

EFFECTING POSITIVE CHANGE:
A MANUAL FOR TEACHERS OF SINGING

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Introduction

The genesis of this project came about at the beginning of my doctoral course work. As I began to teach my first lessons as an Associate Instructor, a professor advised me to think very critically about each component of my teaching. What is the purpose of each specific exercise? How does each exercise (through its intended effect) advance the goal of the technical portion of the lesson? How does the technical portion of the lesson support the repertoire that the student is singing? How does this lesson advance the long-term goals of the student and the changes I want to make? Though perhaps a little too systematic, the professor's advice got me thinking about methodology. I began to investigate how great teachers and pedagogues approach voice building. My hope was to find enough commonalities to create a basic flow chart that, if followed, would help an inexperienced teacher make positive changes in his/her student's singing.

Unfortunately for my research, teaching singing is a somewhat nebulous art. Commonalities do exist among teachers; however, no flow chart can accurately account for the fact that teachers work with a myriad of students, each of whom respond and react differently. The successful teacher must be able to diagnose a vocal issue and provide a remedy crafted for that specific person at that specific time.

For new teachers of singing, this is a daunting task. Of course, independent reading and research can be enormously helpful. Books by pedagogues such as Richard Miller, James McKinney, Oren Brown, Berton Coffin, Barbara Doscher, and Clifton Ware, to name a few, form the backbone of modern vocal pedagogy and are invaluable tools for those starting a career in the studio. However, these authors' approaches are

often diverse and, at times, contradictory, leaving some to feel overwhelmed with no clear starting point.

Similarly, interviews with successful teachers of singing yield fascinating insights into teaching and highlight a few commonalities, but the multi-faceted discipline of teaching singing does not allow for one all-purpose method. Teachers must be flexible. They must learn to recognize and diagnose vocal faults on a moment-to-moment basis. They must associate auditory and physical symptoms with their underlying physiological causes and use whatever means are at their disposal to help the student make a positive change. It is the purpose of this document to help with this process.

The current document is the first part of a much larger work that will address the entire vocal mechanism. Here, I will limit the discussion to issues related to physical alignment and breathing. It has been my experience, as well as that of my teachers, that efficient body alignment and a correct concept of breathing form the basis of a healthy vocal technique. Though issues of phonation, resonance, articulation, agility, etc. are extremely important and can have a severe impact on alignment, breathing, and the voice as a whole, I have decided to begin this ongoing project with the two elements I feel are most vital for the creation of a foundational technique. Chapters I and II begin with a review of the body's anatomy, physiology, and kinesiology as they relate to postural alignment and breathing. The chapters then look at common faults related to these two issues and provide numerous exercises, cues, and images that will help lead a student toward positive change. Appendix 1 is a transcription of interviews with successful teachers of singing. These interviews contain valuable insights into teaching and convey many years of experience in the studio. The last element of the document is an index of

postural and vocal faults as they manifest in the student's body or voice. Each entry explains the underlying physiological cause of the vocal fault and refers the reader to the appropriate section in the main document to find more detailed information and a list of possible solutions.

Chapter I

Physical Alignment

Proper physical alignment is essential for the production of a free and efficient voice. If the body is out of alignment the deep postural muscles will have difficulty holding the body upright, forcing the larger superficial muscles to carry some of the burden. This leaves the superficial muscles fatigued from over-work and limits their ability to move freely and efficiently. Additionally, the excess tension required to maintain an inefficient alignment will transfer to a student's breath and phonation. In order to bring a student into an efficient physical alignment, it is imperative that teachers understand anatomy and kinesiology as they relate to movement. This understanding will allow the teacher to give appropriate postural cues and effect positive change in a student's alignment.

Anatomical Terms

As with every field, anatomy and kinesiology (the study of human movement) have a set of terms that may not be familiar to other professionals. Familiarity with these terms allows professionals from various fields to communicate clearly

Anatomical Reference Terms

Anterior: located at the front

Posterior: located at the back

Superior: located at the top (closer to the head)

Inferior: located at the bottom (further from the head)

Medial: closer to mid-line (the middle of the body)

Lateral: further from mid-line

Superficial (or external): on or near the outside

Deep (or internal): inside the body

Proximal: closer to the trunk (elbow as compared to hand)

Distal: further from the trunk (hand as compared to elbow)

Planes of Movement

Movement of the body occurs in one of three planes. These planes divide the body into halves and are at right angles to each other:

A **sagittal plane** is vertical and runs from front to back. The mid-sagittal plane divides the body into right and left halves. Swinging the leg forward and back is an example of movement in the sagittal plane.

