

AUGUST 1990 Notes -- Monday ARNOLD JACOBS' MASTER CLASS

Arnold Jacobs background in music

Music is only profession

Encouraged at home

Discovered that music may be looked at as an art form and as a science

Learned to play by ear, wrote own trumpet fingering chart

Flooded the brain with great examples (Herbert L. Clarke)

Playing by ear leads AJ to study brain's participation in making music.

Adoption of body to instrument lead AJ to realize the mechanics of body use -- although this knowledge is not needed for music making.

We must consider development of an individual as product of all experiences.

In music today, too much emphasis is on instrumental skills and not enough on musicality.

Find what thoughts bring success? Simplicity, not complexity of knowledge provides the precise physical control needed to perform. Get mind off of research and allow mind to hand motor functions to lower brainstem. Find an order to thought processes for all direct musical development.

Be a story teller in sound. Express emotion in music. Play to feel better.

Divisions of the brain that are used for music making are simple. Learn to stay out of the body's way for direct music making. What the brain hears determines the body's

response, not what the body feels.

The embouchure is a "basket-weave" of muscle tissue. Direct commands can't separate individual function. The brain activates the areas needed to produce results.

The body's system of nerves is divided into two sub-systems: sensory and motor. Each sub-system of nerves is a "one-way street." Electrical impulses travel in one direction only. The sensory sub-system transmits to the brain impulses about our relationship to the external world. The motor sub-system broadcasts from the brain impulses to change our relationship to the external world.

The external environment is observed using sensory nerves and affected through motor nerves.

The feedback of listening to ourselves presents problems because of the independence of the sensory and motor sub-systems.

The teacher can show a beginning player the difference between observing and performing. The teachers take the student's instrument and mouthpiece (so only the player is the variable) and plays a single tone as the student observes (both watches and listens). After a long moment's wait, the teacher plays another tone and then another. This develops the student's ability to recall a sound. The student attempts to perform the same sound.

Performers have a sound in their head (recall of a model) and a sound in reality (how

they utilize their instrument). The best start is by imitation of a great player. After using models of excellence then ask the question, "Do I sound the way I want to sound like?"

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Trumpet example:

AJ begins talking about the lack of problems and urges "basket case" players to perform in class. Says this trumpet player has a well developed musical brain, tissue, and lung capacity.

Works with "breath builder" for directing attention to inspiratory function -- to get suction with minimal friction.

Out of crudities, develop skill. Find the minimal motors to move air with greater ease.

Because muscles of our bodies are configured in pairs, there is a potential for stiffness. During the performance of an activity, un-needed muscles are often inhibitors.

The body uses the respiratory system in three ways

* For respiration, a bellows system of enlargement and reduction --

This mode is for wind playing. Only about three pounds of pressure can be generated by this system.

*For defecation and childbirth -- This uses pelvic pressure (closed-throat, downward pressure). Many pounds of downward pressure are generated.

*For combat -- Tension in the abdominal wall protects vital organs and stabilizes large muscle groups for "fight or flight." The muscle groups here can support weights of over one hundred pounds.

Players become involved in pressurization unwittingly. The direct ordering of muscles to provide air pressure rather than air flow leads to constriction of the air path.

Posture: The small inward curve in the lumbar area of the back is natural. Stay tall even when seated by maintaining this curve when either standing or sitting.

"Psychology of inhalation"

*Visualize the air as wind; move wind out and in

*Breathe to expand, not expand to breathe -- Body expansion is the result not the cause of moving wind.

*For specific development, alter stimulus to alter behavior.

* Use less pressure but use more flow

Inhale/exhale with breather bag to observe air flow. With a short tube in the mouth, explore the sensation of air moving in and out. Constrict the flow in the tube and notice the difference.

Question: Does the diaphragm control the breath?

There is no system of nerves in the diaphragm to tell the brain what position the diaphragm is in. The diaphragm only has pain sensing nerves. Suck air in and the diaphragm will perform.

Many students equate air movement with air pressure. Order air as wind. Remember the

contracted torso can support 100 pounds; only three pounds are needed for air flow.

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Trombone example:

Several styles used during warm-up (very good!). A multi-style approach is important but neglected by "trained" performers. Players are often too used to reading notes and don't rely on memory for generating music.

A crowded oral cavity with tongue and tonsils can constrict air flow. Say "tee, yee, tee, yee" to experience a constricted air flow. Say ah, oh, oo to experience an open airway.

The tongue is an unruly muscle. Even though its nerves have four times the fire power compared to the biceps, the nerves provide very little information to the brain.

Learn the dimensions of the tongue and the oral cavity from spoken language. Language is learned so early that it serves as an excellent model.

Exercise: In a regular pulse, say "ah, oh, oo, oh, ah, oh" then inhale. (Inhale in time.) Discover the sensation of inhale through a large oral cavity.

For recognition, move activities to extremes.

Don't stop air before starting sound. Achieve a smooth "up-bow, down-bow" quality to inhalation/exhalation.

Balance the breath/embouchure connection.

The word "who" is an example of a blown attack. The word "too" is an articulated attack. Practice the different attacks away from your horn. Say "who, too, who, too" and balance the air flow. Check the air flow by "articulating" on the back of your hand. Use the same air flow but with only the addition of the "t" for "too."

With your instrument, practice sequences of five blown attacks with no stopping the tone between attacks. Five quarter notes, no gaps, only blown attacks.

Think like a child so simplicity comes through.

Rely on mental sound pictures.

Don't practice as a teacher teaching yourself.

Question: Will different language backgrounds produce different articulation skills? A much qualified yes -- At first, ingrained language training set the norm, but a concept of musical sound and training overrides the language skill.

How you want to sound is the chief control.

Question: Did the trombonist in Monday's session have problems with the pallet rising properly?

AJ looks at the oral cavity in general: size of tongue, tonsils, feels for tension. An open throat is a relaxed throat. The goal is to promote general relaxation in the area rather than to pinpoint the specific component which gives difficulty.

Everyone can cope with the air pressures demanded by music performance. The one exception -- After a poorly performed tonsillectomy, a trumpet player was unable to handle pressures of four ounces without air escaping through the nose. For trumpet playing, six to seven ounces are needed for soft mid-range playing. Even this minimal amount was impossible for the performer. The operation effectively ended the player's career.

For a performer to examine a specific area of the body, the study of function must be made away from music. An examination of the back of the oral cavity, for example, would include a study of this area as it functions in the activity of chewing, swallowing, and language production. Exercises to normalize function are established away from music to correct a malfunction.

The instrument often becomes a trigger for conditioned reflexes. It is the sum of all the good and bad musical experiences. To avoid conflicts, remove the trigger. Work with the instrument aside. Sight is a powerful stimulus for functional improvement. Work with auxiliary equipment which uses visual cues.

