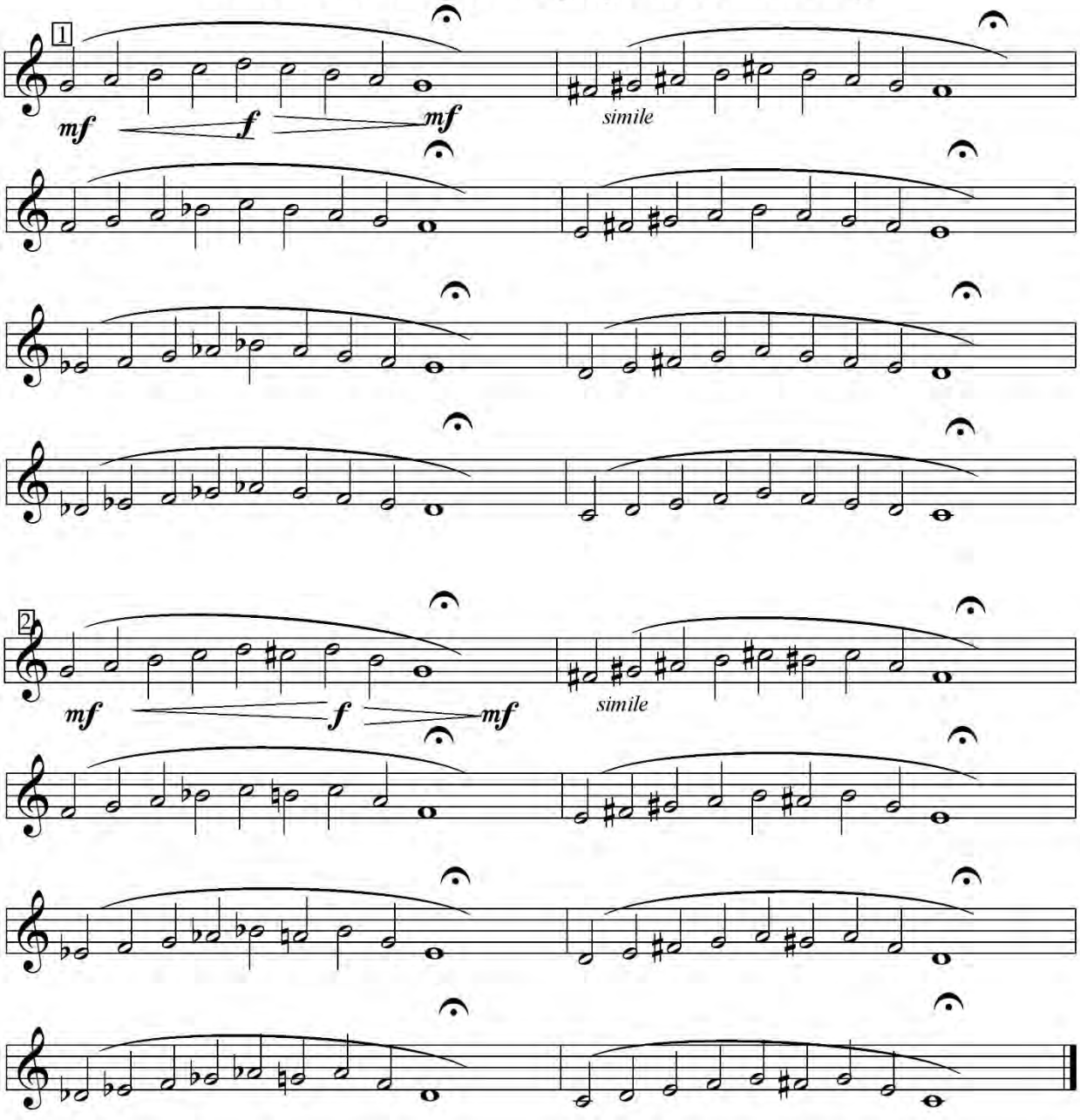
Remember: accidentals carry through the entire measure!

Tone Studies, Part 2

Vincent Cichowicz

Play patterns as written (descending) and ascending
(start with the last pattern and work to the beginning).

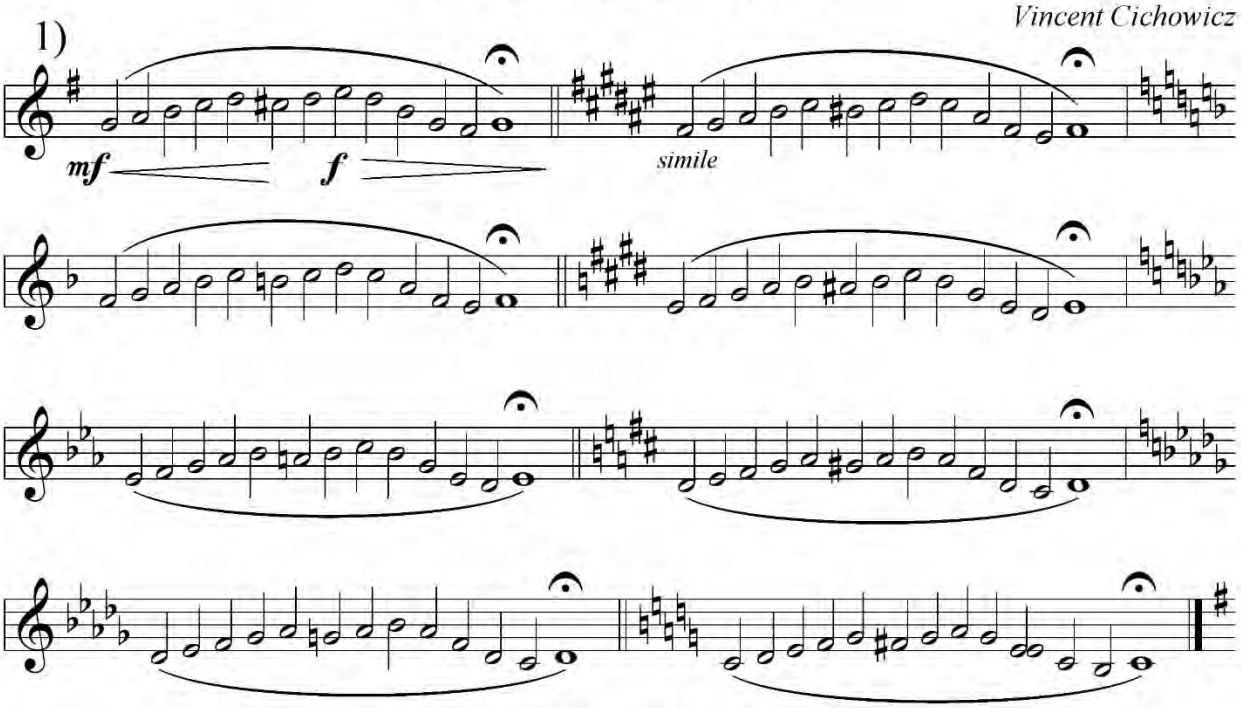
These studies should be played from memory!



Tone Studies, Part 3

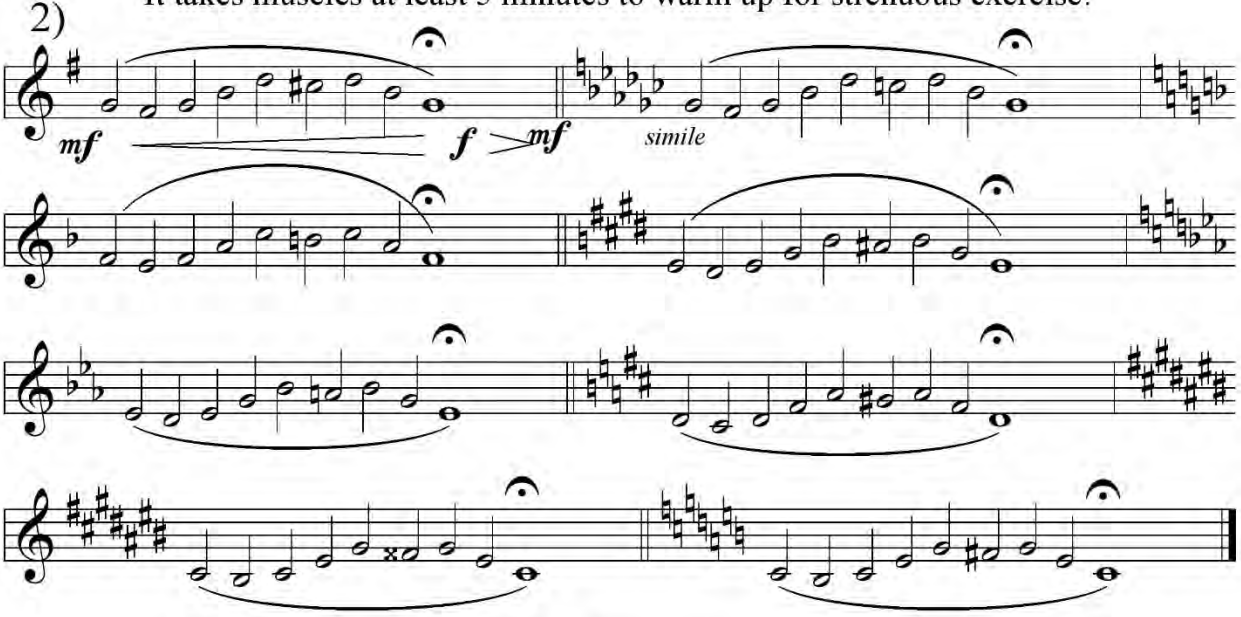
Vincent Cichowicz

1)



It takes muscles at least 5 minutes to warm up for strenuous exercise!

2)

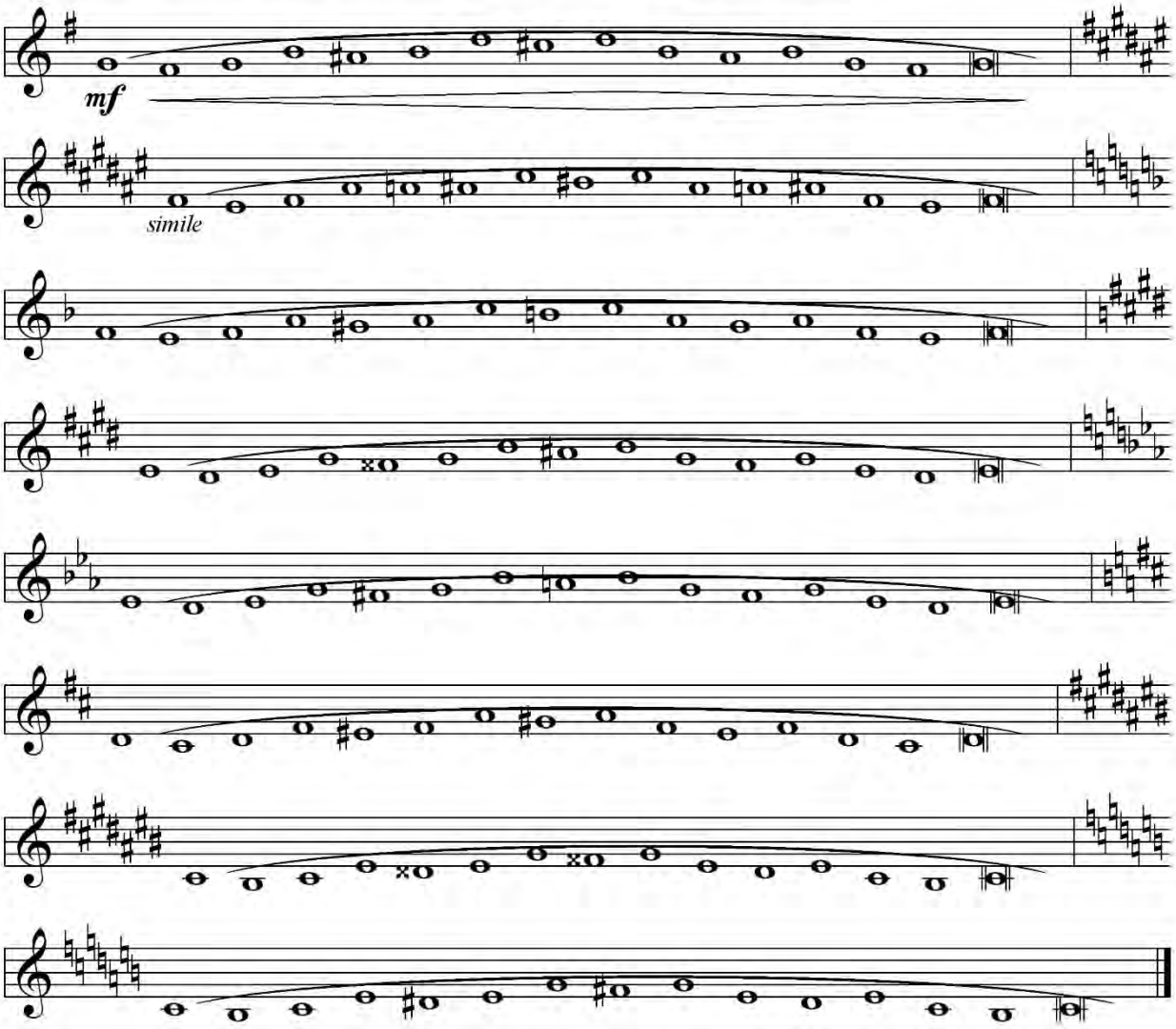


X = double sharp (2 half-steps, or 1 whole-step)
bb = double flat (2 half-steps, or 1 whole-step)