A **coronal plane** is vertical and extends from side to side. It divides the body into anterior and posterior portions. Spreading the legs apart and moving them back together is an example of movement in the coronal plane.

A **transverse plane** is horizontal and extends horizontally in all directions. It divides the body in superior and inferior portions. Twisting the torso is an example of movement in the transverse plane.

Types of Movement

All descriptions of movement are in relation to a standard “anatomical position” in which the body is upright, the feet are parallel, the arms are hanging by the side, and the palms are facing forward (supinated).

Flexion: a movement in a sagittal plane that takes a part of the body forward from the anatomical position (raising arms forward, swinging legs forward).

Extension: a movement in a sagittal plane that takes a part of the body backward from the anatomical position (moving arms backward, swinging legs backward).

Adduction: a movement in a coronal plane in which a part of the body moves toward mid-line (moving thighs together).

Abduction: a movement in a coronal plane in which a part of the body moves away from mid-line (moving thighs apart).

Lateral Flexion: a movement in a coronal plane in which the trunk moves away from mid-line (head or trunk bending to one side).

Lateral Rotation: a movement in a transverse plane that takes a part of the body outward (leg rotating knee away from mid-line).

Medial Rotation: a movement in a transverse plane that takes a part of the body inward (leg rotating knee toward mid-line).

Supination: a rotation of the forearm so that the palm is facing upward or forward. The forearm is supinated in the standard anatomical position.

Pronation: a rotation of the forearm so that the palm is facing backward or downward.

Segments of the Vertebral Column

The vertebral column (or spine) is composed of twenty-four vertebrae and provides the structural support for the trunk. It is subdivided into five regions; vertebrae within each region are numbered sequentially from top to bottom.

Cervical region (neck): Seven vertebrae, C1-C7.

The cervical region articulates with the head.

Thoracic region (upper back): Twelve vertebrae, T1-T12. The ribs and the shoulder girdle attach to the spine at the thoracic region.

Lumbar region (lower back): Five vertebrae, L1-

L5. The vertebrae of this region are larger and more mobile than those above it. This allows for better weight transfer and protection of the spine.

Sacrum: Five expanded and fused vertebrae, S1-S5. The sacrum is the wedge-shaped foundation of the spine. It attaches to the pelvis posteriorly and transfers the weight of the upper body to the lower body.

Coccyx (tailbone): A small triangular shaped bone at the base of the pelvis.

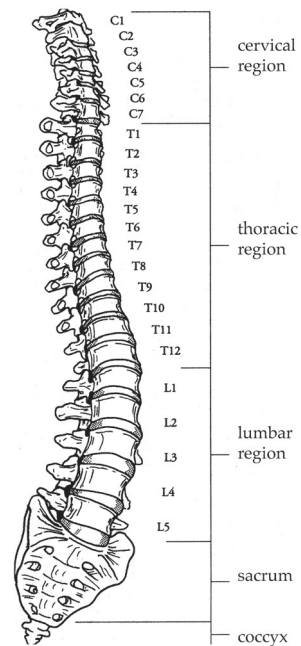


Figure 2-1: Segments of the Spine¹

¹ Blandine Calais-Germain, *Anatomy of Movement*. Rev ed. Translated by Regine MacKenzie (Seattle: Eastland Press, 2007), 34.

A properly aligned spine has several natural curves. The absence or exaggeration of these curves often indicates a muscular imbalance and an inefficient alignment.²

Ideal Alignment

The term **anatomical neutral** describes the ideal alignment of the body. An ideal posture is one in which: 1) the spine maintains its natural curves; 2) the head, shoulders, pelvis, ankles, and feet line up for maximum efficiency; 3) the muscles of the trunk, shoulders, and neck balance in such a way as to allow a sense of ease and at the same time a feeling of readiness. When viewed laterally, a plumb line should run:

Slightly anterior of the lateral malleolus (ankle bone)

- Slightly anterior of the knee joint
- Slightly posterior of the greater trochanter of the femur (hip/leg joint)
- Midway through the shoulder
- Slightly posterior of the ear

When viewed posteriorly and anteriorly, the plumb line should split the body into relatively identical halves.³ See Appendix A for a postural alignment guide for use in the studio.