Question: Discuss the breathing tube used by the trumpeter in Monday's class.

Conditioned response to a stimulus is the norm. If we desire a changed response, the stimulus must be changed. Students often understand verbal instruction but can't communicate with their bodies. The introduction of strangeness is needed to start change. The tube helps put the focus at the back of the oral cavity. In general, these devices promote non-verbal awareness. Use the tube to get away from music -- then work on transference of new skills to music.

AJ began work with physicians to discover function away from music. Got first spirometer, began studies at the University of Chicago using Chicago Symphony wind players, began accumulating equipment from heating/cooling industry. For \$5000 equipped a studio that gave the effective information of a \$25,000 lab.

Often a "musician's breath" (low or regional breath) doesn't extend to the top of the lungs. Use the breathing tube (about 7/8 of an inch in diameter, three or four inches long) to focus attention on the air entering the mouth. Partially block the opening to change the flow rate. Feel the air entering at different rates.

A full breath involves complete enlargement. Establish full-empty cycle to increase enlargement. You feel air movement within the body only above larynx. The breathing tube puts the focus on this area. A compound flow gauge can be added to the set-up to provide a visual cue.

Breathe through a soda straw. Notice the resistances and the flow of air. Cut the straw into two pieces and feel the change in flow. Cut into three or four pieces and notice the differences.

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At all times during these exercises keep the abdominal area like jelly. Weakness is your friend. Tension on the frontal abdominal wall is a trained response (probably from mis-training). Very little strength can produce much motion of air. Learn about air as motion.

Great power in torso is wrongly brought to performance. The biggest problem is to make students aware of the subtle. Pressure becomes downward, pelvic pressure as throat closes. This subtly shifts the function from one of respiration to one of pelvic push.

"Blowing from diaphragm" is impossible. The diaphragm is the main muscle used to lengthen lungs and lower organs -- it descends and lower air pressure in the lungs results. It raises as it relaxes. The high position of the diaphragm is the most relaxed.

The "low breath" with expansion in the abdominal area (but not in the chest) is usable -- especially by woodwinds needing only a low flow rate. We must follow through like a good athlete and use the entire torso for a full breath, not just a small part for a local breath.

When sitting, don't collapse, allow inhale and exhale to occur with simplicity. The torso as a bellows moves air simply.

Study air not muscles. Music is the big deal not physiology. All physical functions have control systems in the brain. The body is too complex to control by direct brain command. The untrained "natural" musician produces results by studying the product. Study breath not the body.

Scales are not an end in themselves. Don't play drills, play scales as music -- part of a concerto for example.

Performance is 99% knowledge of music and 1% other information.

Question: Sometimes students expand the chest and contract the abdomen during inhalation.

This is a reshaping process. It's expanding first breathing second. Work for full lung volume away from music. Make challenges away from the horn. Blow strips of paper as a visual cue. Learn to tell the truth about what the body does.

For blowing problems, work on inhale, establish motion. Turn the attention from problem region to the simple act of air going through the mouth.

Don't un-do or inflict remedial teaching. Start specialized work away from music. Protrude and contract mechanically but with no respiration. Notice the "piston

up/piston down" action. Combine intellectual recognition and physical sensation. A mirror provides sight cues.

In a six liter bag, practice filling/emptying the bag by rebreathing own air. Get the feeling of motion without hyperventilation. In this exercise the muscles of enlargement will learn to work apart from the muscles of reduction.

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French Horn example:

Slight forcing, a little too much effort. Exaggerate sense of flow and ease will come into the tone. Work in the middle range first, then add extremes. Introduce new senses and still talk to the audience. Reduce back pressure and increase flow.

Rub the tongue on the floor of the mouth, say "ta, la, ta, la." Know by feel the dimensions of the oral cavity. Blow a thick steam of air.

Work with Inspirex (incentive spirometer), a hospital device for therapy. Use sight to eliminate internal conflicts. Be aware of breath at the top of the system -- air at the back of the oral cavity. With the spirometer, go from maximum resistance to easier resistances. The first, massive challenge gets the inhalation muscles separated from the exhalation muscles. Later, with the spirometer, work on ease. Remember that low

air pressure is high air flow.

Hands on abdomen, three times protrude/contract with no air movement, three times protrude/contract sucking air.

When the horn comes up; be a storyteller; sell the sound, emotion. Sing every sound in the head. Don't practice with mediocrity.

Inhale at front of mouth (air flow gauge for visualization). The regions of the brain concerned with respiration are always at work. The problem is to communicate with them.

In a cartoon, the words appear over the characters' heads in a balloon. Imagine a balloon over your head and suck the air from it.

Learn about "flab" and weakness. Don't develop strength for musical ends. We must weaken ourselves, then apply only the needed strength for music -- it's not very much strength!

Tuba Example:

Teachers attention: With young players, aim for quality of phrase, not phrase length. Don't do a long bow task with a short bow.

When the first note won't speak, the sound in the brain is lacking. Keep singing in the brain. Have two voices: one in the head singing to communicate musical message to muscles, one on instrument singing to audience.

Don't ask questions -- make statements.

In a long piece, it's not necessary to always start work at the beginning. Start wherever work is needed. Give attention to phrase, music, character of tone, to singing. Treat the embouchure as vocal chords.

Question: Difficulty getting full chest expansion. If you expand to breathe, this reflex will come into play. Learn about the fast breath from slow ones.

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Slow breath exercise to develop sense of fullness and emptiness. Work for six months to two years. "Help" the breath in and out with an accompanying arm motion. Be patient with yourself.

1) Breathe in for 5 counts (or 7 if you have a large capacity)

Blow out for 5 counts (or 7)

2) Breathe in for 3 counts

Blow out for 3 counts

3) Breathe in for 1 count

Blow out for 1 count

4a) Breathe in -- fill up one half at a time

Blow out -- release one half at a time

4b) Breathe in -- fill up one third at a time

Blow out -- release one third at a time

4c) Breathe in -- fill up one fifth at a time

Blow out -- release one fifth at a time

5) Breathe in, hold breath -- but without closure in the airway

"Be surprised," notice the sensation of the expanded torso

6) Breathe in and blow out. Notice

* the sound of moving air

* air movement (use a paper strip as a visual aid)

* the feeling of moving air at lips

7a) In 5/4 time: Blow out for counts 1 through 4

Breathe in on count 5

7b) In 4/4 time: Blow out for 3 1/2 counts

Breathe for 1/2 count

7c) In 8/8 time: Blow out on beats 1 through 7

Breathe in on count 8

7d) In the meters above, with different tempi

Always observe a large quantity of air passing the lips.

