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Latest version is online at –

<http://users.hancock.net/jkosta/Embouchure_Basic_Concepts.htm>

or

<http://users.hancock.net/jkosta/Embouchure_Basic_Concepts.docx>

I suggest you use the ‘refresh’ or ‘reload’ option of your web browser to assure that you access the most recent updates.

Edit - March 20, 2023: HOW can this information be useful, and WHO should be interested in learning about it?

* ‘good’ teachers – a teacher ought to know the mechanics of playing, understand the variations of the mechanics for different individuals, recognize when the mechanics are being done in an effective way, and be able to guide a student to use effective mechanics.
* ‘self-taught’ players – similar to teachers, but likely more difficult to accomplish. Requires good self-analysis.
* Students – when a ‘good’ teacher is guiding the student, less knowledge of mechanics is needed; but the communication between the teacher and student must enable the guidance to effectively reach the student, and the student must be able to accept the guidance. If communication is a problem, then a student might benefit by knowing about mechanics to interpret the guidance from the teacher.

NOTE: My intention is for this information to be compatible with standard trumpet technique, and for it to be acceptable with numerous specialized embouchure techniques and teaching processes. My concern is for this to be useful for actual playing. I want the information to be correct and helpful, but it does not have to be ‘scientifically precise or complete’.

And please do not attempt to ‘read something into’ my words or phrasing. I’ve tried to keep it simple.

The ideas mentioned here are generally not my own – I know about them from reading and hearing them from many different sources. In many cases I have probably reworded the original descriptions to meet my own understanding.

Edit - June 24, 2020: If you are receiving lessons or guidance about trumpet playing, I suggest you do not make changes without discussing them with your teacher. A teacher who is familiar with your abilities is in a much better position to give you personal advice.

Edit – March 23, 2021: When evaluating the instructions and suggestions from teachers, books, online, etc., I suggest spending at least a little time thinking about and understanding HOW those items relate and contribute to the topics below. Good players might have their own ‘methods’ or ‘techniques’ for accomplishing, understanding, and explaining the basic embouchure concepts – but they all DO similar basic ‘playing actions’.

Edit March 1, 2022: PHYSICAL Concerns – teeth, jaw, lips. Most ‘instruction material’ for embouchure has the assumption that the player has ‘typical’ formation and function of their teeth, jaw, and lips. Players who do not fall in that ‘typical’ range can have difficulty applying the material to their own physiology. In order to get a good understanding of the material, it is important to consider the results when the material is applied to ‘typical’ physiology – and then perhaps make adjustments for the specific player. I think the ‘typical’ situations has

* Teeth – in a vertical position that can support the mouthpiece rim in a stable position.
* Jaw – in relaxed position, the upper front teeth are slightly forward of the lower teeth (over-bite). The jaw can be moved slightly forward to acquire vertical alignment of the front upper and lower teeth. Or the jaw can be used to apply varying amounts of rim pressure on the lower lip and teeth.
* Lips – able to conform and function with the size and shape of typical mouthpieces.

# Embouchure Basic Concepts

The very basic ‘must have’ attributes

* Lip(s) that are capable of vibrating fast enough to produce the desired note pitch. If there is too much lip tension or compression, the lip will not be able to vibrate. If the lips are locked closed, no air can flow through the aperture to cause vibrations. If the mouthpiece rim pressure is too great the lip will not be able to vibrate.
* Adequate air flow through the lip aperture to force the lip(s) into vibration. For upper range notes, the internal air pressure must usually also be high. It is not so much the actual amount of air, or its physical ‘speed’ – simply a controlled flow of air through the aperture. Some people use the image of ‘fast air’ to obtain the flow – that is likely due to how they perceive the sensations as individuals. The simplest way to make the air flow is to just ‘blow harder’ when needed - but many people choose to express that as ‘increase the air speed’, or ‘compress the air’.