Tone Studies, Part 4

Vincent Cichowicz

Play all of the Tone Studies with rhythmic variations



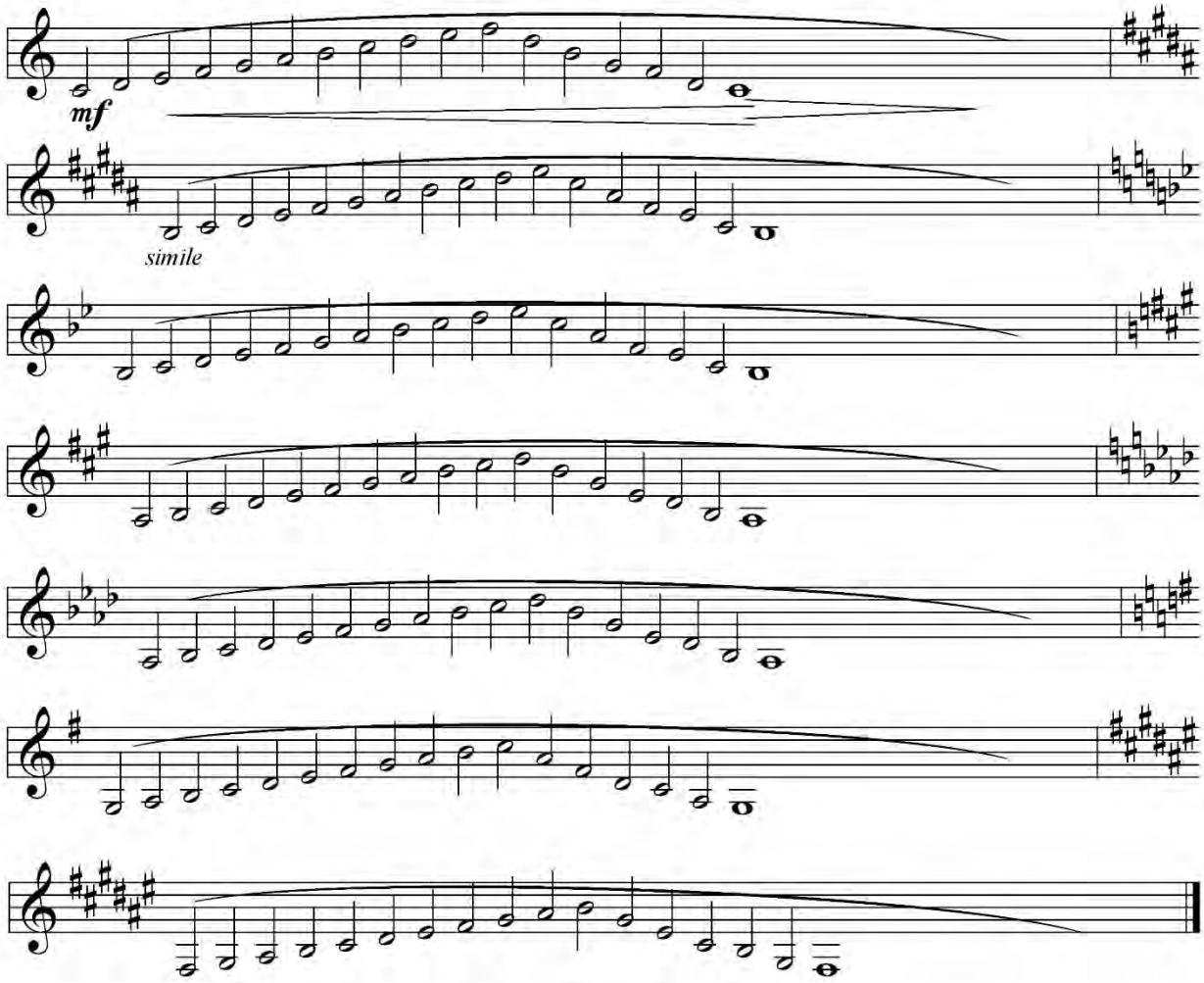
Are you using your valve slides?

D = 1/2 inch

C# = 1 inch

Tone Studies, Part 5

Vincent Cichowicz



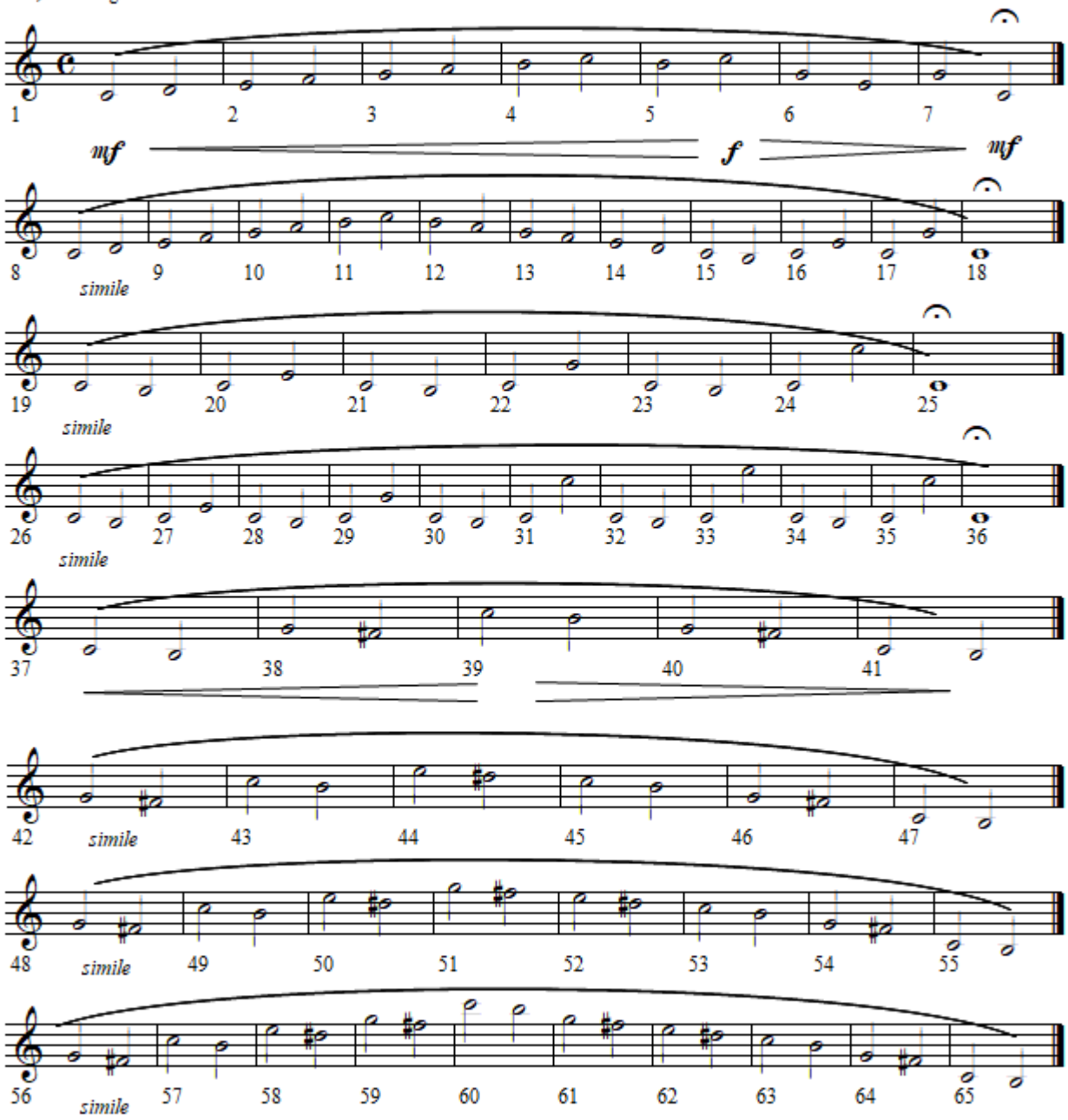
General Characteristics of these Exercises:

1) Slurred
2) Move by step or third
3) Narrow range (except this one)
4) mf dynamic
5) Moderately long
6) Start in mid-range
7) Fermata on last note