Hyper-ventilation is the imbalance of oxygen and carbon-dioxide. For wind players, it's really only a problem for the high flow rate instruments. Some players of low flow rate instruments like oboe may intentionally hyper-ventilate to achieve more sustaining power.

Question: If AJ had to assign the tuba to a junior high student, what traits would he look for?

The desire to play and love for the instrument are most important. If the student is small, it's likely that the air capacity is small too. This would be akin to using a short bow on the violin. Good music can still be made.

Question: Can a breath be "too big"?

Correct breathing is stretching and relaxing motions. If you expand to breathe, straining might result, but if breath is the focus, the body follows in the correct configuration.

Breath expulsion may be generated by elastic contraction of the body's tissues alone.

See figure: $\frac{3}{4}$ of a pound of positive pressure can be generated by relaxation pressure as tissues attempt returning to their relaxed state after a full inhalation. During exhale pressure decreases. On the "last half" of the breath (negative side of the chart), effort is expended to "get all the air out." A healthy body can exhale 80% of the breath in one second and remove the remaining in the next two or three seconds.

During playing, learn to use the top half of the capacity for music making. All recovery breaths bring the level back to full. Often, incorrect playing relies on the middle third of the breath, never refilling back to the top of the capacity. A shallow breather doesn't retake enough air and has less quantity to proceed. Playing with shallow breaths is similar to playing a violin only at the tip of the bow.

Be comfortable at phrase ends. Most players breathe for the first notes. Better is to breathe for the last notes of a phrase and ensure their quality.

Exercise: Take in a great breath; keep the throat open (no closure, a feeling of "surprise"), say "one," pause with throat open, say "two," pause with throat open, say "three," . . . continue. If you are not used to taking a full breath, you may be tempted to close the throat and pressurize.

Use the tongue as a focusing tool, not as a valve to stop the air. The consonant "T" is unvoiced; it only builds up pressure. An instrument's tone is a vowel. Emphasize the vowel of the sound's sustained part; minimize the "T" of attack. t00 or tA

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Start with a long tone then articulate. A half note followed by four eighths. Does the articulated material have the same tone quality as the long note?

Don't set rules about the placement of the mouthpiece. Stabilize the music, not the tissue. If a young student has problems with embouchure placement, be sure the airflow is in good motion. Play music on the mouthpiece. Challenge with music and skill will develop through the strangeness. Let the placement of the mouthpiece work itself out. Don't always answer how-to questions. As the music sounds better, placement will improve.

Question: Is it wrong to fill-up with air from bottom to top?

"From bottom to top" is not a necessary concept. Start with suction at the mouth, and let the air go where it wants. Proper enlargements will follow.

To use a complex machine, know what buttons to press. Make simple tasks simple.

Don't let a voice teacher teach you breathing for wind instruments. A singer's low demands on the breathing system allows for OK results with mis-applications.

Trombone example:

Plays etudes, orchestral excerpts.

Play some material on mouthpiece. Meet the challenge to make music on just the mouthpiece. Play with song and wind on the mouthpiece and then on the horn. Play with the mouthpiece on a spirometer, then on the horn.

Don't focus at the tongue; focus at the vibrating lips. Give the tongue no importance, magnify the use of the lips.

In a phrase, don't by-pass any note. Play a phrase of notes like walking up a flight of stairs -- don't skip any, step on each one.

A worried body is difficult to work with -- a body asking questions is moving towards a "fight of flight" stage.

Use your body at its tallest and longest with a relaxed frontal wall.

Play three low Ds and then three and octave higher. Have the lower D teach the upper one.

In playing, tone color is dominant. The sense of a love song is present. Start with the authority of a powerful mental concept.

Make your job easy -- let language work within music.

Wrong: TA Right: tHA

Say "who, too, who, too" -- same air flow same sound of moving air for both words, only the smallest "t" is added for "too."

The strangeness of a new approach should not be an inhibition; enjoy the strangeness.

Question: What is the difference in breathing potential between a man and a woman?

Comparing a man and a woman of the same height, weight, and body type, the woman will have about 20% less air capacity. However, keeping the song in the brain is the more important issue.

Do a variety of things with the breath that show results outside of the body. Blow out matches, blow up paper bags, blow paper boats in water. Work with visual cues.

Increase your potential for inhale to its fullest: After a full exhale, wait (in an empty state) for 20 seconds, then inhale while raising your arms. Notice the expansion.

Question: How do you evaluate students?
By observing their size and body type and comparing with the instrumental sounds they make. A student with a very large breath potential can under-use it. Take in an excess amount and monitor the flow at the lips.

AJ lost 50 pounds and gained a liter of air capacity. Lose weight, gain air.

Flute example:

Play an articulated passage under a slur. Work toward and excellence in the slurred version. Retain the tone color of the slurred version when the articulation is re-introduced. The slices of bread have the same ingredients as the whole loaf.

Singing bel canto qualities of tone must be present in articulated material.

After a silence, the first note is very important. It establishes the high quality. Have a role model in the brain and match it. Don't allow .10 cent notes, always play \$100 ones. Have tone qualities of lyric music in fast articulated passages.

Think of the flute and the brain sends "flute playing" signals. Breathe without regard to the instrument, then play.

Work on the psychology of the inhale not the physiology of it.

In the five count breathing exercise of yesterday, use arm motion to pull quantities of air out of the body. Have the same sound of moving air in as moving out.

Tools of the artist dominate. Put the attention of breath in perspective.

Avoid paralysis by analysis.

Personal note in answer to some questions --

Q: Who are you, where from, etc.?

A: Charles Lipp, bassoonist-composer, writer for a software company

111 W Washington Street, Urbana, IL 61801 (Full resume on request.)

home: (217) 328-6102

office: (217) 352-4266

fax: (217) 352-2215

I get the most out of the class by preparing these notes and taking a few photographs.

Students that get copies of the notes (you folks reading these lines) -- help me be

correct. If I have noted down anything incorrectly or in a wrong-headed way, write, call

or fax me your correction. I've assigned Mr. Jacobs the copyright on these notes since

he's the main man in this arena.

Some of the tools used this week:

Inspirex (incentive spirometer)

WPS (6 liter bag)

Voldyne (volumetric exerciser) from Cheesebrough

Ponds, Inc.

See-Through Human Anatomy (the "thin man" chart) from George Cram Corp.

A couple of these tools and other breathing aids not listed here are available from:

Discount Music Inc

P0 Box 148027

Chicago IL 60614

Please write for ordering information.

Question: After practicing for 20 or 30 minutes using very full breaths, my rib cage felt sore.

First make application of these techniques away from music. Take comfortably large

breaths at first. Start with a flow that doesn't relate to music. Get familiar with movement of air as motion, not static pressure.