² The degree of curvature varies from person to person. Additionally, the external appearance of an individual may not be indicative of the spine's curvature. For instance, an individual with highly developed gluteus muscles may appear to have an abnormally curved lumbar spine when, in fact, he/she does not.

³ Florence Peterson Kendall, Elizabeth Kendall McCreary, Patricia Geise Provance, Mary McIntyre Rodgers, William Anthony Romani, *Muscles: Testing and Function with Posture and Pain*. 5th ed. (Baltimore: Lippincott, Williams, and Wilkins, 2005), 60.

Categories of Misalignment

A misalignment is any deviation from ideal posture. Though posture deviations manifest in various ways, many fall within three categories: kyphotic-lordotic, flat-back, and sway-back. These deviations cause the surrounding postural and superficial muscles to work in less efficient and even debilitating ways, and are the partial cause of many neck, shoulder, and back pains.

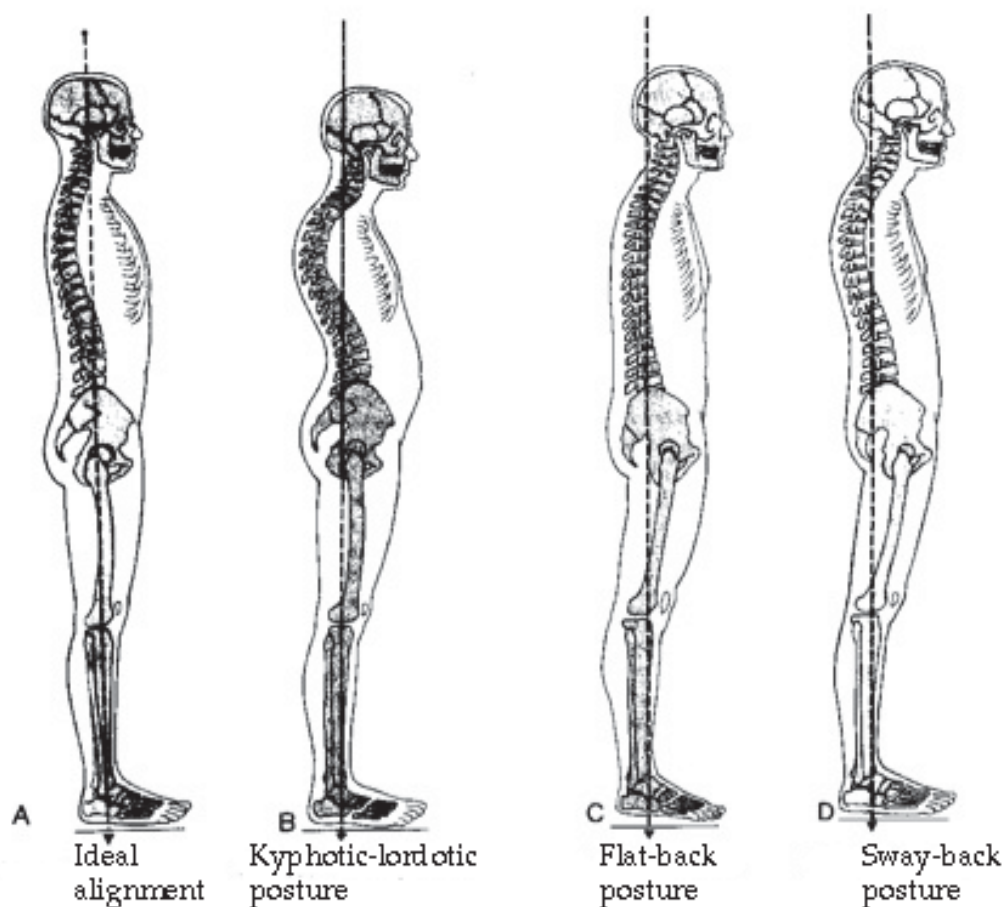


Figure 2-2: Categories of Misalignment⁴

⁴ Ibid., 64.