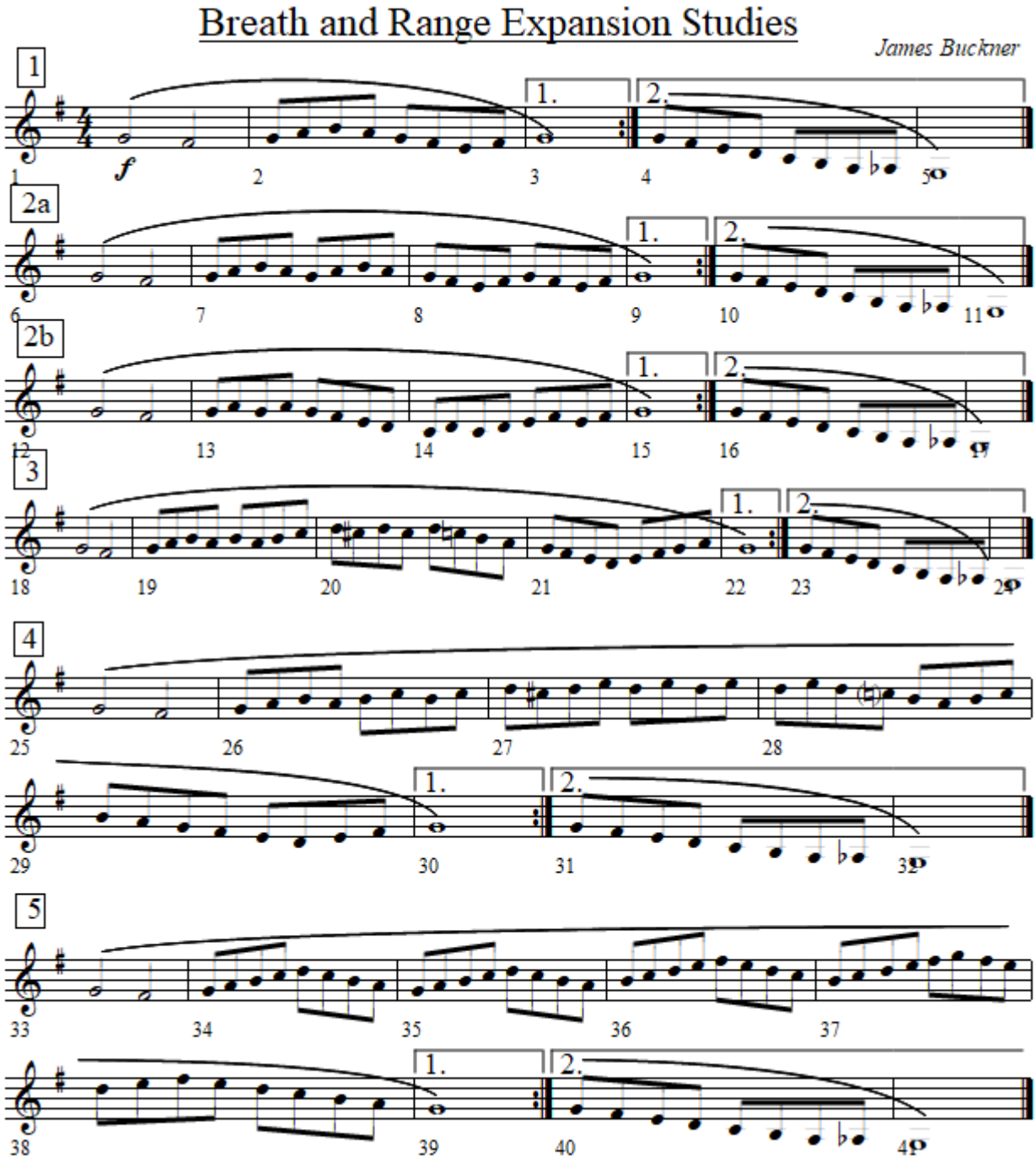
Advanced Tone Studies

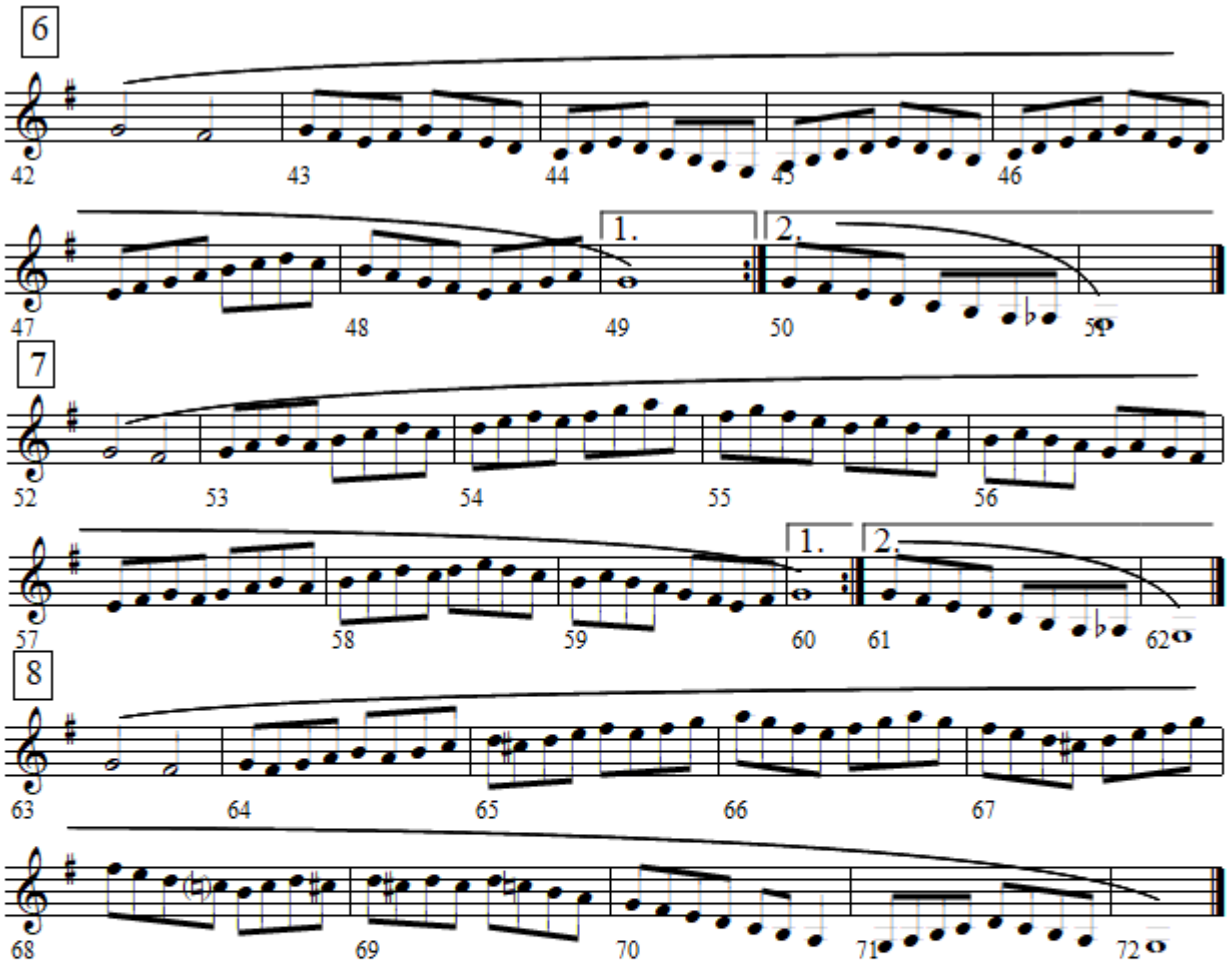
Practice: 1) Slowly!
2) Blowing all the way through the horn
3) Making the lines smooth and connected

Vincent Cichowicz

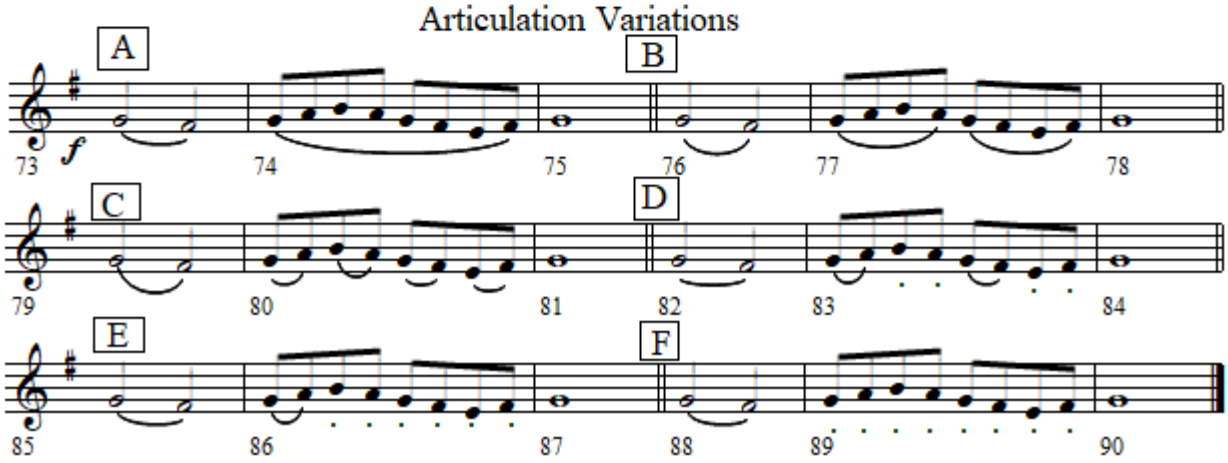


Transpose preceding down by half-steps, starting on 2, 1, 12, 23, 13, 123


Breath and Range Expansion Studies
James Buckner
1
2a
2b
3
4
5
f
1.
2.



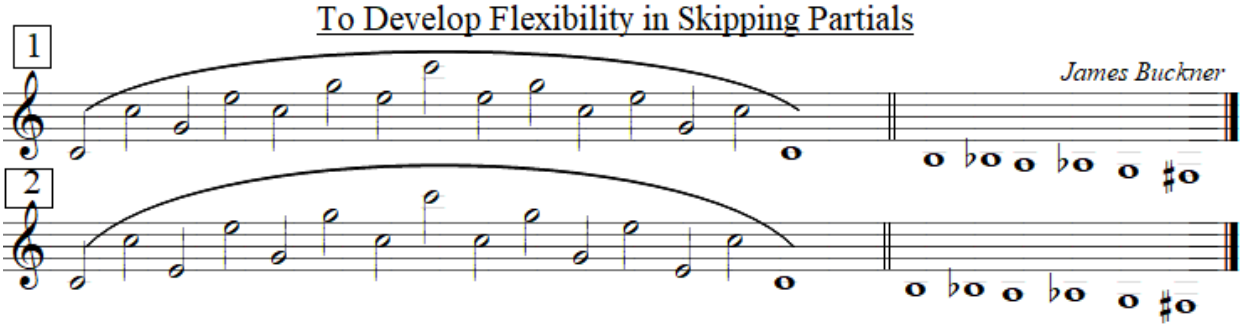
Articulation Variations



These articulations should be applied to exercises 2-8.

Lip Slurs

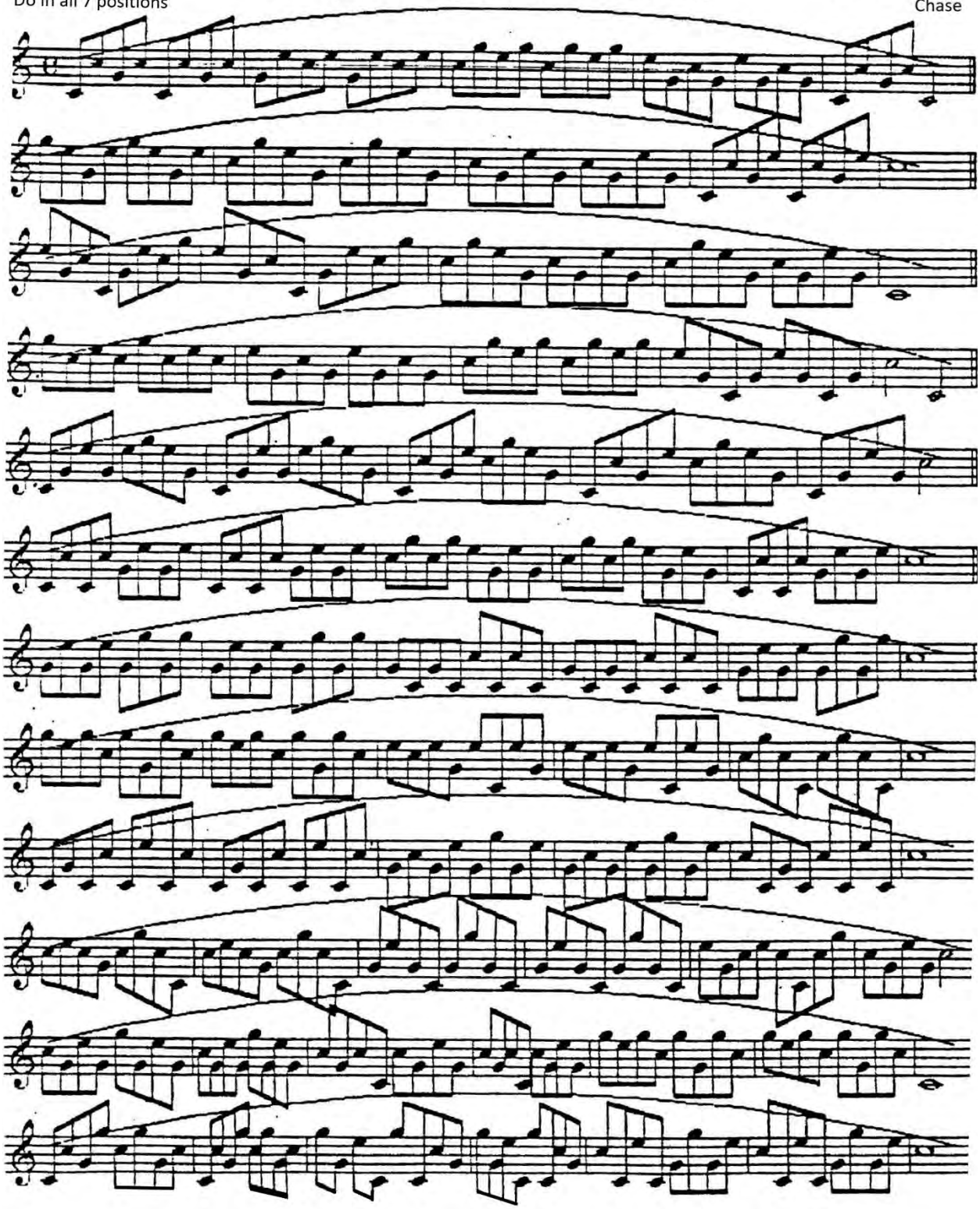
To Develop Flexibility in Skipping Partials