Question: Why do I have a tight, "bottled-up" feeling when I play the oboe?

With a low flow rate instrument like the oboe, static pressure immobilizes the torso.

The bellows-like function wrongly becomes a pelvic or static pressure.

1) Hold the back of your hand a couple of inches from your mouth. 2) Say "who" at the back of your hand. 3) Say it several times remembering the feeling of air at the back of your hand. 4) Achieve the same feeling of air movement by "blowing" a silent "who."

The brain deflates the lungs starting with no pressure build-up. With a valve (tongue) release, pressure builds behind the tongue then the air is released (at times explosively) to the embouchure.

Work toward a blown release even in forte. Keep the ease, freedom, and quantity even with massive air requirements.

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Question: What was your greatest teaching problem?

A tuba student couldn't match a pitch. He would hear a pitch but would be unable to sing it back. Students who have great retentions can build a memory bank of musical experiences. The problem is to educate the brain to music. To educate this "tone deaf" student, a single note was played on the piano. After a long silence, another note. Surrounding the notes with silence allowed the student to build a memory of the isolated event. The student had to carefully post-hear each note. With a twelve window strobe, the student would hear a tone, see which wheel would "stop," and after a pause try to stop the same wheel by whistling. Slow gradual progress finally built an ability to successfully match tones.

Tuba example:

Improve bellows motion of torso; get smaller when you blow. Establish music in the mid-range; transpose material that sounds good in one octave and maintain excellence. The fine qualities of one register are introduced into extreme registers.

Be a great artist in your imagination. Don't listen to results, but imitate sound in your head. When you ask questions about playing, you're no longer in charge.

Practicing is 85% making statements and 15% asking questions.

Start with bad sounds and make them into good ones. Silence can not improve.

Don't allow standards to change when you play.

In the low register, use a thick column of air. The small embouchure of the high register trumpet also uses a thick stream of air. High notes are fast vibrations; low notes are slow vibrations. Don't make a big deal out of the number of vibrations. Approach range as a performer and always strive for high quality.

Question: How do you get the image of a good sound into a student's head?

Have a good play present a live demonstration (preferably with the students own instruments and mouthpiece). Develop a feel for playing by playing on the mouthpiece only. Mouthpiece playing is important away from the full instrument.

Question: Describe the non-musical equipment used this week.

The equipment is to provide a visual stimulus. The tools show moving air and are helpful in development away from the instrument. They introduce strangeness, some can be adjusted to vary the resistance, some can be used with a mouthpiece.

Trumpet example:

Use slow air for piano; fast air for forte. To ensure a large fuel supply breathe as if the whole page were to be played in one breath.

With a mirror, check to see if you look the same or different when comparing the breather-bag exercises with trumpet playing.

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Create note-by-note in your head and on the horn. We may hear music phrase by phrase but we play it note-by-note. Don't settle for less than the best. Establish quality in the mid-dynamic range and keep the quality in the louder and softer dynamics.

Bassoon example:

Low breathing with no use of chest. Chest immobilized producing an uncomfortable feeling while playing. With hand on sternum, be aware of the sternum rising during an inhale. It must rise up, not out. A long tall body keeps the ribs in the correct configuration during inhalation and exhalation. During a quick inhale the rapidly rising sternum frees up the lower area's muscles.

In practice, play for an imagined audience.

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Question: Can you learn "absolute pitch"?
You can come close by carrying a pitch source around with you. Zero-in on one pitch and check your memory of it. Can you play a pitch on the tuning fork or pitch pipe and remember it for a long time? How long? Throughout the day at odd times, recall the pitch and check yourself on your pitch source. Use a portable keyboard to check your pitch sense on a melodic line.

Can you sing the first note of a solo or etude before picking up the instrument and

playing it? Can you remember a pitch with more ease by imagining the fingering?
Improving inner ear skills away from the instrument will strengthen your aural imagination.

Be flexible with your intonation in ensemble situations. In an orchestra, don't insist that you're the only one "in tune."

Question: What kind of warm-up do you recommend?
If you play a lot, you're always in shape and ready to play. Phil Farkas (Chicago Symphony first horn in the '50s and '60s) used an hour warm-up before each concert. He'd sound as good on the first note of the warm-up as he would sound at the end of the hour. If he would arrive too late for the complete warm-up, he'd still sound great in the concert. His warm-up was really to become comfortable with the concert environment rather than to "warm" the embouchure. Once the brain and the embouchure are connected, you're ready to go. You don't need to have an athlete's warm-up to promote blood flow. The embouchure always has a great blood supply. The best warm-up of brain/tissue connections is to find the norms of a great sound in the mid-range using a mid-dynamic. Then as you play, expand the pitch and dynamic ranges.

Question: How early should students begin to learn new breathing techniques?
AJ at the age of 15 knew music, not physiology. Let music be the teacher. Don't let students get into the mode of "how do you do it?" or "how should I do it?" The concern is how we sound.

Poor teaching -- "support with the diaphragm" -- misses the point. The diaphragm pulls down during the inhale. It relaxes during exhale.

Trumpet example:

Player changed embouchure while in school. A successful jazz player; then difficulties with classical repertoire. AJ: Jazz was from the brain, classical was from trying to play "correctly."

Use the embouchure as the focus of performance not as blockage for the air. Buzz a mouthpiece ring to put the focus back at the lips. Use thickened air with a great inner song. Stabilize the lyric qualities of the trumpet sound. Allow the embouchure to change if it wants to.

Remove conflict, sneak in the backdoor of problems. Attend to brain work; get organized in the art form. The instrument will follow.

For octave leaps, let the lower octave educate the upper one.

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Play a "C" on the trumpet, play a "C" on the mouthpiece, play a "G" on the trumpet, play a "G" on the mouthpiece, play a "B" on the trumpet, play a "B" on the mouthpiece, without using valves play a "B" on the trumpet. Notice that a "B" is sounded but with no

resonance from the trumpet. If the music is present at the mouthpiece, it will come out of the horn.

Solfege converts written notes to sound -- a great mental/musical exercise. There's a great deal of danger in converting printed notes to fingerings. Solfege is a good challenge for a beginning player. Exercise to refine the skill of converting printed notes to music.

There is a danger in acquiring information without also practicing the ability to tell stories in sound and impart information. When learning, use the sense of sight and hearing. Allow the senses to multiply and reinforce learned information.

Question: How does a reed player use the analogy of the embouchure as vocal cords?
Perhaps more help does come from using fingerings on a woodwind than on a brass instrument. However, establish recall of pitch. Play known material from memory. Spend time learning to tell a story. Sing the music.