Details about: Tongue position, Mouthpiece rim pressure, Teeth position, Lips, and Air

* Tongue

Tongue position and usage is quite controversial! There are many different opinions about how and if the tongue position itself makes a difference. But regardless of the actual position that the tongue assumes, there is muscle usage associated with efforts to move the tongue. And those muscle efforts do have an effect on other important aspects of the embouchure – lips, lower jaw, and throat. The effect is due to where the muscles that control tongue movement are attached, and how muscle tension on those areas can affect other tissue that is related to embouchure. For upper range playing, some players primarily (and successfully) claim to use tongue arch level and air flow as the way of controlling pitch – I think this is due to having ‘maxed out’ on direct control of lip adjustment, and the effect of changing the tongue arch is enough to induce subtle changes to the lips.

If you have success in controlling the embouchure by consciously moving your tongue, that’s fine. Some people find it very helpful, and it is somewhat easier to explain and visualize tongue movement.

Edit – November 5, 2022: thoughts about ‘anchor tonguing’, ‘k tonguing’, ‘tongue arch’, ‘air stream control’, etc.

[https://www.trumpetherald.com/forum/viewtopic.php?p=1666063#1666063](https://www.trumpetherald.com/forum/viewtopic.php?p=1666063%231666063)

Edit: March 17, 2023 Learning basic tongue manipulation and control

1. Position your lips for a relaxed mid-range note, and then gently blow through the aperture – with your full concentration on maintaining lip position and the flow of air.
2. While maintaining the lip position and air flow from #1, slowly begin to feel and sense the position of your tongue – but do not try to move your tongue, if it does move that is ok. As you apply more mental attention to the position of your tongue you might feel it and your lips change, continue to increase your mental attention about the position and feel of your tongue and lips.
3. Again, begin with the lip position and air flow from #1. Then start to ‘squeeze’ (circular feeling) your tongue in the area between your rear teeth. If the squeeze results in constricting your throat or causing your tongue to reduce the air flow, then adjust the position of the squeeze forward or backward so you feel tongue movement without degrading air flow. As more squeeze is applied to the tongue, apply the mental concentration from #2, and continue to squeeze – pay attention to how the position of the tongue feels in your mouth, and how your lips and jaw respond. Avoid tongue positions that degrade air flow – but some increase in the amount of air pressure is needed to maintain air flow when the lip aperture size is reduce.

Edit – October 23, 2023: tongue positioning. Try placing your tongue in a forward position to pronounce ‘ye’ or ‘yee’ and at the same time blowing air through the lip aperture.

This exercise is not intended to teach you precisely ‘how to play’, but to help you learn how tongue control can be used to adjust overall embouchure position and control.

Edit: April 7,2023: Tuning the Oral Cavity - Some teaching methods mention this to control and adjust the pitch. If you find it useful, practice so you can remember and develop an automatic response of creating the proper oral cavity needed.

* Mouthpiece rim pressure

There must be enough rim pressure to prevent air leakage, and the pressure and position of the rim on the lips must not cause pain or injury. A function of the rim is to assist in supporting and controlling the amount of lip tissue that vibrates inside the rim. Everyone has different lip and teeth configurations – the best rim for you needs to be discovered by careful testing. Mouthpiece rim pressure on the upper lip needs careful attention – the upper lip needs to be able to vibrate and too much rim pressure can prevent that from happening. A way to reduce mouthpiece pressure on the upper lip is to use slightly more pressure on the lower lip – do that by increasing forward force with the lower jaw.

If overall mouthpiece pressure is reduced too much, trouble can happen. Air leakage is more likely and also earlier embouchure fatigue due to the reduction in support of the lips by the rim causing a greater effort needed by muscles.

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Edit - April 23, 2020: An additional function of mouthpiece pressure is to prevent unwanted vibrations from occurring which reduce the quality of the sound: for example, unwanted ‘fuzziness’ or lack of ‘purity’ in the sound.

If that type of vibration occurs. it could be due to insufficient mouthpiece pressure which is allowing more lip area to vibrate than is needed to produce only the desired sound.