KYPHOTIC-LORDOTIC POSTURE

Kyphosis and lordosis refer to excessive curvature of the thoracic and lumbar spine respectively. Figure 2-3 shows this excessive curvature in the upper back (kyphosis) and in the small of the back (lordosis). In this posture, the head moves forward of neutral, hyper-extending the cervical spine. The scapulae may slightly adduct and the various muscular imbalances over-accentuate the thoracic and lumbar spine's curves. The pelvis tilts forward and the knees may slightly hyper-extend.⁶

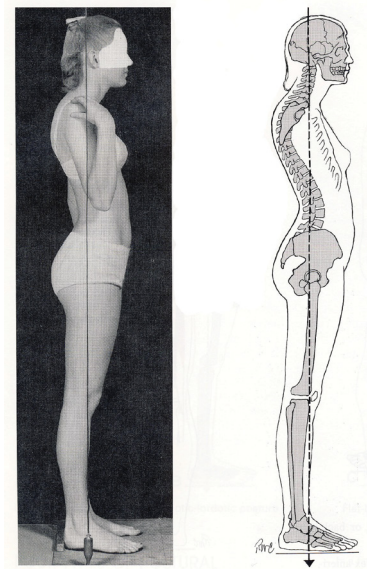


Figure 2-3: Kyphotic-Lordotic Posture⁵

People with this postural deviation will generally exhibit weakness in the neck flexors (muscles that tilt the head forward), the muscles of the upper back, the transverse abdominus, and the external oblique abdominals. In contrast, the neck extensors (muscles that tilt the head back), the hip flexors (muscles that bend the body forward at the hip), and the muscles of the lower back may be over-worked and habitually pulled short.⁷

⁵ Ibid., 66.

⁶ Ibid.

⁷ Ibid.

LORDOTIC POSTURE

Though Lordosis often appears in combination with Kyphosis, it is not uncommon to see it by itself. The head, cervical spine, and thoracic spine will be neutral, but because of an anterior pelvic tilt, the lumbar spine curves excessively. Muscle weakness in the external oblique abdominals, transverse abdominus, and rectus abdominus in conjunction with overuse of the muscles of the lower back and hip flexors are generally responsible for this deviation.⁹

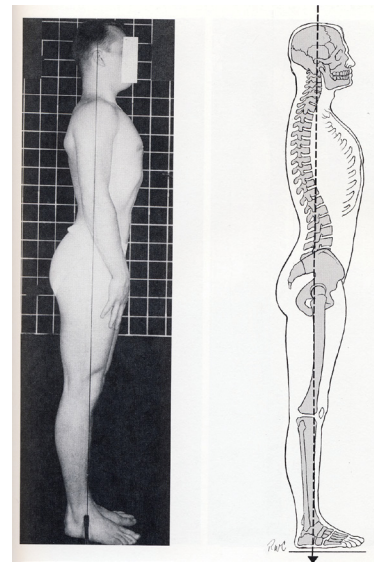


Figure 2-4: Lordotic Posture⁸

FLAT-BACK POSTURE

In a flat-back posture, the head moves forward of neutral and the cervical spine extends slightly. The upper portion of the thoracic spine will have increased flexion while the lower part will be flat. The posterior pelvic tilt will flex the lumbar spine flat. The hips and the knees will hyper-extend and can, at times, make the legs appear to bend backward. Generally, the abdominal muscles and hamstrings over-contract, tilting the pelvis

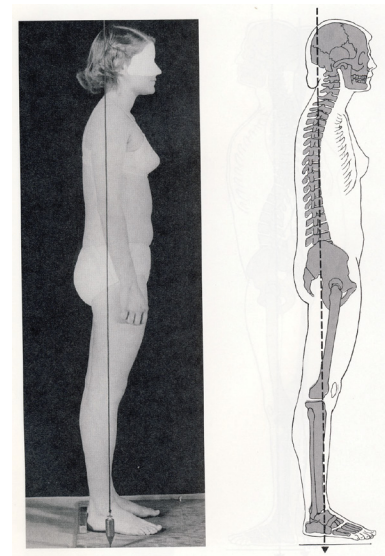


Figure 2-5: Flat Back Posture¹⁰

⁸ Ibid., 67.

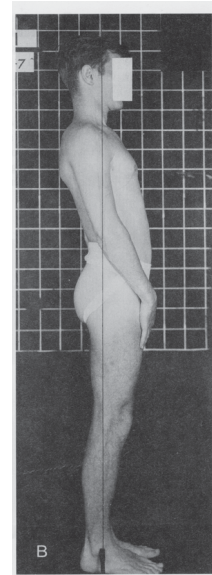
⁹ Ibid.