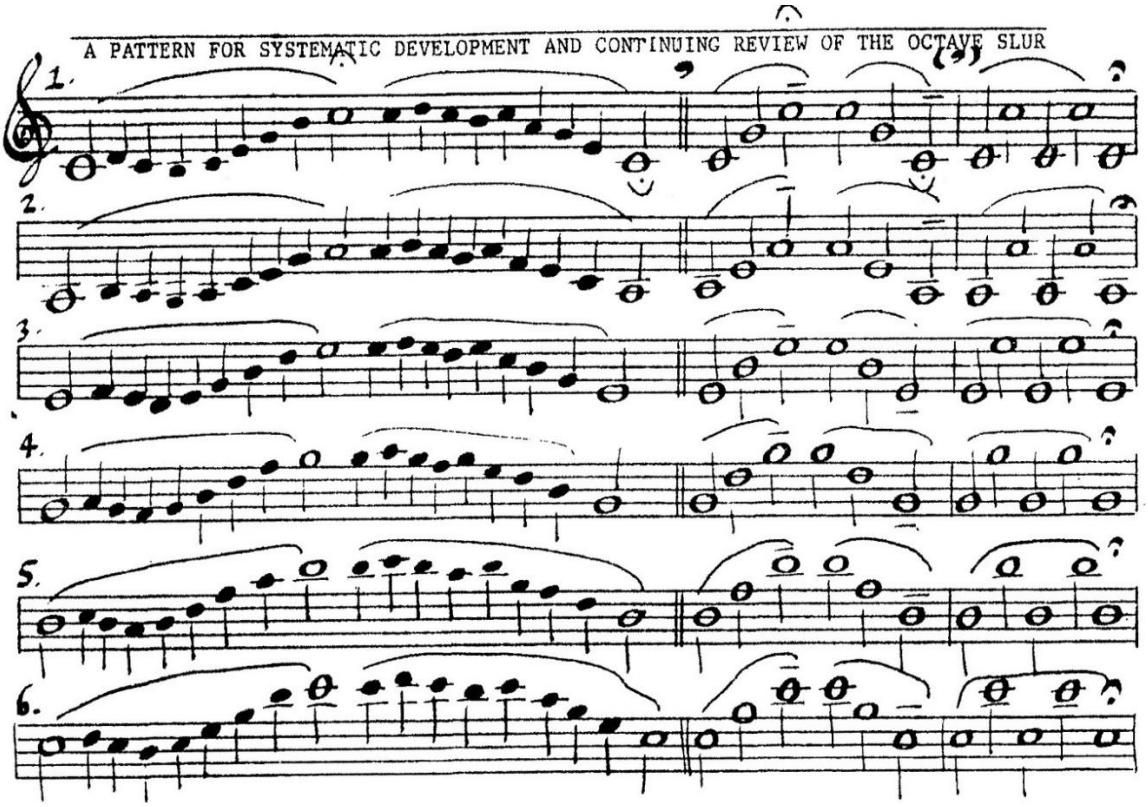
Dirty Dozen/Terrible Twelve

Do in all 7 positions

Daily (Until Death Chase



Jacobs Octave Slurs



Of the numerous patterns dervised for this purpose, the above slurs represent the most effective I have ever encountered. In order to expand in a chromatic progression (in both directions) and involve a minimum of written notes, please follow these instructions. If they represent a challenge to your thinking and note-reading, so much the better, for much of fine performance on the trumpet depends on mental training (rather than mere physical finesse and coordination). (L. Didrickson/2-23-82)

LINE 1. (a) as notated in key of C (regardless of key of trumpet used)
(b) as notated in key of Cb
(c) as notated in key of C#

LINE 2. ~~(a) one written note higher in key of Bb~~
(b) as notated in key of A
(c) as notated in key of Ab
(d) one written note higher in key of Bb
(e) one written note lower in key of G

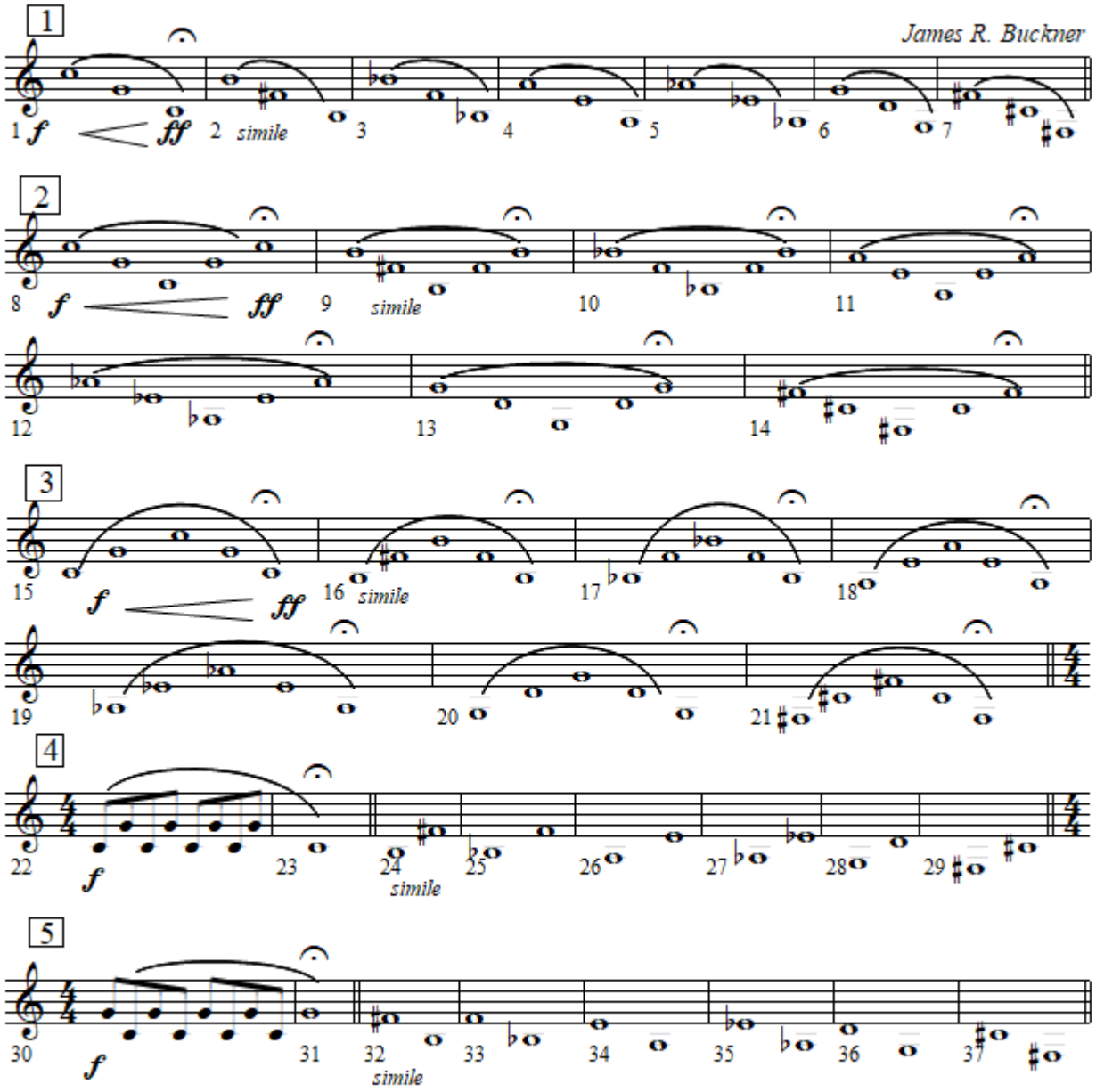
LINE 3. (a) one written note lower in key of D
(b) as notated in key of Eb
(c) as notated in key of E
(d) one written note higher in key of F

LINE 4. (a) as notated in key of Gb
(b) as notated in key of G
(c) one written note higher in key of Ab
(d) one written note higher in key of A

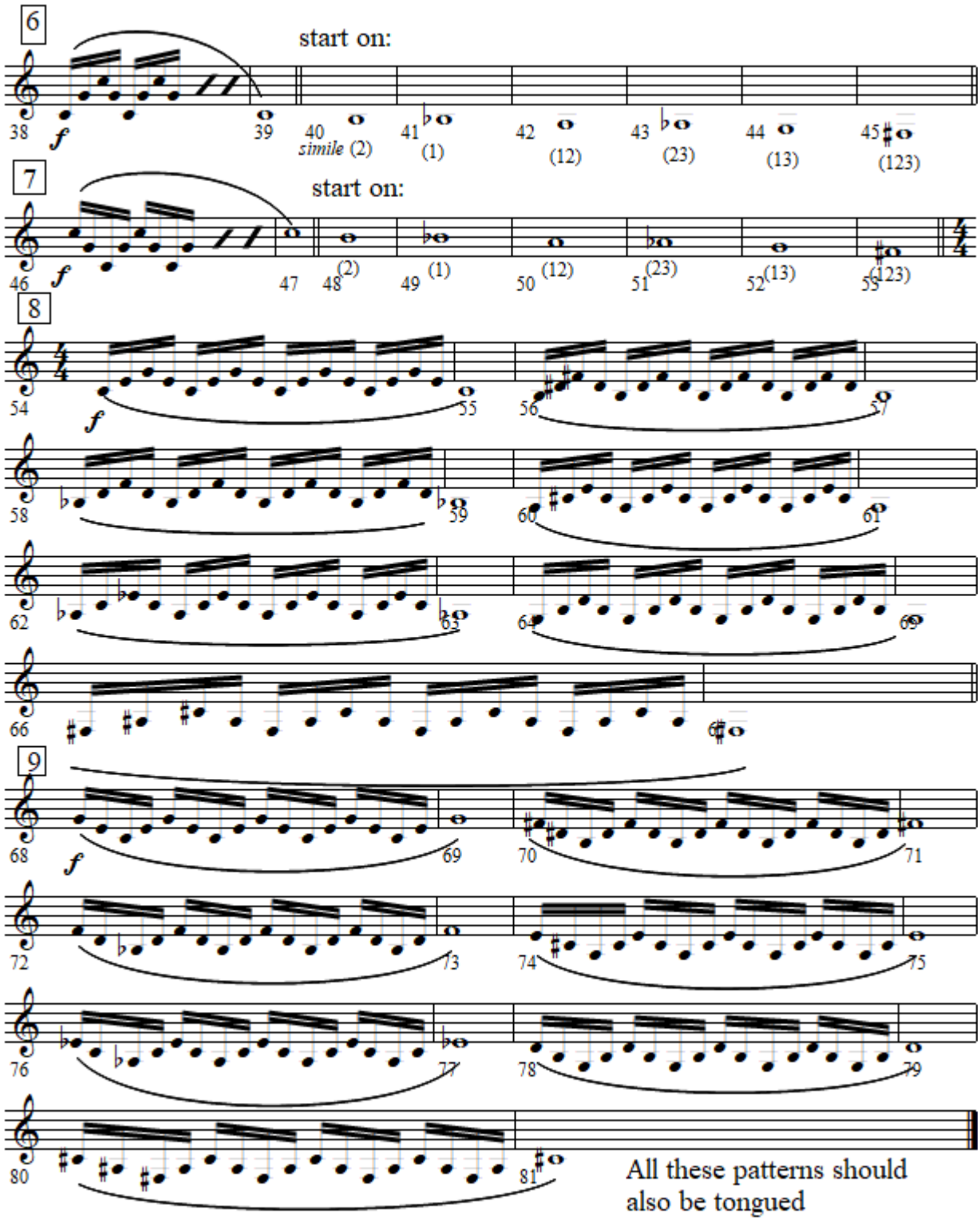
LINE 5. (a) as notated in key of Bb
(b) as notated in key of B major
(c) one written note higher in key of C
(d) two written notes higher in key of Db
(e) two written notes higher in key of D

LINE 6. (a) trumpet in Eb
(b) trumpet in E
(c) trumpet in F

Low Range Development



Remember: 1) Firm Corners, 2) "Ah" or "Oh", 3) LOTS of AIR, 4) May want to drop jaw and pivot bell up slightly