 A prime concern is having adequate lower lip pressure on the mouthpiece. The amount of pressure from the lower lip should be controlled, and its effect on the sound should be recognized and employed while playing. The amount of lower lip pressure and its effect depends on the pitch of the notes being played.

* Teeth position

The upper and lower front teeth should be slightly separated vertically. And the horizontal position of the lower front teeth can be adjusted so the lower teeth and lower lip has controlled pressure on the mouthpiece rim.

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Edit – May 17, 2020: The upper and lower teeth are kept separated to allow a more open throat and to enable the jaw to easily change position when needed.

Edit – June 16, 2021: Movement and position of the jaw is a very personal adjustment (actual movement might not be needed). The goal is to enable the lower lip and teeth to have some amount of controlled pressure on the mouthpiece rim. A player will need to experiment and learn what ‘balance of pressure’ between the upper and lower lip works best for themself depending on the range of the notes being played.

Edit – August 13, 2021: The teeth provide the 'support' for the lips, and that is a huge factor in controlling what lip vibration is possible. The teeth opening is critical for enabling lip tissue to form the proper aperture, and for exposing the proper amount of lip tissue to the air flow. The precise amount of teeth opening, alignment, and the amount of ‘lip exposure’ must be learned and controlled by the player.

Edit – February 2, 2022: The front/back position of the lower teeth and lip is controlled by the jaw position. The alignment of the upper and lower teeth affects precisely where the mouthpiece rim exerts pressure – ‘fit’, area size, location, comfort, flexibility, etc. The position also affects what precise lip tissue is involved with the aperture. Slight changes in alignment can make a noticeable difference, even though actual movement is small.

* Lips

Edit – January 22, 2021: Using ‘lip adjustment’ to control the pitch of notes is a better description of the concept than placing too much emphasis on ‘lip tension’. Yes, there needs to be some lip tension, but that is not the whole answer. The lips need to be adjusted so they can, and do, vibrate at the desired pitch.

The ‘outer skin’ that surrounds the soft red lip tissue should typically bear the pressure from the mouthpiece rim. Some people do have success with placing the mouthpiece directly on (or surrounded by) the red lip tissue. A useful beginning playing position can often be obtained by saying the letter ‘M’, and with the lips held lightly together make the lip movement for the word ‘pea’ while pulling the lips slightly inward.

Edit – February 27, 2022: It is not necessary to make the lip movement for the word ‘pea’ – simply the ‘M’ (mmm) position with a gentle air flow should result in the sounding of a note. At that point, slight adjustment of the lips can be made to enhance the sound of the note being played. By a slight tightening for the ‘pea’ position, a higher pitched note can be played.

Edit – April 14, 2020: Think of your lips as being similar to xylophone / glockenspiel tone bars – sturdy material that can absorb mouthpiece pressure and vibrate at the desired pitch. Your lips shouldn’t be thought of as guitar strings that are stretched tight and thin – doing that can cause injury to your lips.

Your lip tissue and shape should be ‘adjusted’ by controlled and coordinated muscle use that exerts BOTH inward and outward force – similar to isometric muscle contraction. The amount of adjustment determines the pitch at which your lips will vibrate.

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Edit – January 22, 2021: The lips can be 'adjusted' to vibrate at different pitches by coordinated muscle counter-forces - a delicate blend of muscle usage TRYING to do several things simultaneously. The adjustments cause changes to the tension of the lip surfaces, the size and shape of the resulting lip aperture, the flexibility of the lips, etc.

1) pulling the corners outward

2) squeezing the corners inward

3) puckering the lips outward

4) drawing the lips inward

5) squeezing the upper and lower lips together

6) pulling the upper and lower lips apart

7) edit – July 15, 2022: control the tissue tensions AROUND (the circumference of) the aperture, it is not necessary to think only in terms of up/down or left/right tensions.

Everyone has to discover the blend of forces that works best for them self. And a skilled teacher can be a big help by giving suggestions and demonstrations.