¹⁰ Ibid., 68.

posteriorly.¹¹

SWAY-BACK POSTURE

In a sway-back posture, the pelvis literally sways forward of midline. The head moves forward of neutral and the cervical spine may extend slightly. The thoracic spine over-flexes slightly and the entire placement of the upper trunk and ribcage shifts backward of neutral (see Figure 2-6). The lumbar will flex slightly due to the forward placement of the pelvis. The pelvis may exhibit a slight posterior tilt. The knees will hyper-extend but the ankle will typically be neutral. The hip flexors, external oblique and transverse abdominals, upper back muscles, and neck flexors will tend to be weak while the hamstrings and lower back muscles are generally over-used.¹³



**Figure 2-6:
Sway-Back
Posture¹²**

¹¹ Ibid.

¹² Ibid., 69.

¹³ Ibid.

Legs and Feet

The legs' connection to the pelvis at the hip allows movement of the body and effectively transfers the weight of the torso to the legs. The feet and legs provide a solid foundation upon which efficient alignment can be built. Without a solid foundation, the body becomes unstable, forcing the superficial muscles of the torso and spine to maintain balance. This significantly limits free and flexible movement, including respiration.

Anatomy of the Legs and Feet

For the purpose of this document, the anatomy of the legs and feet is relatively simple. The **femur** connects to the pelvis via the hip joint. The **hip joint** is a ball and socket joint that allows for a wide range of motion, essential to one's ability to walk. Unlike the humerus's connection to the shoulder joint, the head of the femur fits relatively deeply within the hip, which gives the hip considerably more stability than the shoulder.¹⁴ Five sets of muscles, the **hip flexors, hip extensors, hip adductors, hip abductors, and hip rotators**, control the motion of the leg from the hip.¹⁵

The knee joint connects the upper leg to the lower leg. This joint lacks the structural stability of the hip joint; rather, its stability comes from the arrangement of various muscles and ligaments.¹⁶ The **quadriceps** are the chief knee flexors and the **hamstrings** are the chief knee extenders.¹⁷

The **foot** must be both strong to bear the weight of the body and flexible to allow for movement such as walking and running. It is composed of twenty-six bones, thirty-

¹⁴ Calais- Germain, 15.

¹⁵ Ibid., 252-3.

¹⁶ Ibid., 222.

¹⁷ Ibid., 238-243.

one joints, and twenty intrinsic muscles, lending incredible flexibility and stability to the foot.¹⁸ The **ankle** joint helps to transfer the strength of the leg to the foot. The specific details of how the foot and ankle work are beyond the scope of this document.¹⁹

Anatomical Neutral

When viewed laterally, a plumb line should pass slightly behind the hip joint, slightly forward of the knee joint, and slightly forward of the lateral malleolus (protruding bone on the outside of the ankle). This allows for the most efficient transference of weight. The knees should not hyper-extend, but rather be flexible and ready for movement. The feet should stand beneath the hip joint and may turn out slightly (10° - 15° is acceptable). In general, the foot forms a 90 degree angle with the leg and the arches are neither raised nor flat.²⁰

One must be cautious of the phrases “feet shoulder-width apart” and “feet hip-distance apart.” People often assume that the term hip-distance apart refers to the outside of the hips when it should refer to the actual hip joint, where the femur meets the pelvis. Placing the feet beneath the hip joint requires a much narrower stance than placing the feet beneath the outside of the hips. Similarly, many people mistake the “tailor’s” shoulder with the anatomical shoulder. A tailor’s shoulder is the measurement taken at the outside of the shoulder and is used when sizing suit jackets. It lies on the outside of the deltoid muscles. The anatomical shoulder is the joint where the humerus meets the clavicle. This is found underneath the deltoid muscle. People who use the tailor’s

¹⁸ Ibid., 257.

¹⁹ For an in-depth discussion of the foot and ankle, see Calais-Germain, Chapter 7.

²⁰ Kendall, 63.

shoulder width as a reference tend to have too wide of a stance. This stance causes the muscles of the pelvis and lower torso to come out of balance and may result in excessive tension.

Exercises and Images

Often, one can resolve misalignments of the feet and legs in a student simply by pointing them out. As with all misalignments, creating new postural habits is a long-term process, so teachers should give frequent reminders. The following cues and images may be helpful.