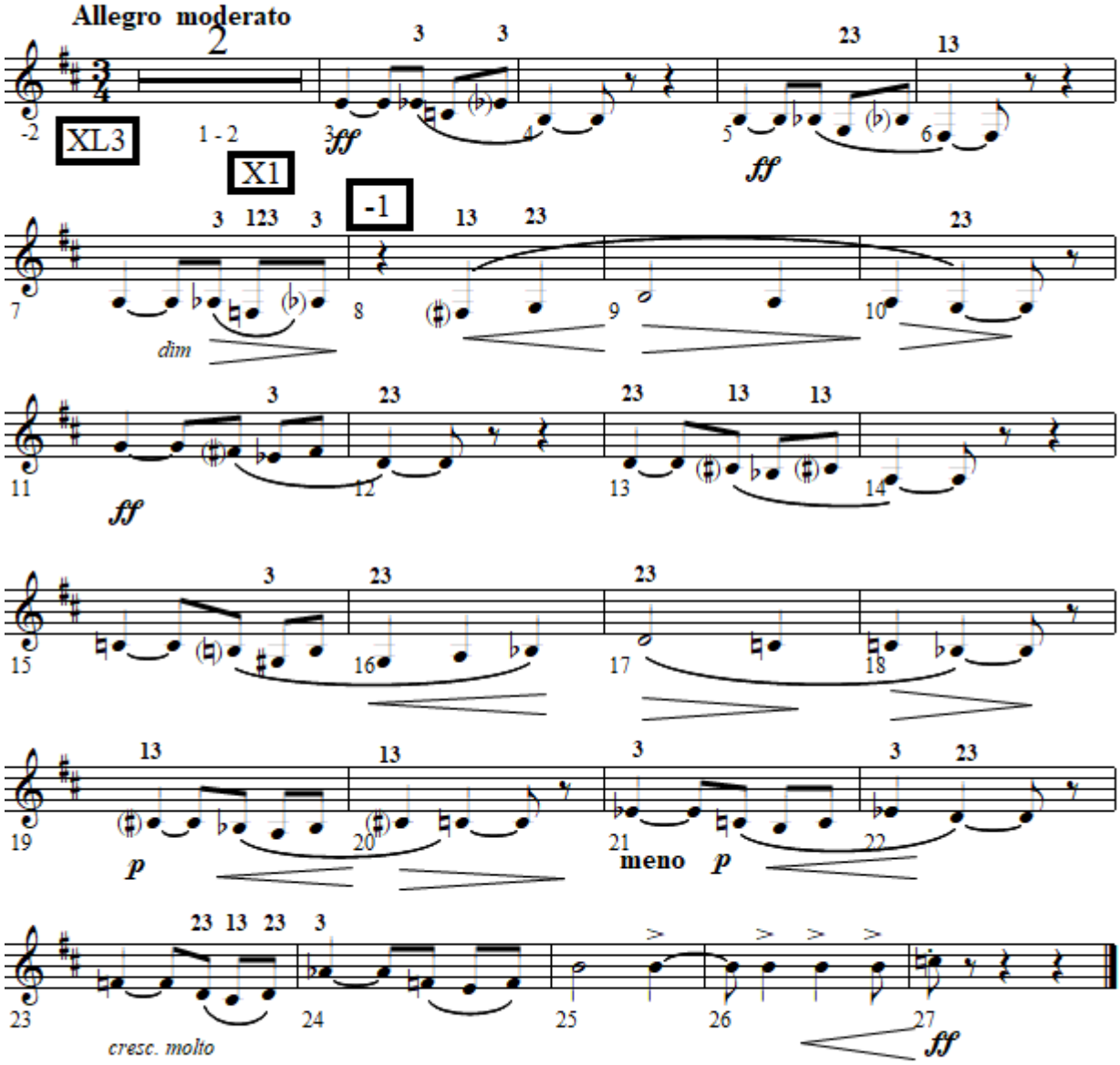

6
start on:
38
f
39
40
simile (2)
41
(1)
42
(12)
43
(23)
44
(13)
45
(123)
7
start on:
46
f
47
48
(2)
49
(1)
50
(12)
51
(23)
52
(13)
55
(123)
8
54
f
55
56
57
58
59
60
61
62
63
64
65
66
67
9
68
f
69
70
71
72
73
74
75
76
77
78
79
80
81
All these patterns should
also be tongued

See Chapter 25 Low Range for explanations of this and the following excerpt.

Carmen

Trumpet in A, transposed for B-flat trumpet

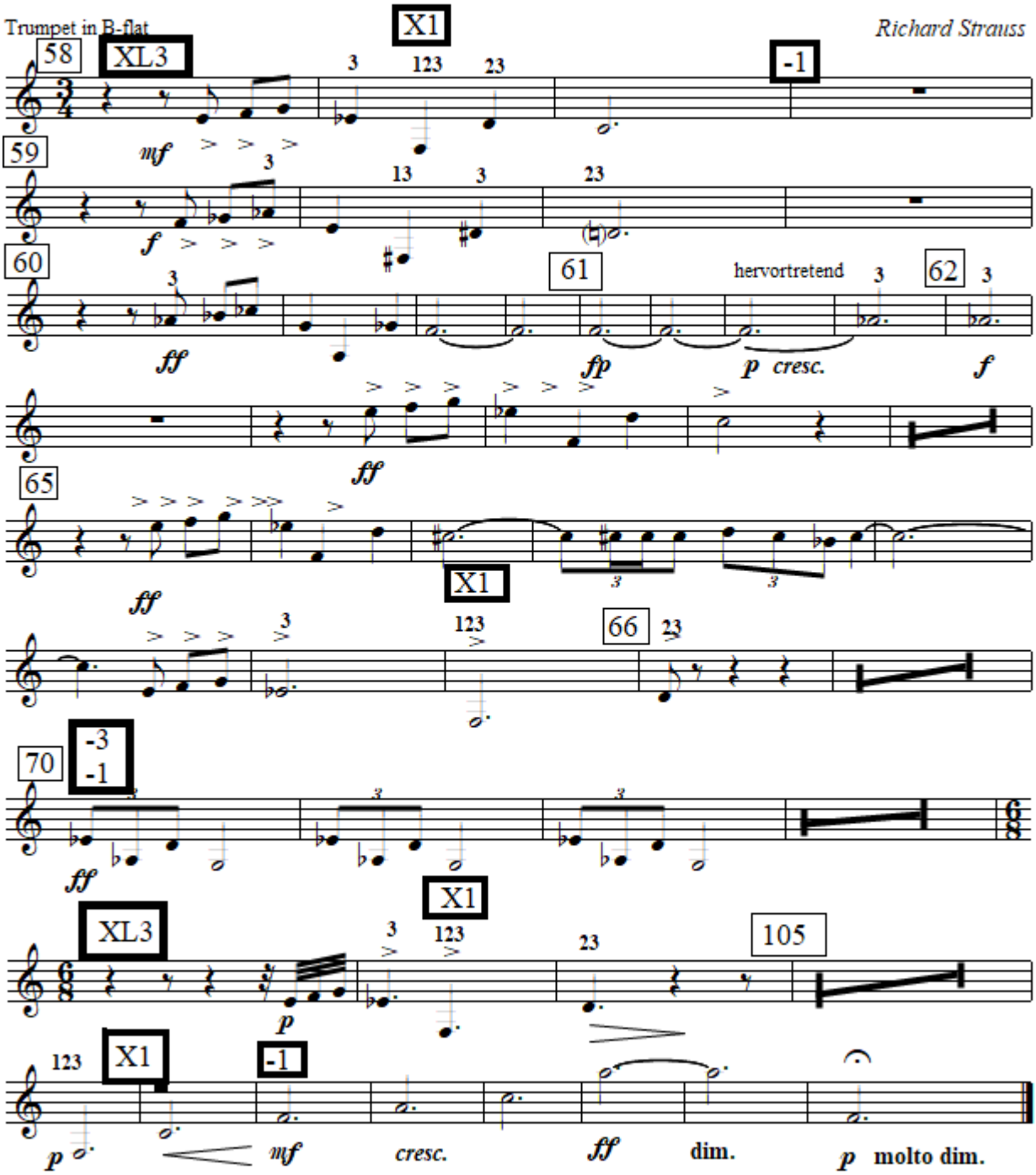
Trumpet in B-flat — *Georges Bizet*



Tune 3rd valve slide to major 3rd by extending as far as possible; extend 1st valve slide 1 inch on low F natural; observe alternate fingerings!

Ein Heldenleben

2nd E-flat trumpet, transposed for B-flat trumpet



Part 2 – Methods and Reference Books

Methods

This is certainly not an exhaustive list of method books; its purpose is to give you something to use while you're learning about other possibilities. There are good, representative solos at the end of the Rubank *Advanced Methods* (6 solos per book)

Trumpet/Euphonium treble clef

Arban *Complete Conservatory Method* (Carl Fischer)

Clarke *Technical Studies* (Carl Fischer)

Gower-Voxman *Advanced Method*, Volumes I and II (Rubank)

Getchell – *Practical Studies*, Volume I and II (Belwin)

Selected Studies (Rubank)

Concert and Contest Selections (Rubank)

Horn

Clarke *Technical Studies* (Carl Fischer)

Gower-Voxman *Advanced Method*, Volumes I and II (Rubank)

Kopprasch *60 Selected Studies* (Carl Fischer)

Getchell – *Practical Studies*, Volume I and II (Belwin)

Pottag *Preparatory Melodies* (Belwin)

Concert and Contest Selections (Rubank)

Trombone/Euphonium bass clef

Arban *Complete Conservatory Method* (Carl Fischer) – especially euphonium

Clarke *Technical Studies* (Carl Fischer) – especially euphonium

Gower-Voxman *Advanced Method*, Volumes I and II (Rubank)

Bordogni/Rochut *Melodious Etudes*, Volume I (Carl Fischer)

Selected Studies (Rubank)

Concert and Contest Selections (Rubank)

Tuba

Arban *Complete Conservatory Method* (Carl Fischer) – trombone down an octave

Clarke *Technical Studies* (Carl Fischer) – trombone down an octave

Gower-Voxman *Advanced Method*, Volumes I and II (Rubank)

Bordogni/Rochut *Melodious Etudes*, Volume I (Carl Fischer) – trombone down an octave

Blazevich – 70 Tuba Studies (Boosey & Hawkes)

Tyrell – 40 Advanced Studies (Robert King Music)

Getchell – *Practical Studies*, Volume I and II (Belwin)

Concert and Contest Selections (Rubank)

Reference Books for Teaching Brass Instruments
Note: This list was compiled in 1986.

General

Applied Music Curriculum, Gale L. Sperry, University of South Florida, 1965

Art of Brass Playing, The, Philip Farkas, Wind Music (not for students - too analytical and detailed in physical processes)

Art of Musicianship, The, Philip Farkas, Musical Publications. 1976

Brass Anthology, Instrumentalist, 1984

Brass Book, E. C. Moore, G. Leblanc Company. 1954

Brass Ensemble Method for Teacher Education, Norman J. Hunt, William C. Brown Publishers, 1963

Brass Ensemble Music Guide, Paul G. Anderson, Instrumentalist, 1978

Brass Facts, Joseph L. Bellamah, Southern Music, 1960

Brass Instruments, The, James H. Winter, Allyn and Bacon, 1964

Brass Instruments in Church Services, James Ode, Augsburg Publishing, 1970

Brass in Your School, Ian Lawrence, Oxford University Press, 1976

Brass Music for the Church, John Devol, Harold Branch Publications, 1974

Brass Performance, Robert Weast, McGinnis and Marx, 1965 - good

Brass Player, The, Charles Colin, Charles Colin, 1972

Brass Solo and Study Material Music Guide, Paul G. Anderson, Instrumentalist, 1976

Brass Wind Artistry, Paul Severson and Mark McDunn, Accura Music, 1983

Contemporary Brass Technique, Vernon F. Leidig, Highland Music. 1960

Embouchure, The, Maurice Porter, Boosey and Hawkes, 1967 – don't recommend

Embouchure and Mouthpiece Manual, Vincent Bach, 1957

Essentials of Brass Playing, F. Fox, Columbia Pictures Publications, 1982

Guide to Teaching Brass, Norman J. Hunt , 3rd edition, William C. Brown Publishers, 1984 (care of instrument, embouchure, breathing, tonguing, vibrato, methods and solo literature lists for all brass, fingering charts, intonation problems, mutes - rather physical approach to methodology) - basic reference source

Instrumental Music Guide, A. Harold Goodman, Brigham Young University Press, 1979

Keys to Natural Performance, Robert Weast, McGinnis and Marx, 1979

Materials for Miscellaneous Instrumental Ensembles, Music Educators National Conference, 1960

Music for Three Brasses, Richard G. Decker, Swift-Dorr Publications, 1976

Playing and Teaching Brass Instruments, Robert Winslow and John Green, Prentice-Hall, 1961 (for ensemble playing; assumes musical training)

Practice Methods for Brass Players, Bengt Belfrage, Wilhelm Hansen Musikforlag, 1982

Preventive Maintenance for Piston Instruments, Otto H. Weisshaar, Belwin-Mills, 1966

Selected Wind and Percussion Materials, University of Iowa (graded solos, methods, ensembles)

Survey of Modern Brass Teaching Philosophies, Joseph Bellamah, Southern Music, 1983

Teacher's Guide to the Literature of Brass Instruments, A, Mary Rasmussen, Cabinet Press (Brass Quarterly), 1968 - good

Teaching the Successful High School Brass Section, Merrill Brown, Parker Publications, 1981

Vital Brass Notes, Charles Colin, Charles Colin, 1948

Wind and Percussion Literature Performed in College Student Recitals (1971-72), Merrill E. Brown, Instrumentalist, 1974