The important point is to adjust the flexibility of the lips to vibrate at the desired pitch. Don’t depend solely on mouthpiece pressure or lip stretching as a way to ‘force’ the lips to produce the desired pitch.

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Edit – February 18, 2021: Lip usage to provide resistance to air flow.

note: the concept of resistance was recently mentioned to me in private correspondence. I believe that the inclusion of resistance is an important item that has not been adequately studied or taught. I think it helps to create a ‘unified’ view of how the various factors of embouchure are intertwined.

1. Oral cavity air pressure. The air pressure is regulated by 2 primary functions, how much force is used to exhale, and how quickly the air can flow through the lip aperture. A small lip aperture creates resistance to the air flow, and that enables high oral cavity air pressure to be maintained. The flow of high-pressure air through a small aperture can produce the feeling of ‘fast air’.
2. Lip Adjustment. The process of creating a lip aperture with varying amounts of resistance activates the muscles that surround the lips.
3. Tongue. Similar to lip adjustment, the muscles that control tongue position are also activated depending on the amount of resistance that is created.

By using the feeling of the lips creating different amounts of resistance to the air flow, along with the feeling of ‘air pressure’ and ‘air speed’ through the aperture, the lips become adjusted to vibrate at the desired pitch – and there is sufficient air flow to make them vibrate and create sound.

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Edit – August 17, 2020: Sound Production. It is important to realize that the PLAYER of a trumpet (and other brass instruments) makes the sound, and controls the pitch by lip adjustment and air flow. The player chooses what pitch to produce and must control the lips and air to make it happen. It is vital to first ‘hear in your mind’ the desired pitch and loudness, then use the proper valves for that note and adjust your lips and air to play it.

Edit – February 27, 2022: A different view – the lip(s) need to be adjusted for the desired pitch, but it is not so much the player actually ‘making the sound’ as the player ‘activating’ the trumpet via air flow for a ‘pitch resonance’ (a stable pressure wave) to be produced inside the trumpet and the pressure wave produces the sound and interacts with the lips to cause the needed vibrations. The player does need to actively control and adjust the lips to establish and maintain the sound quality of the note that is produced.

Edit – February 28, 2022: Part of the ‘typical teaching’ for brass instruments is the notion of the player needing to ‘buzz their lips’ in order to produce a sound. That can be a useful analogy for some people, but it can be an impediment to others who ‘try too hard’ to buzz, and do not produce adequate air flow into the mouthpiece. Sound will be produced with proper lip positioning (without trying to buzz) on the mouthpiece and a gentle air flow into the mouthpiece. The reaction of the instrument to the air flow will result in the sound. It is useful to have the player mentally imagine the pitch of the sound that will occur and to correlate their lip position with the actual pitch of the sound.

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Edit – October 1, 2023: the ‘imagining’ should be the complete ‘sound’ that is desired, including pitch, air, loudness, tone, articulation, etc.

* Edit – July 2, 2022: PRONOUNCE each note! Similar to speaking from written material, each note has its own ‘pronunciation’ – including its tone, pitch, embouchure adjustment, air usage, etc. The same note has pronunciation differences depending on articulation, loudness, etc. – it is important learn all the variations so they can be played as desired.
* Air

The total ‘playing embouchure’ cannot be obtained without some amount of internal air pressure. The muscles used to contain the pressurized air in the mouth and throat also affect the overall embouchure. When inhaling, a large quantity of air can be obtained by allowing your entire torso (belly, chest, and back) to expand. When additional air pressure is needed for playing, use the muscles in the torso to ‘blow harder’.

Edit – March 23, 2021: Deep breathing can work fine when playing slow long notes, but for ‘quick playing’ there isn’t time for take a full inhalation. It is necessary to do quick partial inhalations whenever possible (or necessary), in order to have adequate air at the ‘top’ of your lungs (upper chest / shoulder area) that you can use for keeping the air stream moving forward.