Question: What's the best way to use a mirror while your practice?
Look at your general appearance in the mirror. Don't ask questions or look for distress signs.

Trombone example:

Holding the horn is often a precondition to "hearing" a pitch with the inner ear. It's a good cue, but also develop skills away from the instrument.

Breathe with large movements but with weakness.
Replacement breaths are the same
as the first one. The primary friction of incoming air is
at the lips, not in the throat.
Suck in air and the brain orders the machine of the body to
perform correctly.

Oboe example:

Use air flow, not air pressure. Start with wind. Blow
wind outward past the
embouchure as if nothing is in the way -- although the reed
is really at the lips.

Work to end conflict between breathing out muscles and
breathing in muscles.

Think of air as a column of water gushing up. The tone is
a ball buoyed up by the column
of air. Bring the expansion/contraction of the abdominal
wall into play even if you
pretend to have motion.

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Question: How should we practice?
A practice routine includes time playing in a singing bel
canto style to find the best
tone qualities. Determine what you want the audience to
hear. Work in the mid-range of

both register and dynamics. 40% of the time is spent on drills. Even during this time, make music with a high standard. Repetitive material could be just as well found in a concerto as in a scales study book. 60% of the time spent on interpretive music. Develop musicianship -- even with children's songs or folk music.

Question: What suggestions do you have for doublers? Doubling is not for elementary musicians. Always keep artistry in the foreground while playing the secondary instrument. Keep a program of practice that includes both primary and secondary instruments. Play the secondary instrument at least two or three times a week.

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Follow the body's laws while adapting them to your instrument's requirements. Simply take air in and move it out. Great music may be made without the specific knowledge of body mechanics.

Functional breathing is used for everyday life. Specialized function (like music making) keeps and adapts the everyday function. Performers give only the most simple orders.

A knowledge of mechanics is not needed for specialized activity. The need is to give simple orders. Think like a child and use conditioned reflexes to provide specific stimuli.

Conditioning

Start with musical thought dominating, order excellence in the musical product.

Work toward accomplishment as a goal. For example:

Walking -- the goal of

moving the legs. Music making -- the goal of moving the bow. Language

communication -- the goal of moving the vocal cords. (If you were as preoccupied

with the mechanics of walking as much as you are preoccupied with the mechanics

of playing, how much distance would you cover?)

Great music may be made without the specific knowledge of the body.

Requirements for sound:

Motor force, vibration, resonance. The piano has both a vibration source and a

fixed resonator. The trumpet is only a resonator (or collection of resonators

selected by valves). For sound from the piano, motor force of any kind is needed

on the keyboard. For sound from the trumpet, motor force (moving air) allows

vibration (lips buzzing) to resonate in the tube.

Mouthpiece's sound is amplified

20 decibels by the instrument.

The external environment is observed through sensory nerves and affected through

motor nerves. When you act, the brain sends commands to the motor nerves for

performance; when you observe, sensory nerves send raw data to the brain for

evaluation.

Elementary students best work from imitation.

Academic studies:

Take an acting class to study presentation and to play the role of the presenter. In musical studies, devote equal time for absorbing and imparting information.
Learning

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Question: How can I get power in the trumpet's high register?

The small embouchure surface needed for high pitch and the big push needed for amplitude makes a delicate situation. Danger lies in pushing against resistance.

Instead of hard blowing, move toward a bigger sound based on the buzz of the embouchure. Zero-in on the buzz of the lips in a lower octave then keeping the same feeling for buzz, play in the upper octave.

Question (from the Bonn orchestral player): What causes the embouchure instability and resultant tone color change in the descending scale? The throat is discovered to be closing. When relaxed, the throat is open. Locate the

closure by placing a finger on the throat just above the larynx. Say "key;" say "hoe." Feel the closed throat while saying "key." Use suction on inhalation with minimal friction. Use the lips (not the throat) to control the inward moving quantity of air. Be aware of the sound of moving air. Breathe to expand; don't artificially expand to breathe. The main physical unit used for inhalation is the diaphragm. Follow through brings other physical units in to play. Teach large inhalation, not regional movement. The product is the sound of moving air. A 6 liter air bag may be used to give visual cues for movement of air. Inhale, fill bag, take back air from bag, use the "old" to play. The bag gives a visually known quantity of air.

Strive for simple child-like communication between your art's desires and your body.

A study of slow breath away from music:

Inhale a slow breath for five beats at MM 42-48.

Visualize a ribbon of air entering the body through the mouth.

Exhale for five beats. Visualize the ribbon of air leaving the body.

Sense the quantities of moving air.

A study of slow breath in thirds:

As above, move air in and out while imagining the quantity moving in thirds.

Move air in one third of total.

Pause (2 or 3 seconds) and reflect on quantity and bodily stretch.

Move air in a second third.

Pause and reflect.

Move air in a third third.

Pause and reflect.

Move air out one third.

Pause and reflect, etc.....
Locate a large volume of air passing the lips.

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- 1) Breathe in for 5 counts
Blow out for 5 counts
- 2) Breathe in for 3 counts
Blow out for 3 counts
- 3) Breathe in for 1 count
Blow out for 1 count
- 4) Breathe in subdivisions of thirds or fifths
- 5) Breathe in, hold breath -- "be surprised", notice the sensation of expanded torso
- 6) Breathe as in 1), 2), or 3) and notice body expansion/relaxation
 - from belt to rib cage
 - chest
 - abdomen relaxed
 - neck relaxed

mouth forming vowels

- 7) Breathe as in 1), 2), or 3) and notice
the sound of moving air
air move by using paper as a visual aid
the feeling of moving air at lips
- 8) 5/4 time: blow out for counts 1-4
breathe in on count 5
- 9) 4/4 time: blow out for 3 1/2 counts
breathe in for 1/2 count
- 9a) 7/4 time: breathe in on beat 7, out on beats 1 through
6

Although these studies will seem to be mastered in a week, a year of practice is necessary for the full integration into your playing. Suck air through a straw, then two straws, then three, then four Be sensitive to the movement of air as the opening varies.

Challenge proceeds development. Be patient with development.

The body uses the respiratory system in three ways, and the brain has three blueprints of the respiratory system:

- * For respiration -- This mode is for breathing and wind playing.

- * For defecation and childbirth -- This uses pelvic pressure (closed-throat, downward pressure).

- * For combat -- Tension in the abdominal wall protects vital organs and stabilizes large muscles groups for "fight or flight."

Misapplication during playing may introduce unwanted pelvic pressure or abdominal

tension.

Spirometer:

(Problem -- habitual downward contraction by the abdominal wall keeps the lower ribs immobile.) Three or four breath cycles through the spirometer set (at maximum resistance) fatigues muscle groups and separates the groups needed for inhale from those needed for exhale. Fatigue sets in then

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training finds the easiest way to proceed. Gradually work toward minimal resistance.