Images for the Feet

- Stand with feet underneath the hip joint.
- The heel, the pad of the big toe, and the pad of the little toe form a tripod. Rock in a circle until weight rests equally on all three points.²¹
- Feel the entire foot on the floor.
- Allow the toes to relax: no “pterodactyl toes.”²²

Images for the Knees

- Bend, bend, bend: feel a gentle bend at the ankle, at the knee, and at the hip.
- Bend the knees almost into a squat. Notice the crease in the hips. Stand and maintain a feeling of softness across the front of the hips and behind the knee.
- Allow the back of the knee to be soft.

²¹ Adam Noble, interview by Author, Bloomington, IN July 30, 2011.

²² Ibid.

Pelvis and Lower Back

The pelvis, due to its direct connection to the lumbar spine and indirect connection to the thoracic spine and ribcage, can have a profound effect on the functionality of the torso. If the pelvis tips too far forward (anterior tilt) it will result in an over-emphasis of the lumbar curvature (lordosis) and possibly an over-emphasis of the thoracic curvature (kyphosis). In this situation, the overarched lower back restricts the descent of the diaphragm and impairs one's ability to balance the muscles of inhalation and exhalation to control air pressure. On the other hand, a pelvis that tips too far back (posterior tilt) removes the natural curve of the lumbar spine (flat-back). The curves found in a neutral spine help the skeleton to support the weight of the body; when they are altered or removed, more energy is required to maintain an upright position. The deep postural muscles must enlist the help of the larger superficial muscles to support the body, leaving those muscles fatigued and overworked. Additionally, a sunken chest often accompanies a flat-back posture. This will reduce the ribs' ability to expand laterally during inhalation, thus limiting a singer's control over both inhalation and the subsequent exhalation.

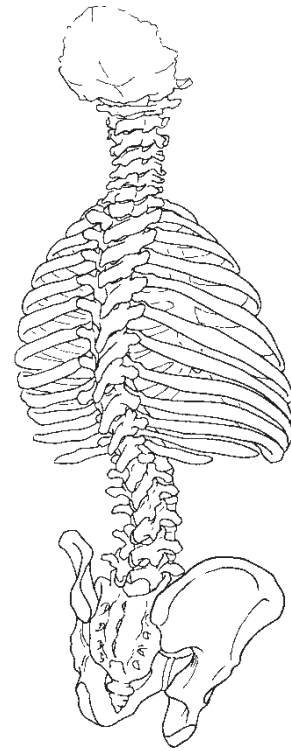


Figure 2-7: Spine and Pelvis²³

²³ Calais-Germain, 35.

Anatomy of the Pelvis

The main function of the pelvis is to transfer the weight of the upper body to the lower body. Conversely, the pelvis absorbs impact from the lower limbs in activities such as walking, running or jumping. It is composed of four bones that fit together to form a bowl-shaped structure. The two **ilium** form the uppermost portion of the pelvis. They are rounded at the top and can easily be felt along the sides of the body.²⁵ A large boney prominence on the front of each

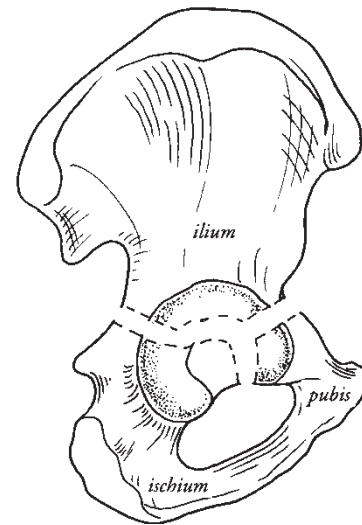


Figure 2-8: Bones of the Pelvis²⁴

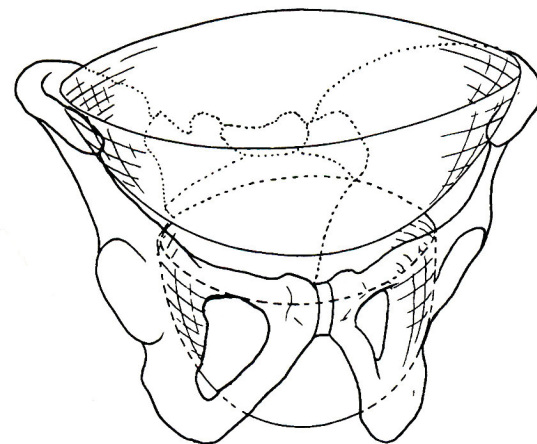


Figure 2-9: Pelvis as a Bowl²⁷

ilium is called the **Anterior Superior Iliac Spine (ASIS)**. This boney prominence is often referred to as the hip bone and can easily be felt on both sides of the hip about two inches down from and four inches to the side of the navel.²⁶ The ASIS is particularly important in postural analysis.