Trumpet

Advanced Method, Roger Grocock, Argee Music Press, 1968

Art of Trumpet Playing, The, Vincent Bach, Vincent Bach Corporation, 1969

Art of Trumpet Playing, The, Keith Johnson, Iowa State University Press, 1981 - very articulate, well thought out, trained in "Chicago" methodology

Artistic Trumpet Technique and Study, Irving R. Bush, Highland Music, 1962

Basic Guide to Trumpet Playing, Byron L. Autrey, M. M. Cole Publishing, 1963

Brass Playing, Faye Hanson, Carl Fischer, 1968 – analytical

Comparative Mouthpiece Guide, Gerald Endsley, Tromba Publications, 1980

Cornet Playing, D'Ath, Boosey and Hawkes, 1960

Embouchure Enlightenment, Gene Young, Tromba Publications. 1977

Solo Literature for the Trumpet, Thomas Hohstadt, F. E. Olds Music Education Library, 1959

Textbook for Trumpet, A, Daryl J. Gibson, Schmitt, Hall & McCreary, 1967 (repertoire list)

Trumpet Player's Guide to Orchestral Excerpts, A, Linda Anne Farr, The Brass Press, 1978, revised

Trumpet, The, Wilfredo Cardoso, Wilfredo Cardoso (Vol. 1 & 2: High Trumpets, 1977; Vol. 3 & 4: Ascending [valve] Trumpets, 1978; Vol. 5-8: How to Play in a Symphony Orchestra), 1980)

Trumpet Profiles, Louis Davidson, Louis Davidson. 1975 - questionnaires

Trumpet Teacher's Guide, Gordon Mathie, Queen City Brass Publications, 1984 (indexes 144 trumpet method books by technical and musical problems) - good

Trumpet Technique, Delbert A. Dale, Oxford University Press, 1965

Trumpeter's Handbook, Roger Sherman, Accura Music, 1979

Trumpeter's Supplemental Guide, William Pfund, William Pfund, 1979

Trumpeter's Treasury of Information, Bellamah, Southern Music, 1969

Twentieth-Century Music for Trumpet and Orchestra, Norbert Carnovale, The Brass Press, 1975

Twentieth-Century Music for Trumpet and Organ, Cansler, The Brass Press, 1984

Horn

Art of French Horn Playing, The, Philip Farkas, Wind Music, 1962 – good

Creative Approach to the French Horn, A, Harry Berv, Chappell Music1977

THE FRENCH HORN, Birchard Coar, Coar, 1947 (some pedagogy)

French Horn, The, R. Morley-Pegge, Ernest Benn Limited, 1973

Horn, The, Robin Gregory, Praeger, 1969

Horn, The Horn, The, Merewether, Paxman of Covent Garden, 1978

Horn Bibliographie, Bernhard Bruechle, three volumes, Heinrichshofer Wilhelmsharen, 1970 and 1975 (in German)

Horn Player's Guide to Orchestral Excerpts, A, Linda Anne Farr, The Brass Press, 1978

Horn Technique, Gunther Schuller, Oxford University Press, 1962

Index of French Horn Music, Wayne Wilkins, The Music Register, 1978

Photographic Study of Horn Players' Embouchures, Philip Farkas, Wind Music, 1975

Playing the Horn, Barry Tuckwell, Oxford University Press, 1978

Practical Guide to French Horn Playing, A, Milan Yancich, Wind Music, 1971

Trombone

Annotated Guide to Bass Trombone Literature, Thomas G. Everett, The Brass Press, 1978

Annotated Guide to Trombone Solos with Band and Orchestra, Verne Kagarice, Studio P/R, 1974

Art of Trombone Playing, The, Edward Kleinhammer, Summy-Birchard, 1963 - very good

Modern Trombone, The, Stuart Dempster, University of California Press, 1979

Solos for the Student Trombonist, An Annotated Bibliography, Verne Kagarice, et. al., The Brass Press, 1979

Trombone, The, Robin Gregory, Praeger, 1973

Trombone Chamber Music, An Annotated Bibliography, Harry J. Arling, The Brass Press, 1978

Trombone Teaching Technique, Donald Knaub, Accura Music, 1978

Trombone Technique, Denis Wick, Oxford University Press, 1971

Trombonist's Handbook, The, Reginald H. Fink, Accura Music, 1977

Euphonium and Tuba

Art of Euphonium Playing, The, Art Lehman, Art Lehman, 1977 (with recordings)

Contemporary Tuba, The, Barton Cummings, Whaling Music, 1984

Encyclopedia of Tuba Literature, William Bell, Charles Colin, 1967

Euphonium Music Guide, Earle L. Louder and David R. Corbin, Jr., Instrumentalist, 1978

Euphonium Music Guide, David R. Werden and Dennis W. Winter, Whaling Music, 1983

Low Brass Guide, The, John R. Griffiths, Jerona Music, 1980

Studio Class Manual for Tuba and Euphonium, William H. Rose, Iola Publications, 1980

Tuba Family, The, Clifford Bevan, Faber and Faber, 1978

Tuba Handbook, J. Kent Mason, Sonante Publications, 1977 (repertoire list)

Tuba Music Guide, R. Winston Morris, Instrumentalist, 1973

Part 3 – Teachers and Musicians

Many teachers and musicians are referenced throughout this book. Rather than listing their credentials each time they are mentioned, they are listed below:

<table>
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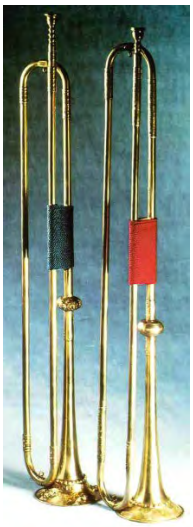
bernardadelstein.com</td>
<td> 
public domain

Sorry, no photo of Altenburg available!</td>
</tr>
<tr>
<td>Bernard “Bernie” Adelstein – Principal trumpet, Cleveland Symphony Orchestra, 1960-1988; professor of trumpet, Indiana University, 1988-1994. I heard him with Cleveland – amazing!</td>
<td>Johann Ernst Altenburg – German trumpeter, composer, and organist; author of Trumpeters’ and Kettledrummers’ Art (1795).</td>
</tr>
<tr>
<td> 
William Gottlieb – Public Domain</td>
<td> 
youtube.com</td>
</tr>
<tr>
<td>Cat Anderson – Duke Ellington’s lead trumpet player.</td>
<td>Maurice André – Spectacular trumpet soloist, undoubtedly THE most recorded of all time. I saw him perform a recital in 1980. It was FLAWLESS!!!</td>
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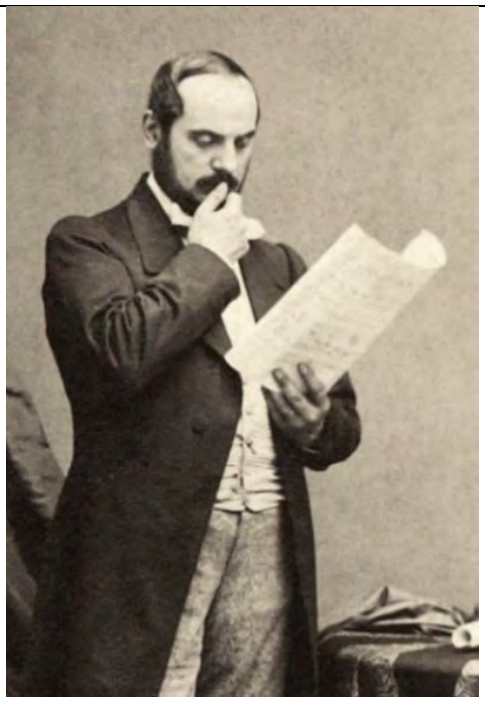
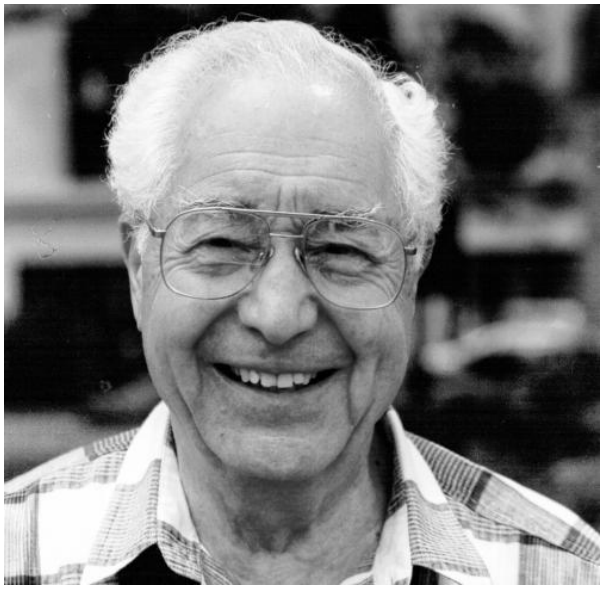
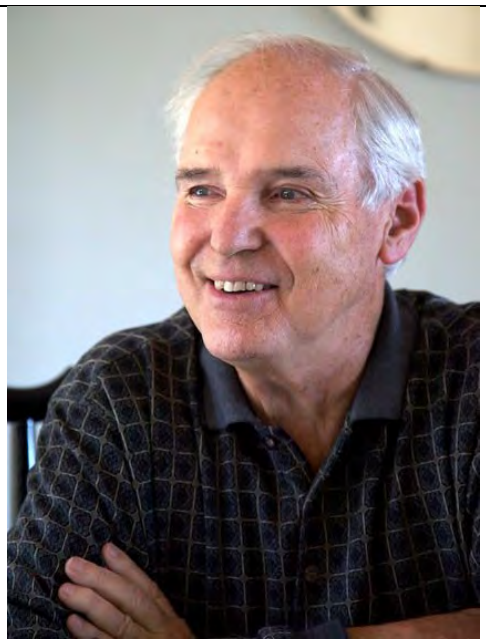
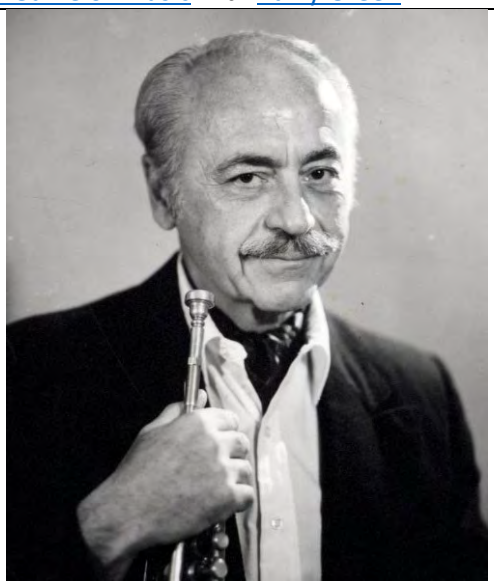
 wikimedia.org – public domain	 conn-selmer.com
Jean-Baptiste Arban – Famed cornetist and composer of the *Complete Conservatory Method*.	Vincent Bach – Trumpet and mouthpiece designer; principal trumpet, Boston Symphony Orchestra.
 Wayne Bergeron	 wikimedia.org – public domain
Wayne Bergeron – Fantastic lead trumpeter who played lead with Maynard Ferguson and records MANY movie scores. Guest artist at Henderson State University.	Hector Berlioz – Composer, author of *Treatise on Instrumentation* (1844). Composed cornet obbligato in the 2nd movement of the Symphonie fantastique for Arban.

 wikimedia.org – public domain	 Arkansas Brass
Daniel Bernoulli – Swiss mathematician and physicist. The Bernoulli principal was presented in *Hydrodynamica* (1738).	Wes Branstine – Dr. Wes Branstine taught low brass at Henderson State University for 31 years; I taught with him the last 14 years. Great cook, too!
 facebook.com	 Rice University
Bud Brisbois – High note super star (to triple C), lead trumpeter for the Stan Kenton Orchestra, studio musician. Frequent soloist with Henry Mancini. He performed as soloist at my high school in 1969 – that is when I decided to pursue music as a career.	Barbara Butler – Trumpet professor at Rice University, Northwestern University, the Eastman School of Music, co-principal trumpet of the Vancouver Symphony Orchestra, and more.

 carminecaruso.net	 youtube.com
Carmine Caruso – Legendary brass teacher and saxophonist. Author of Musical Calisthenics for Brass.	Bill Chase – Founder and lead trumpet of Chase; lead trumpet with Woody Herman, the Stan Kenton Orchestra, and Maynard Ferguson. I saw his group several times – phenomenal playing!
 Author's Collection	 unknown
Joe Christiansen – "Mr. C" taught at Louisiana Tech University prior to becoming trumpet teacher at Iowa State University and eventually director of bands. I studied with him for two years – he's the reason I became a college trumpet teacher. Mr. C was a student of Faye Hanson and Clifford Lillya.	Vincent Cichowicz – Trumpet professor at Northwestern University and 2nd trumpet in the CSO sitting next to Adolph Herseth for 23 years. He was THE orchestral trumpet teacher with students from all over the United States, Germany, and Japan. I did my doctorate in trumpet performance with him.

 wikimedia.org – public domain	 daleclevenger.com
Herbert L. Clarke – Solo cornetist for John Phillip Sousa, composer of many virtuoso solos and technical studies, and author of How I Became a Cornetist.	Dale Clevenger – Principal horn of the Chicago Symphony Orchestra from 1966 to 2013. I hear him several times with the CSO.
 Amazon	 Legacy.com
Charles Colin – Trumpet educator and publisher.	Ray Crisara – Professor of trumpet, University of Texas-Austin; principal trumpet, Metropolitan Opera; member of the NBC Symphony under Arturo Toscanini; recorded with Aaron Copland and Igor Stravinsky; helped develop the Bach Stradivarius trumpet.