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Edit – June 16, 2021: (rewrite of section)

Inhaling air to fill the lungs, final positioning of the mouthpiece, and playing the initial note should be smooth and controlled.

Although there are several individual ‘steps’ involved, it isn’t necessary to have conscious breaks or interruptions between steps.

* Unified Theory of Pitch Control (section added February 21, 2021)

There are two viewpoints about pitch control for playing brass instruments: the ‘Wind and Air’ method, and the ‘Aperture Control’ method. The goal of both methods is the same, efficient and effective production of the desired pitch with good endurance and a wide range of playable notes.

Players and teachers seem to gravitate to one or the other method, and might have difficulty understanding or explaining the other. Both of these methods depend on successful employment of all the items listed above, the difference is the order of importance, and how each item is controlled (by either direct, or indirect, physical awareness and actions).

The ’Wind and Air’ method indirectly activates the ‘Aperture Control’ items; this occurs because control of the ‘Wind and Air’ requires aperture control.

Similarly, the ‘Aperture Control’ method indirectly activates the ‘Wind and Air’ items; because the aperture method requires air (flow) to produce sound.

PC represents ‘pitch control’,

PC(wa) is PC done by ‘Wind and Air’, and

PC(ap) is PC done by ‘aperture control’.

The basic ‘Unified Theory’ is: PC(wa) = PC(ap)

That means they accomplish pitch control in basically the SAME way but through seemingly different paths: they are the two sides of the same coin.

* Long Tones and Sustained Notes (section added March 28, 2021)

A major aspect of being able to ‘play well’ is the ability to produce ‘long tones’ and sustained notes without any wavering of pitch or loudness. Being able to do that requires both technique and physical conditioning, and being able to ‘do the technique’ itself requires physical conditioning of the embouchure muscles. Long tone practice should be part of the daily schedule; and it can (and should) cause tiring of the embouchure muscles; so, don’t do too much, just enough to begin noticing the tiredness, but not so much that it makes you stop practice. EASY long tones can be part of a warm-up routine, but don’t overdo it – the warm-up is for preparation before serious practice and training. The actual practice session is when long tones exercises should be done.

Other benefits of long tone practice are that it will develop and improve the basic sound, will improve endurance, and will aid upper range ability.

The ‘technique’ for long tones (and sustained notes) has several aspects –

1. Mental concentration to maintain the embouchure and breath control for the entire duration – do not relax after initial playing of the note. Continue to ‘follow-through’ playing the note with the same determination that was used at the start.
2. Physical embouchure strength needs to be developed in order to allow long term consistent muscle control. This can only be done by actual playing of long tones, and that is why long tones should be part of daily practice.
3. Mouthpiece pressure and placement needs attention; it might be necessary to make small ‘fine adjustments’ to the upper/lower lip balance of mouthpiece pressure, and to jaw position after the initial ‘striking’ of the note.
4. Posture and Grip

An upright and alert posture can help prevent inadvertent relaxing. The pressure used to keep the mouthpiece on your lips can sometime cause a slight tremor; try not using the finger hook, and alter the position of the righthand thumb – even slight changes might give better results. Little things can matter!

The discussions in this video from Josh Rzepka gives an interesting overview of how various players approach their daily practice.

<https://youtube.com/watch?v=3vmTFumXOsI>

The entire video is great, and the section with Brian Lynch at 25:11 mentions his use of long tones. And also with Lessie Vonner at 38:23. And again with Kenny Rampton at 46:10.

* Not Quite Buzzing (added January 24, 2022, a new topic)

Edit: May 15, 2022, remove mention of leadpipe ‘buzzing’, the leadpipe can be played without forced lip buzzing. See <https://www.trumpetherald.com/forum/viewtopic.php?t=159593&highlight=>

Lip buzzing (including mouthpiece version) is controversial because the sensation of actual playing is difficult to duplicate by ‘buzzing’ activities.