At the front of the pelvic bowl is the **pubis** or **pubic bone**. The pubic bone

²⁴ Ibid., 44.

²⁵ Ibid.

²⁶ Ibid., 45.

²⁷ Ibid.

connects the two halves of the pelvis in a rather immobile joint; during activities such as childbirth, this joint allows some gliding and twisting.²⁸ The bottom portion of the pelvis is the **ischium**, and is more commonly called the sitz bones.²⁹

The spine connects to the back of the pelvis via the **sacrum (Figure 2-1)**. The five fused vertebrae of the sacrum form the foundation of the spine. The joint where the sacrum and the pelvis meet is called the **Sacroiliac (SI) Joint**.³¹ Normally, the SI joint is rather inflexible; however, for some people the SI joint is abnormally flexible. These individuals may experience discomfort or even stabbing pain beneath the lumbar spine as the sacrum and ilium rub against each other. This is one cause of lower back pain. Learning to engage the muscles of the pelvis can be extremely beneficial in reducing or eliminating this kind of pain.

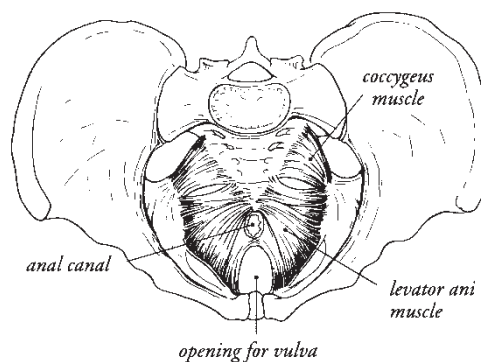


Figure 2-10: Muscles of the Pelvic Floor³⁰

A multitude of muscles attach to the pelvis and work synergistically to stabilize its position relative to the rest of the body. The deepest are the muscles of the **pelvic floor**. These muscles create a hammock at the bottom of the pelvis and help to support the pelvic organs (e.g. bladder and reproductive organs) and are involved with continence.³² Posteriorly, the lower fibers of the **multifidi**

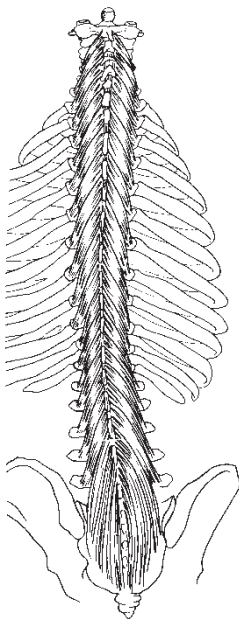
²⁸ Ibid., 47.

²⁹ Ibid., 45.

³⁰ Ibid., 98.

³¹ Ibid., 52.

³² Ibid., 98.



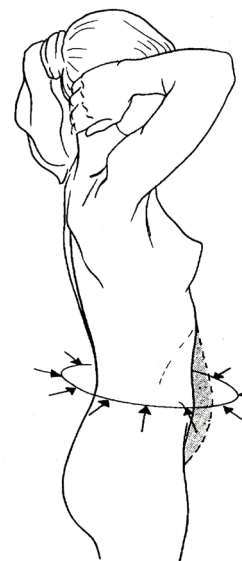
**Figure 2-12:
Multifidi³⁵**

(one of the deep spinal muscles) attach from the vertebrae of the spine to the back of the pelvis. Contraction of these lower fibers assists in tilting the pelvis forward.³³

The last set of muscles that affect the pelvis's movement is the four abdominal muscles. The innermost abdominal muscle, the **transversus**, wraps all the way around the abdomen much like a girdle. It attaches to the pelvis on the bottom, the ribs at the top, the lumbar spine at the back, and to the midline of the abdomen in the front. It is

the only abdominal muscle that attaches directly to the spine and is, therefore, essential to proper alignment. Contraction of the transversus squeezes inward on the abdomen; some people refer to it as the corset muscle because its action squeezes and lengthens the lower torso much like a corset or girdle.³⁶

The **internal and external oblique abdominus** run diagonally from the pelvis to the ribs and are partially responsible for side-bending and rotation. They are also



**Figure 2-11:
Action of the
Transversus³⁴**

³³ Ibid., 74.