 Author's Collection	 facebook.com
Luther Didrickson – First call trumpeter with the CSO and trumpet professor at Northwestern University. Mr. Didrickson was my primary teacher at Northwestern University.	Vince DiMartino – Trumpet soloist, retired professor of trumpet at the University of Kentucky and Centre College. I have met him several times – he is a fantastic trumpeter and one of the nicest people on the planet!!
 Amazon	 Loadmaster, CC Attribution-Share Alike 3.0
Phillip Farkas – Principal horn in the Boston, Cleveland, and Chicago orchestras, professor of horn at Indiana University, author of several important works (including *The Art of Brass Playing*), and the driving force behind Holton horn and mouthpiece design.	Maynard Ferguson – Perhaps the greatest high note trumpeter of all time! I heard him many times over the years.

 tubaforum.it	 theinnergame.com
John Fletcher – Principal tuba, London Symphony Orchestra and the Philip Jones Brass Ensemble, which I saw in 1986.	W. Timothy Gallwey – Author of The Inner Game of Tennis and related books. Co-author of The Inner Game of Music with Barry Green.
 youtube.com – Mr. Geisler is performing the National Anthem at World Series 3, 1969.	 ©Regents of the University of Michigan Bentley Image Bank, Creative Commons by 4.0
Lloyd Geisler – Principal trumpet and associate conductor, National Symphony Orchestra.	Armando Ghitalla – Principal trumpet, Boston Symphony Orchestra; professor of trumpet at the University of Michigan; first trumpeter to record the Hummel trumpet concerto. I heard him perform Mahler's Symphony No. 5 – incredible!! The BIGGEST trumpet sound I've heard!

andreagiuffredi.com

Andrea Giuffredi – Italian trumpet soloist, professor of trumpet at the Civica Scuola di Musica Milano "Claudio Abbado." Former orchestral trumpeter. Guest artist at Henderson State University.

memim.com

Bernie Glow – Studio trumpeter, 1st call in New York City. Member of the Woody Herman Orchestra and the NBC and CBS Orchestras.

qpress

Fay Hanson – Trumpet teacher. Student of Herbert L. Clarke. Joe Christensen studied with her for two years before transferring to the University of Michigan. She was the author of Brass Playing: Mechanism & Technic.

Trphira, Creative Commons 3.0

Adolph "Bud" Herseth – Principal trumpet, Chicago Symphony Orchestra for 53 years. I heard Mr. Herseth perform the Hummel trumpet concerto with the Cedar Rapids (IA) Symphony Orchestra and many times with the CSO. A legendary musician!

summit records.com

tomhooten.com

David Hickman – Professor of Trumpet, Arizona State University (retired); over 3,000 solo performances with Orchestra; founder of Summit Records and Summit Brass. I've seen him perform several times.	Tom Hooten – Principal trumpet, Los Angeles Philharmonic Orchestra. Former principal trumpet, Atlanta and Houston Symphony Orchestras. Former member of "The President's Own" United States Marine Band in Washington, D.C. Guest artist at Henderson State University.

Earl D. Irons Papers, University of Texas at Arlington Libraries.
Earl D. Irons with cornet at age 16. (1907).
library.uta.edu

unknown

Earl Irons – Trumpeter, band director, and composer of 27 Groups of Exercises and numerous trumpet solos with band.	Arnold Jacobs – Principal tuba, Chicago Symphony Orchestra; world-renown brass pedagogue. See Chapter 9 for more information. For more on his teaching, see windsongpress.com. I took six life-changing lessons from Mr. Jacobs.

 thetrumpetblog	 *William P. Gottlieb collection, Library of Congress*
Don Jacoby – Noted trumpet soloist and teacher; performed with Benny Goodman and Les Brown. His students include Bobby Shew and Marvin Stamm.	Harry James – Big band leader and exceptional trumpeter from the 1940s and 1950s. Perhaps the most famous entertainer of his time.
 youtube.com	 trumpetland.com
Ifor James – Principal horn in many London orchestras, horn in the Philip Jones Brass Ensemble, horn professor who taught over 100 professional musicians.	Gil Johnson – Principal trumpet, Philadelphia Orchestra for 18 years and professor of trumpet, the University of Miami for 27 years. I heard Mr. Johnson perform with the Philadelphia Orchestra in 1971.

uniqware.com

Keith Johnson – Professor of Trumpet at the University of North Texas and the University of Northern Iowa; author of *The Art of Trumpet Playing* and *Brass Performance and Pedagogy*. I performed with him in the Waterloo-Cedar Falls Symphony Orchestra and took a fantastic class in brass pedagogy from him.

youtube.com

Philip Jones – Principal trumpet for most major London orchestras, founder of the Philip Jones Brass Ensemble, which I saw in 1986.

springgardenband.com

Frank Kadarabek – Principal trumpet, Philadelphia Orchestra, Dallas Symphony, and Detroit Symphony Orchestra. I saw Mr. Kadarabek perform Copland's third symphony under the direction of Aaron Copland himself. What a thrill!

iltrombone.it

Edward Kleinhammer – Bass trombone, Chicago Symphony Orchestra, 1942-1985. Author of *The Art of Trombone Playing* (1963).

 Charles Lazarus	 Dallas Brass
Charles Lazarus – Fourth trumpet, Minnesota Orchestra; former member of the Canadian Brass, the Meridian Arts Ensemble, and the Dallas Brass. Guest artist at Henderson State University.	Michael Levine – Founder, narrator, and trombonist with the Dallas Brass; inventor of the Windmaster. Founder of Harmony Bridge. I have known him since 1987.
 Author's Collection	 scribd.com
Clifford Lillya – Mr. Lillya won a spot in John Phillip Sousa's touring band; unfortunately, Sousa shut the band right after this. Mr. Lillya's students at the University of Michigan included many of the finest professional trumpeters and university trumpet professors in this country. Joe Christiansen studied with him for two years. I did my masters in trumpet performance with him.	Bai Lin – Professor of trumpet at the Central Conservatory of Music in Beijing, China; composer of *Lip Flexibilities*.

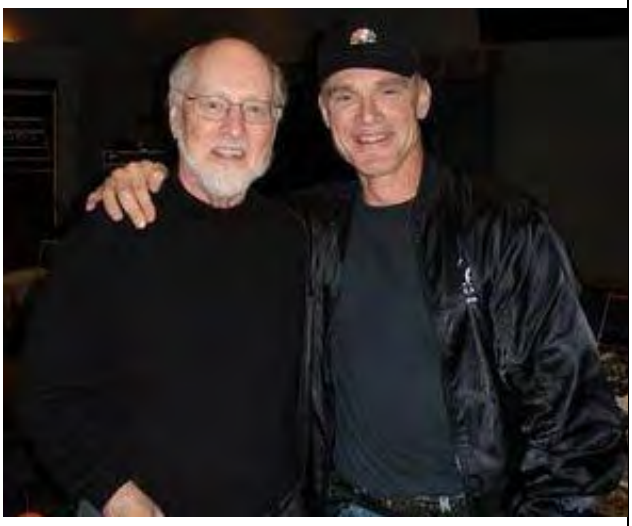
Balquhidder Music

b-and-s.com

Rob Roy McGregor – Second trumpet, Los Angeles Philharmonic; assistant principal trumpet, Baltimore Symphony Orchestra; founder of Balquhidder Music.

Malcolm McNab – One of THE most recorded trumpeters in Hollywood! If you've ever watched a movie, the odds are that he was playing.

mendezbrassinstitute.com



facebook.com

Rafael Mendez – Virtuoso trumpeter who first achieved the "impossible" – double tonguing while circular breathing. He took a lesson from Herbert L. Clarke who said to him, "I should be taking lessons from you!"

Tim Morrison – Former Associate Principal, Boston Symphony Orchestra and principal trumpet, Boston Pops Orchestra. Featured on numerous film scores; one of John Williams' favorite trumpeters.

Sergei Nakariakov – One of the greatest classical trumpet soloists of all time.

Joe Neisler – Retired professor of Horn at Illinois State University Joe Neisler was one of Phillip Farkas' last students, and I believe he learned leak and seal from Mr. Farkas. I taught with Joe for one year.

Oberlin College and Conservatory

Barnie Pearson – Former professor of trumpet at the Oberlin College and Conservatory, former member of "The President's Own" United States Marine Band, 1st trumpet in the White House Orchestra, member of the New Orleans Philharmonic and dixieland trumpeter. Barney and I were at the University of Michigan for our masters at the same time. He was a mentor to all of us!

Frost School of Music

Sam Pilafian – Tuba virtuoso, professor of tuba at Arizona State University, co-founder of the Empire Brass, author of *The Breathing Gym* with Pat Sheridan.

magikflute.com

Donald S. “Doc” Reinhardt – Trombonist and creator of the Pivot System.

Eastman School of Music

Verne Reynolds – Horn professor, the Eastman School of Music. Composer.

rexrichardson.net

Rex Richardson – Trumpet soloist and professor of trumpet at Virginia Commonwealth University; former member of Rhythm & Brass, Joe Henderson’s Quintet, and the Brass Band of Battle Creek. Guest artist at Henderson State University.

Brass Wind Publications

John Ridgeon – Trumpeter, teacher, and composer of *How Brass Players Do It*.

hnwhite.com

wiffrudd.com

Seymour Rosenfeld – Second trumpet in the Philadelphia Orchestra; principal trumpet, St. Louis Symphony Orchestra; professor of trumpet at Temple University. Fabulous low range! I saw him with Philadelphia in 1971.

Wiff Rudd – Professor of Trumpet, Baylor University; former member of Rhythm & Brass and the Dallas Brass. He is one of the most accurate trumpeters I've heard!

ataelw
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alchetron.com

Arturo Sandoval – Trumpet soloist originally from Cuba. Arturo has one of the most exceptional upper ranges on the planet!

Renold Schilke – Trumpet and mouthpiece designer; founder of Schilke Music Products; principal trumpet of the Chicago Symphony.

 docseverinsen.com	 trumpetland.com
Doc Severinsen – Undoubtedly the most famous trumpeter of all time, Doc led the Tonight Show big band for 30 years. Extensive experience as soloist, guest conductor, and recording artist. One of my all-time trumpet heroes! Guest artist at Henderson State University.	Max Schlossberg – Trumpet, New York Philharmonic, taught MANY superb students (see link.)
 Wayback Machine	 Roy Des Ruisseaux
Charles Schlueter – Former principal trumpet, Boston Symphony Orchestra, Minnesota Orchestra, Milwaukee Symphony, and the Kansas City Philharmonic, associate principal trumpet in the Cleveland Orchestra. I heard him live several times.	Dick Shearer – Lead trombone, Stan Kenton Orchestra, director of jazz bands at Wayne State University. I worked with him for a week at a jazz camp.

 bandworld.org	 International Women's Brass Conference
Pat Sheridan – Tuba virtuoso, former member of "The President's Own" United States Marine Band, professor of tuba at Arizona State University, author of *The Breathing Gym* with Sam Pilafian. Guest artist at Henderson State University.	Susan Slaughter – Principal trumpet in the Saint Louis Symphony for forty years and the founder of the Women's Brass Conference. I studied with her for one year – I wish it could have been longer! I heard her perform several times with St. Louis.
 Chris Lee/New York Philharmonic news.uga.edu	 jazztimes.com
Phil Smith – Principal trumpet, New York Philharmonic, professor of trumpet at the University of Georgia. I saw him in recital while he was a member of the CSO.	Lew Soloff – Lead trumpet with Blood, Sweat, and Tears, soloist with the Lincoln Center Jazz Orchestra, trumpet professor at the Julliard School. I saw him live several times.