Use "minimal motors" to develop an ease which becomes the basis for performance activity.

Exaggerate for recognition. Start with crudity or gross exaggeration, then refine. Move areas of gray to black and white.

During respiration, the torso is like a bellows getting larger and smaller, so strive for a unified bellows effect. For example, all muscles shorten when functioning, so abdominals compress for exhale. The clavicle marks the top of lungs, so the clavicle will move up and down slightly on correct inhale and exhale.

Position of larynx (voice box) -- It moves down on a large inhalation or at a moment of surprise. It moves up when swallowing. The larynx is controlled subconsciously.

Observe what happens to the body in everyday life. Observe how these motions may be

used for playing. Move from product to muscle, not from muscle to product. The great endeavor is sound. Find role models in the art form, and control what is to be the final product.

The psychological focus of blowing is wind as moving air. The idea is air as wind, not air as pressure. To move more wind requires more pressure. Problems arise when pressure increases without an increase of wind. A common problem is the inhale muscle group working against the exhale group. Visual cues (from the spirometer) turns the attention away from the inner body workings and helps separate muscle function.

The idea of "thick, fast air" includes more muscle groups all working at a light load. The hardest work is using the inhale muscles to fight the exhale muscles when blowing.

Watch the ease of the athlete. The term "ease of the athlete" means getting the job done using minimal motors. Minimal motors exclude extraneous muscles and isometrics. Minimal motors use only muscle groups needed.

Although the muscles of the torso can support 125 pounds on the chest and abdomen, these muscles can only generate 3 pounds of static breath pressure. Sensors in the lungs protect the delicate tissue and prevent large pressures from being generated.

Control of the breath comes from the control of long tones, crescendos, and diminuendos. We start with the product and work backward.

Don't additional problems arise when correcting bad habits?

Do not correct habits. Skirt them by adding another dimension to your playing. Adding and practicing a new habit can gradually replace an old one. For example: Start with wind as a physical skill, start with crudity, move areas of gray to areas of black and white. Develop a melodic sense in a "problem" register, don't develop power in a problem area.

Practice the beauty of sound. The norm is lyric playing, the love song, or bel canto. This norm allows a fine tuning of the performance machine. Begin lyric playing with vibrato, then retain the lyric style without vibrato. Be able to play a love song with and without vibrato. Keep the lyric quality

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when adding articulation to the sound. Be the great player who maintains a lyric quality at all speeds.

Question: Describe the nerve damage to the throat of the trumpet player who had her tonsils removed.

Nerves were severed that controlled the region of the soft pallet. She was incapable of producing closure when playing. Air would escape through the nose.

Find the balance between breathing and blowing. Avoid self-analysis, issue statements.

Psychology is the study of the world around us, not the study of the world within us.

Avoid self-analysis; it's passive. Instead, issue statements. Give orders, avoid self-

analysis.

David Glidden, tuba Frankfurt Radio Orchestra: Breathing predominantly low using the abdomen. Good general breathing on "replacement" breaths. Large lung capacity; some constriction from allergy; using medication. Practice slow inhalation when raising arms, hold breath, drop arms, notice chest expansion. Cycles of inhale/exhale using visual cues from a spirometer allow a study of the breath, not a study of the breathing apparatus. A focus on where the air enters takes the attention away from the area of low breathing. Discover areas of unused expansion and work them into the activity of general breathing.

Posture

Put your instrument aside. Stand comfortably tall; assume your best posture. Using your hand, feel your back's curve just above the belt. Sit down. Feel for, reform, and maintain the same curve. Now you're "standing" above the waist and sitting below the waist.

Breath pressure may be generated by elastic contraction of the body's tissues alone.

See figure: 3/4 of a pound of positive pressure can be generated by relaxation pressure of tissue after a full inhalation. During exhale pressure decreases. On the "last half" of the breath, effort is expended to "get all the air out." During playing, learn to use the top half of the capacity for music making. All recovery breaths bring the level back to full. Often, incorrect playing is in the middle third of the breath, never refilling back to

the top of the capacity.

Question: Should carbon dioxide levels be artificially manipulated?

Not necessary for brass (especially low brass) playing. A high flow rate keeps the oxygen/carbon dioxide ratio in balance. In situations where extreme long phrases are needed, slight hyper-ventilation by deep breathing several cycles before playing helps.

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The tongue is an unruly organ. It gives very little feedback. It is best trained when your playing imitates spoken language. Make your playing speak with inflection.

Never substitute pressure for quantity. Diagram of air flowing through tubes of different sizes. How this may be similar a situation of the tongue being in the way.

Trumpet from Washington, D.C. Pines of Rome, Promenade from Pictures at an Exhibition.

The embouchure uses whatever air is available, even when the air supply mechanism is inefficient. If the first full breath gives a poor attack, hear the tone quality with the inner ear, then play. To take in a "best" first breath -- suck in air. The main muscle of suction is the diaphragm in descent. Poor attack: Problems in the upper air way (at the tongue) usually are accompanied by problems in the lower air way (the abdominal wall). Work the expansion/contraction of the chest with a general bellows effect. Each replacement breath returns the capacity to the "first" breath level.

Exercise: In a slow 5/4 meter, exhale the full breath during beats 1 through 4. Replace the breath on beat 5. Work toward ease of replacement breath.

Exercise: In 4/4 meter, exhale the full breath during beats 1 through the first half of 4. Replace on the last half of 4. Or in 8/8 meter, exhale during 1 through 7, replace on 8.

Music making is 90% story telling and 10% fuel.

Question: When a student plays and adds vocalization, how can the vocalization be eliminated?

If the problem is minor, ignore it and continue working toward ideas of communicating the artistic product. To assist the student, direct attention to large breaths and study

of tone -- long tones, crescendo and diminuendo. We take air in like a bellows -- we enlarge lowering the internal air pressure and air enters -- we get smaller and air is expelled (Boyles' Law). We must have an awareness of the balance between the inner and outer pressures and only use the minimal effort to play. Take air in with the gesture of surprise. This feeling of surprise allows us to maintain size without adding pressure.

Exercise: (Eliminate pressurization) Take a full breath with the gesture of surprise, with a resonate voice say ONE, pause while retaining the feeling of surprise, say TWO, pause retaining the surprise feeling, etc. On a full breath play isolated tones retaining the feeling of surprise between them.

Blowing is an active state, not an inactive one. The player psychology gives orders for results and by-passes the brain's blueprints of the body's

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mechanical functions. Although complex relations between nerves and tissues exist, the machine easily complies to simple orders.