It is necessary to develop a ‘feel’ for how the embouchure and lip posture (aperture, tension, size, etc.) changes when actually playing different notes.

A helpful ‘feeling’ can be obtained by just blowing air through the lips (with no attempt to produce a buzz or sound). Start with your lips comfortably touching and with a slight amount of inward tension to prevent any outward lip puckering or rolling. Now, just blow easily and imagine a pitch that you associate with that lip feeling.

Next, adjust (make slight changes) to the way you are blowing (your lips, jaw, air pressure, tongue) to get the feeling of a higher pitched note - perhaps up the scale, or the next pitch of a chord.

The goal is to learn to recognize the feeling of those slight changes, so that when you do play notes on your instrument you can recognize and remember the feelings that are associated with playing those notes.

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Edit – October 1, 2023: the ‘imagining’ should be the complete ‘sound’ that is desired, including pitch, air, loudness, tone, articulation, etc.

* Mouthpiece BUZZING as initial learning tool (added June 15, 2023)

If a beginner has difficulty producing an initial sound on the instrument or the mouthpiece + leadpipe, it might be due to improper lip positioning. In that situation it could be useful to do gentle mouthpiece buzzing – just enough to get the lip position ‘feel’ of what is needed to produce a buzz sound on the mouthpiece. Once that feeling is learned, the same feeling should produce a good sound on the whole instrument (or mouthpiece + leadpipe) but WITHOUT ‘trying to buzz’ – only proper lip positioning and blowing.

Advanced Details

 There are many subtle details about these topics that I do not know how to explain. In many cases it will be necessary for the player to discover what works for them. But the execution of those details is unlikely to violate or nullify the principles above – it is likely that they will be additional ‘personal tweaks’ to enhance the basics.

Additional Information

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February 23, 2020 – Tongue Control

https://www.trumpetherald.com/forum/viewtopic.php?p=1588549#1588549

From Rod Haney

Begin quoted section

 I read everything on web and heard a lot of theories but until I started working on training my emb. to hit the pivots and using the lower jaw to do so did I get the gain. A lesson with Bobby Shew confirmed this as well as ways to build strength for the ff. So maybe the tongue arch does help jaw move but it can also be accomplished without the tongues help which makes articulation a little better. So if you need tongue arch to move the jaw up and out for the hi notes ok, but I would like to understand if the theory is correct. I can see how it could restrict flow, does when I use it, it it can assist in jaw movement, it doesn’t speed air or direct it in a better place on lips that I can see??

Not saying I’m right but my experimentation bears it out.

End quote

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April 23, 2020 – Lower lip pressure

<https://www.trumpetherald.com/forum/viewtopic.php?p=1593746#1593746>

(JK) I have not yet been able to verify that this opinion from razontherock accurately reflects Reinhardt’s teachings. I would appreciate it if anyone can provide additional information about Reinhardt’s view concerning lower lip pressure.

From razontherock

Begin quoted section

… I would tell you what Doc Reinhardt said: always play with more pressure on the lower lip, simply because it can handle more. This is good for everybody.

What you have done is thrust your lower jaw forward which is an entirely separate element that may or may not bring you closer to his teaching goal of "working with what Mother Nature gave you."

End quote

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February 15, 2021

Trumpet Herald post from HERMOKIWI

Regarding teeth, lip, jaw, air

<https://www.trumpetherald.com/forum/viewtopic.php?p=1620041#1620041>

May 5, 2021

The Horn Embouchure, Part 1 “Embouchure 101”

by Dr. John Q. Ericson, Arizona State University

<http://apps.texasbandmasters.org/archives/pdfs/bmr/2003-01-ericson1.pdf>

primarily about French horn embouchure, but the basics are also relevant for trumpet

May 15, 2022

Basics for Beginning Brass

<https://www.trumpetherald.com/forum/viewtopic.php?t=159593&highlight=>

June 14, 2022

Horn Angle Changes For Brass

* and related jaw use

<https://wilktone.com/?p=6476>