Editions-Bim.com

James Stamp – Principal trumpet, Minneapolis Symphony Orchestra. Highly respected trumpet teacher.

umkc.edu

Tom Stein – Professor of Tuba and Euphonium at the University of Missouri-Kansas City, formerly taught at Central Michigan University, the University of Colorado at Boulder, and the University of Southern Mississippi.

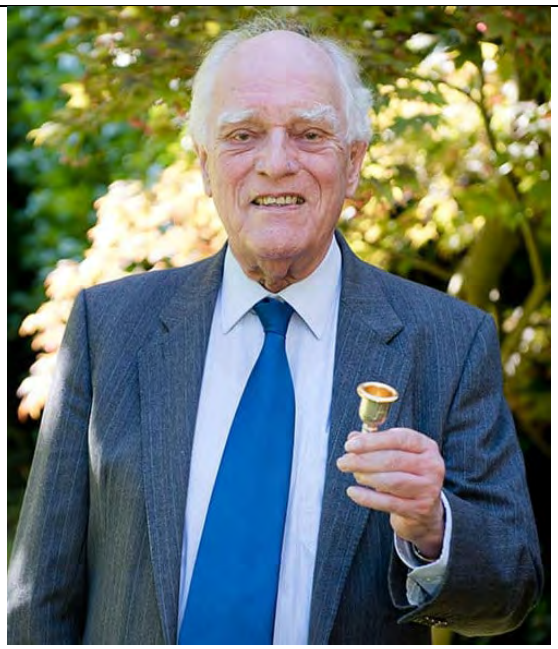
International Trumpet Guild

Tom Stevens – Principal trumpet, Los Angeles Philharmonic. I saw him once with this orchestra.

Author's Collection

Arthur Swift – Professor of trumpet and music department chair, Iowa State University. I studied with Dr. Swift for 3 years; he helped me survive a difficult embouchure change.

 Brianmcmillen CCA-Share Alike 3.0 Unported	 trumpetsizzle.com (Maurice André in the background)
Clark Terry – Jazz trumpeter and big band leader. He was a member of the Duke Ellington, Count Basie, and Tonight Show bands. Guest artist during my senior year of high school.	Kurt Thompson – Trumpet teacher and lead trumpet player.
 mikevaxmusic.com	 vizzutti.com
Mike Vax – Lead trumpeter with the Stan Kenton Orchestra; leader of the Stan Kenton Legacy Band. I heard Mike the first time he played lead with Stan Kenton. Guest artist at Henderson State University.	Allen Vizzutti – Trumpet soloist; former lead trumpet with Woody Herman; recorded over 100 movie sound tracks. Guest artist at Henderson State University.

 Denis Wick	 wikimedia.org – public domain
Denis Wick – Principal trombone for 31 years, London Symphony, author of *Trombone Technique*, mouthpiece and mute designer, and founder of Denis Wick Products. I saw him perform with the London Symphony.	Ernest S. Williams – Cornet soloist with Victor Herbert, John Philip Sousa, Edwin Franko Goldman, and others. Principal trumpet, Philadelphia Orchestra, solo trumpeter under Leopold Stokowski, Richard Strauss, Georges Enescu, and Vincent d'Indy.
 Chris Devers CCA Share Alike 2.0 Generic	 cleveland.com
John Williams – One of the most famous and successful composer of movie composers of all time. List of scores at IMDB.	David Zauder – Second trumpet and first cornet, Cleveland Orchestra; first trumpet, Boston Pops; author of Trumpet and Cornet Embouchure and Technique Studies. I saw him perform with Cleveland.

Part 4 – The Care and Feeding of Trumpeters

Many, many years ago someone told me that you don't teach trumpet, you teach people. Regrettably, it took me some time to understand what this meant, and I now know it to be true.

If you're a band director, you must understand how trumpet players typically differ from other musicians in your band. Following are observations I have made during 45 years as a university trumpet teacher…I mean teach of trumpet players.

Musical Demands

I want to reinforce my comments in Chapter 9, Attitude. Trumpeters are often called upon to play boldly. Combined with the sound of the trumpet, this draws great attention to the trumpet players individually and as a section. Many trumpet players love this attention and glory, but not all of them. For your less brave trumpeters, it can be helpful to compare their musical role to that of an actor.

Great actors project the image of their character, not the image of who they are on the inside. My personal favorite is Harrison Ford in the role of Indiana Jones. I suspect Harrison is quite nice in person, but I would NEVER want to cross Indiana Jones! Indiana is more than willing to punch or shoot people in his way, but I doubt Harrison would ever lay a hand on someone.

Similarly, a trumpeter can be a nice, sensitive, polite person, but when they pick up the trumpet, they need to get into their musical role and play like Indiana Jones! When they put the trumpet away, they can return to their normal self.

In a way, it's rather exciting – through the trumpet, you can express yourself in ways you would never consider in real life.

With guidance, you can bring your timid students around and turn them into fearless "warriors" on their instrument.

There is a flip side to this – sometimes trumpeters who are great with heroic music have problems playing gentle music, especially if they are the typical loud, obnoxious trumpeter. Help them find a movie actor or character they understand and have them project that role.

Complicating things further, the trumpet is called to play in virtually every style of music. Some actors are typecast as "bad guys" or heroes, etc. Imagine an actor who can play ANY role – that is the requirement of playing trumpet well.

Some trumpeters delight in playing technically hard music, but there are many who run from it. My experience is that this is rarely due to a lack of potential but is usually a fear of failure or embarrassment. Laziness is often a factor, which is rather surprising considering how boisterous and energetic most trumpeters are.

Physical Demands

The trumpet requires more strength and endurance than any other instrument because of the demands on the embouchure and breathing muscles to play high, loud, and long. Hmm…sounds like marching band…

Don't think it's true? Tell me one other instrument where you can pass out from playing a high note. How many people will drive a great distance to hear someone play a high note on a piano? Or a violin or a flute? High note trumpeters like Maynard Ferguson, Doc Severinsen, Wayne Bergeron, Jon Faddis, etc. draw large crowds because of their unique ability.

I often wonder if trumpeters are athletic musicians or musical athletes. I hope we're musicians first and foremost, but strength is a huge part of playing trumpet.

Typical Personality Traits

There are many exceptions to what follows, but the typical trumpet player:

1. Is obsessed with their lips. This is rarely true of other brass players.

2. Is highly competitive. Handled properly, this drives trumpeters to excel. Handled poorly, it can lead to feelings of inferiority and an unwillingness to try to keep up with someone else.

   I am a firm believer in healthy competition:

   "If someone in the section does something I can't, then I'm going to learn to do it, too."

   "I hope you play the best audition of your life, and I'm still going to beat you." "Oh, no you're not!"

3. Talks too much. Trumpeters tend to have outgoing personalities and often are unaware how much their conversation detracts from a rehearsal.

4. Talks too big. Not all trumpeters do this, but some elevate their self-importance by telling everyone else how great they are and by putting others down. From a teacher's perspective, this always comes from people who have an inferiority complex and brag to make themselves feel better.

   And no one likes that trumpeter. "Big talk" can cause a trumpet section to be divided and unable to put the group ahead of the individual. Teach your students "brag" through their playing – everyone loves hearing someone who plays really well. As soon as the trumpeter opens their mouth and starts talking, it turns others off.

   Trumpeters must have confidence in their abilities, but it's an internal confidence which doesn't need to be "shared" with the world.

5. Has range envy. Trumpet players tend to think that whoever has the best range is the best player…even when the person with the best range is terrible at everything else.

   What other musicians have this problem? How many altos are dejected because they aren't coloratura sopranos? Sadly, it's a trumpet thing.

6. Is a showoff. Trumpeters frequently don't out grow "Look at me, Mom!" This is great when it's necessary for them to show off, but it often results in playing too loudly or trying to take things up an octave when it serves no musical purpose.

7. Will die trying. Any trumpeter worthy of the name will do whatever it takes to get the job done. If their chops are shot, and you decide to run a piece again, your trumpeters will kill their lips so they don't let you or the group down. You must protect them from themselves. Once injured, there can be no progress until healing if completed.

8. Overreacts to your statements. I've seen situations where the director tells the brass to blow, blow, blow! This is quite often appropriate, but often your trumpeters on first part are already doing everything they can. But you just told them "blow, blow, blow," and they'll try to do it. Once I watched a director tell the trumpets to play louder. Not satisfied, he said it again.

   Seems reasonable, but the first part trumpeters were red in the face and trying to do even more. Finally, the director said, "More third trumpet!" That's were the problem was…not in the first part.

   Bottom line – you cannot talk to your trumpeters like everyone else. They are simply too literal and do not think for themselves. Any intelligent person would think, "I'm already doing everything I can" and not try to do even more. Not so with trumpeters…

9. Is a natural leader because of their enthusiasm and outgoing personality. See…trumpeters aren't ALL bad!

I know it sounds like I have a low opinion of trumpeters. Far from it…I devoted my career to helping trumpeters reach their potential. There is much to admire about them, but you must recognize their weaknesses to help them overcome them.

And remember, teach people, not the trumpet!

Jim Buckner

Dr. Jim Buckner is Professor Emeritus of Trumpet at Henderson State University where he taught trumpet and high brass methods for 32 years. In 2001, he received the Faculty Excellence Award for Outstanding Teaching; he was the faculty advisor for the Reddie Trumpet Guild and served as Contest Controller for the North American Brass Band Association Championships from 2008 to 2015.

Buckner previously taught at Illinois State University, Quincy University, Western Carolina University, Truman State University, and West High School in Waterloo, Iowa. He received the Bachelor of Music in Instrumental Music Education from Iowa State University, the Master of Music in Trumpet Performance from the University of Michigan, and the Doctor of Music in Trumpet Performance from Northwestern University.

He has been principal trumpeter in the South Arkansas Symphony Orchestra and a member of the Arkansas Brass quintet since the fall of 1990. Buckner has performed as first trumpet with the Arkansas Symphony Orchestra, the Quincy Symphony Orchestra, and the Brevard Chamber Orchestra and has been a member of the Asheville Symphony Orchestra and the Waterloo-Cedar Falls Symphony Orchestra.

Buckner has been featured with several orchestras, including the South Arkansas Symphony Orchestra (Neruda *Concerto*, Purcell *Sonata*), the Illinois Wesleyan University Chamber Orchestra (Shostakovitch *Concerto for Piano, Trumpet, and Orchestra*), the Quincy Symphony Orchestra (Arutunian *Concerto for Trumpet and Orchestra*), and three times on the Bach *Brandenburg Concerto No. 2* (Quincy Symphony Orchestra, Brevard Chamber Orchestra, and Northeast Missouri State University Festival Orchestra). He

has been a featured soloist with public school, university, and community bands throughout the South and Midwest.

In September, 1995, Buckner performed a recital in the Glinka Hall at the Moscow International Trumpet Festival. He was a member of the Mississippi River Brass Band and was named Outstanding Soloist, Championship Division, at the fifth North American Brass Band Championships in Columbus, Ohio. While a member of the Smoky Mountain Brass Band, Buckner performed at the 1982 World's Fair (Knoxville, TN); he was a guest artist at the 1980 Trumpet Conference in St. Louis, Missouri.

In April 2012, Buckner played split lead trumpet with the Harry James Orchestra on a 10-day cruise. Since moving to Arkansas, he has played lead trumpet with the Arkansas Symphony Orchestra Big Band, the Real Band, and the Tom Tiratto Big Band. He directed the first jazz ensemble at Truman State University for two years in the late 1970s.

He has played first trumpet in several musicals, including *Anything Goes* (Arkansas Repertory Theater), the national touring productions of *Titanic* and *Peter Pan* (with Cathy Rigby), *West Side Story,* and *Mame*. He has also performed second trumpet in *Fidler on the Roof* and *The Music Man*.

Buckner's teachers have included:
Arnold Jacobs, solo tuba, Chicago Symphony Orchestra
Vincent Cichowicz, Northwestern University; second trumpet, Chicago Symphony Orchestra
Luther Didrickson, Northwestern University; first call trumpet, Chicago Symphony Orchestra
Susan Slaughter, principal trumpet, St. Louis Symphony Orchestra
Clifford Lillya, University of Michigan
Joseph Christensen, Iowa State University
Arthur Swift, Iowa State University

Lesson with Arnold Jacobs, ca. 1997