An improper habit is the immobilization and/or static protruding of the abdomen. Employ the natural bellows-like tendency to get small as the exhale progresses. Controls of pressure are crude; they make hard work of an easy task. Work to eliminate the isometrics between the inhale and exhale groups.

Pelvic pressure (closed-throat, downward pressure) may be misapplied during playing and introduce unwanted pelvic pressure or abdominal tension. Air is wind, not pressure. To move more wind does require more pressure. When pressure increases without an increase of wind problems arise.

To directly control the larynx is harmful. A dynamic control can be approached by using the life form application of the larynx's movements. The larynx raises when swallowing and descends when inhaling.

Use an adult's outlook for studying the art form and the emotional content of the artistic matter to communicate. Use a child's outlook for simple physiological approaches.

The psychology of wind is to achieve an end outside the body. Blow out matches; watch a strip of paper move in the stream of the wind. Externalize the air movement. To blow a large quantity, use fast air.

How can stage fright be prevented?
Develop an ease in performing for an audience. Stage fright usually results in a high pulse rate and shallow breathing. Before performing, know the music. Then, in performance, prepare yourself by slow breathing (five count breathing), moving large quantities of air. Mentally rehearse the music using solfege or a text -- sing the music in your brain. Mentally replay your best performance. Flood the brain with positive examples of music making.

Question: How do you work with beginners?

The teacher plays a note on the student's mouthpiece and instrument. The teacher plays another and another. Plays bad sounds and compares them with good ones. Plays two, three notes or a short melody. The student observes and remembers the difference between good and bad. The student takes the instrument home and using large volumes of air attempts to match the notes of the teacher. The student works on products. Later, as the challenge of extremes enter, allow the students to find their own way to a "proper" embouchure.

Teach art. Set the rules for music; play down "how to play the instrument" or "how to control the meat." Playing is singing -- the strings replace the vocal chords. To get the mind off the instrument, play a simple tune while jogging around the studio or doing deep knee bends -- do "something strange" while you play to find out about your "minimal motors."

Inhale at the corners of the embouchure; don't inhale by dropping the jaw (and having to relocate the embouchure). Play simple material while looking in a mirror.

Embouchure: The lips are usually a healthy part of the body. The mouthpiece rim isolates the vibrating area according to requirements of the vibrations. AUGUST 1988

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The mouthpiece is not the embouchure; the embouchure is where the lips vibrate and where pitch is read out.

When a note is missed, doesn't it cause a "chain reaction" of missed notes? When you miss a note, keep going with a positive attitude to improve the next notes. When you miss a note, flood the brain with models of best notes -- make the next notes even better than your norm.

Flutist from Detroit: Complaints about too many required breaths and too noisy breathing.

A Breath Builder (a visual aid product) needs 14 ounces of pressure to hold a ping-pong ball at the top of the column. Find the minimal function to keep the ball up. Look in the mirror for visual cues to keep the wind moving with ease. Find the full range of abdominal movement. Bring this range of expansion and contraction into use. Put both middle fingers on the navel. Spread the hands over the abdomen. Feel the bellows of the torso. As the diaphragm descends on inhalation, the lower respiratory area enlarges. The abdomen protrudes on a full breath. Don't fear being wrong -- when working with physical skills exaggerate.

Hornist from Charleston, SC: Think of air flow as a quantity. A helpful image: the air as a fountain of water spurting up. The tone of the instrument as a ball riding at the top of the spurting water. For loud playing the ball (the tone) rides high on a tall jet of water (a large, fast moving stream of air). For soft playing, the ball rides low on a short jet of water. Breathe in while raising arms, hold breath, lower arms, notice the chest expansion. Strive for a visual "Dolly Parton-like" expansion when achieving a full

breath. Play articulated material legato to obtain a "best" sound then have the articulation be the lightest addition of the tongue.

Think of the breath as the "balloon of words" above a comic strip character's head. When you take a big breath, suck in a big balloon of words that floats over your head.

Some of the tools used this week:

Inspirex (incentive spirometer)
WPS (6 liter bag also available in 3, 4, and 5 liter sizes)

Windmill (for roughly measuring capacity) from Kinetics Measurement Corp

Voldyne (volumetric exerciser) from Cheesebrough Ponds, Inc.

Access (peak flow meter) from Healthscan, Inc.
See-Through Human Anatomy (the "thin man" chart) from George Cram Corp.

Question: When a player uses too much mouthpiece pressure and abuses the

embouchure tissue, what is the best cure?
In general, the lips have good circulation; under extreme conditions they can be bruised.
The usual result of this mistreatment is a circulation problem. When a player holds the mouthpiece on the lips too long, swelling develops from fluid collection. If the swelling disrupts the embouchure, rest is the best cure. When that's not possible, use a slightly smaller dynamic range and avoid the very top notes of the instrument. The swelling from fluid accumulation will clear up with 24 to 48 hours of rest. The best procedure keeps the brain occupied with music keeping it from self-analysis and possible downward spiral.

Question: Can the embouchure be paralyzed?

If the face is distorted away from the instrument, seek an examination by a doctor.

When there is no medical justification to the condition, go back to the easy part of playing and buzz the mouthpiece. Sing with the lips; air is the tool.

Question: What about pain in the joint of the jaw?

Perhaps this is a mild dislocation. See a dentist for a medical explanation. If the dentist finds nothing, keep a journal about possible cause-effect relationships. Take a rest, and buzz the mouthpiece.

Vibrato is a sinewave-like fluctuation of pitch, volume, or a combination of both. The physical relationships that produce vibrato are complex, so vibrato should be created in the brain as sound quality. It can be taught as a mellow, lyric sound. Teachers should demonstrate this sound to students. Start learning vibrato from the sound model as a crude mechanical maneuver using the sense of sight (play into a microphone connected to an oscilloscope or strobe). Exaggerate the physical maneuver of the jaw or hand. Look for a fluctuation on the scope. Learn vibrato as a connotation of lyricism, as a tool of your art. To refine vibrato, have large muscle groups work at a minimum load to produce the desired fluctuation. At times, the vibrato's pitch fluctuation can fool

players into playing off the resonate center of their instrument. Playing off the resonate center (usually sharp) necessitates tuning compromises. The resonance center is blurred as a result, and the resonant amplifying power of the instrument is lost. Use vibrato search for the best, most resonant pitch center.

Question: How do you increase the available air supply? Keep the focus on the buzz of the lips. Be concerned with the quality of the sound and with being a fine artist. Train yourself to take a full breath by playing long tones while watching the second hand of a watch. How long and how easily can a tone be held?

About mouthpieces.

There are three performance variables -- 1) the player, 2) the mouthpiece, 3) the instrument. Within the variable of the mouthpiece, the rim and cup are two variables.

Don't lock yourself into one mouthpiece. Keep the same rim style and try different cups.

Playing a small instrument using a deeper cup will strengthen the fundamental. Play as a storyteller. Play different roles using different equipment to fully explore your potential.

Start a conditioning program of playing (even simple music) for others.

Trombonist:

In hearing the playing there is a sense of thin air. The lower part of the respiration tract is immobile. Long, slow, deep breaths to improve flexibility. At the end of the breath add a little more air flow to compensate for dwindling air

supply. Remember to breathe to expand not expand to breathe. Practice a bellows motion without breathing.

When performing, teach the audience how a beautiful first note should sound. Speak through the instrument, and deliver a message to the audience. Be a storyteller with friendly authority speaking word by word. Although the audience may hear long phrases; the artist creates phrases note by note.

Strive for flexibility by directing the air away from your body.

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Your body

Form a pattern of performance physiology through visual memory. Whenever you play, see yourself performing. We've all seen awkward, ill at ease performers. In yourself, transform regions of stability into ones of change. Establish performance habits away from music, meet challenge first as a human being. Have a carelessness of technique but a sharp accuracy of your brain's musical image.

Young trumpet student (15 years old):

For articulation: Rub tongue on the floor of the mouth. Say TA, LA, TALA, LATA.

Don't encourage mediocrity; play at your best; don't be second class in the head.

Memorize the sound, not the feel. Away from the instrument, guess at a pitch, and check

yourself using a pitch pipe. Convert printed notes to sounds as quickly and surely as you convert printed words to ideas. The word run stands for the idea run. The printed note D stands for the sound D. Solfege develops the brain. See the Kodaly 333 Singing Exercises (Boosey and Hawkes) also the Pasquale Rhythmic Studies.

fff-----half way-----
-----ppp

The point half way between dynamic extremes is the norm for general playing. Establish quality at the norm, and keep this quality while working toward the extremes.

The first half hour of playing each day -- play simply, and sound great. Play songs, Christmas carols, slurred scales. In the next time block, be challenged, but remain free to err.

The oboe uses the least flow, highest pressure of the winds. To change the balance of oxygen and carbon dioxide, slightly hyper-ventilate. This is in preparation for any very long phrase for any instrument. Open the space in the oral cavity and lower the tongue. Increase the air quantity. Never sacrifice quality of tone when reaching for a larger size of sound. Get the most result for the least activity. For a buoyant sound: The tone of the instrument is a ball riding at the top of spurting water. For loud playing the ball (the tone) rides high on a tall jet of water (a large, fast moving stream of air). For soft playing, the ball rides low on a short jet of water. Work at the

peak of ability (even in two bar phrases) then extend the goal. Use rhythmic breath drills as a preparation for a fast breath.

Balance air in performance. As we inhale and exhale, the atmospheric pressure outside the body and the air pressure inside the body is in balance. We inhale, expanding the torso, the air pressure inside the body drops and the higher atmospheric pressure outside the body rushes in. We exhale, collapsing the torso, the air pressure inside the body increases and the air under this slight pressure rushes out. We increase the pressure by 10 or 12 ounces to meet the demands of our instruments to successfully perform under most conditions.

Use air as needed for piano or forte without pressurization. Use minimal motors to eliminate all unneeded muscle tone or isometric contraction. Motion makes pressure.

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Inspiration = enlargement. Expiration = reduction. Never lie to your body, communicate with tissue for a product oriented activity. It is not compatible to play and be static.

Study a slow breath with minimal motors to gauge the feeling of air entering and leaving. This practice prepares you for the fast breath necessary in performance. Practice slow and fast breaths away from music. Meet the challenge of controlling the breath as a human being.

See the breath move a sheet of paper or blow out a match. Use visual aids to validate the blowing. Familiarize yourself with the effect of your blowing being outside your body.

Investigate suction using minimal friction. In addition to visual aids, be familiar with the sound of air moving across your lips. The hollow sound of blowing is the first sound to achieve and remember. Next, achieve the same sound while inhaling. In both cases, this is the sound of moving air. Suction in, blowing out - - both at the same velocity. Use arm motion of a bow arm moving from frog to tip to enhance the learning process of a slow breath. Keep the arm motion as the breathing practice becomes faster.

A fast replacement breath is impeded by "trying to relax." A quick change of direction (in this case changing from exhale to inhale) is a sufficient trigger to disable one set of muscles and enervate another.

Know the capabilities of your air supply: Measure the time (in seconds) of a one breath phrase of music. Play a long tone for the same number of seconds in various ranges.

Become familiar with the flow rate to produce a given loudness in a given register for a specific length of time. Using minimal motors increases the efficiency of this exercise.

Debbie Silverthorne, trumpet, London, Ontario:

Exercises in blowing out matches help enliven the image of air working outside the body.

Move artistic goals to the foreground of playing. Play "by heart" for the first 30 minutes each day. Directly connect the song in the brain to the performance on the instrument. Improve the first note. Play the first three notes of a phrase: 1, 2, 3. Next, play the notes in the order: 3, 2, 1. Is note 1 better on this second try? Learn how note 1 can sound best. Make each note worth \$500, not \$5. Practice scales playing them like they were passages in a concerto. Make up words to the music you play; sing the words through your instrument.

Use a mirror to see what you look like during your best inhalation. Whether you are playing, doing breathing exercises, or working with visual cues, keep the vision of your "best" inhale as a model at all times.

Practice the lyric lovesong on the mouthpiece and on the instrument. Start with what's right, not with what's wrong, and then move into areas of challenge.

Trumpet player from Mexico City
Play by statement, not by feel. Do not use self-analysis; do not ask questions; rely on musical thought to give orders for making music. Do three cycles of deep breaths for flexibility, and then play.

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It is better to breathe based on the lower part of the torso than one based on the upper part. Why decide? Use both areas at once.

When you play the right notes on the mouthpiece, you will play the right notes on the horn. Establish playing the mouthpiece as a challenge, just like playing the instrument.

Hornist from Oklahoma Mozart Concerto

Build a phrase note-by-note. Although we hear notes as phrases, we perform notes one at a time. Substitute words for notes, especially to assist entrances. Have the sound of a great performance dominant in the brain.

Have the proper pressure of the mouthpiece rim on your lips before playing.

To improve a pitch in a higher register, play the pitch an octave lower three times, then as written. (G, G, G, g) Also, play the note and depart scale-wise to notes below. For refining note "8".

Play 8, 7, 8, 6, 8, 5, 8, 4, 8, etc. In both cases, have the lower notes "teach" the higher one.

Remember a high note is just fast vibrations and a low note is slow vibrations.