³⁴ Ibid., 94.

³⁵ Ibid., 74.

³⁶ Ibid., 94.

essential for stabilizing the relationship between the pelvis and the ribs during strenuous activities.³⁷

The last abdominal muscle is the **rectus abdominus**. This muscle runs from the front of the pelvis up toward the sternum and causes the body to flex forward.³⁸

Thanks to all these muscles, the pelvis is supported in all directions: the pelvic floor at the bottom, the multifidi in the back, the obliques on the sides, the rectus in the front, and the transversus all around. Efficient alignment of the pelvis can only be achieved through properly balancing these muscles.

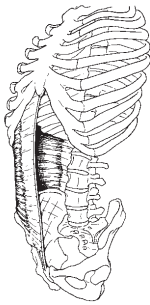


Figure 2-13: Transversus³⁹



Figure 2-14: External Oblique Abdominus⁴⁰



Figure 2-15: Internal Oblique Abdominus⁴¹

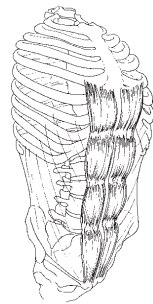


Figure 2-16: Rectus Abdominus⁴²

³⁷ Ibid., 95-96.

³⁸ Ibid., 97.

³⁹ Ibid.

⁴⁰ Ibid., 96.

Anatomical Neutral

An anatomically neutral pelvis will allow the lumbar spine to maintain its slight anterior curve and will be positioned in such a way as to most efficiently transfer the weight of the torso to the legs. In a neutral pelvis, the anterior superior iliac spine (ASIS) and the pubis will be in one vertical plane.⁴⁴ Though inappropriate for a teacher to palpate (or feel) this area, a student can be led to determine his/her own pelvic neutrality with these simple steps. It is often easiest to begin lying supine (face up) and then transfer the exercise to a standing position:

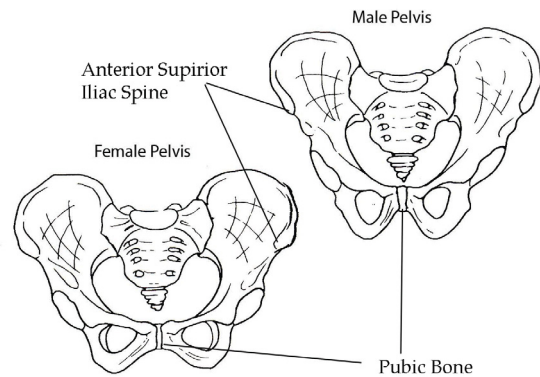


Figure 2-17: Pelvic Anatomy for Postural Analysis⁴³

1. Lie supine with knees bent, feet on the floor.
2. Place the palms of the hands on the large hip bones found on the front sides of the body (ASIS).
3. Place the fingertips on the pubic bone at the base of the pelvis.
4. Rock the pelvis back and forth until the hands form a horizontal line parallel with the floor.⁴⁵

⁴¹ Ibid., 95.

⁴² Ibid., 97.

⁴³ Ibid., 48.

⁴⁴ Kendall, 62.

⁴⁵ Much of the information regarding skeletal neutrality comes from the author's certification courses in Pilates by STOTT Pilates. More information on STOTT Pilates may be found at stottpilates.com.

When the student stands, the angle of the hands will indicate whether the pelvis is neutral, tilted forward, or tilted backward.

It is also important to ensure that the pelvis is level horizontally. By comparing the heights of the iliac crests on either side of the body, one can determine if the pelvis is neutral or is elevated on one side.

Beyond its relative position to the body's midline, it is very difficult to determine the position of a student's pelvis just by looking. The pelvis of a student with developed gluteus muscles may appear to be tilted anteriorly when in fact the pelvis is neutral. Such a person might be told to "tuck his/her tail bone." Typical responses from the student

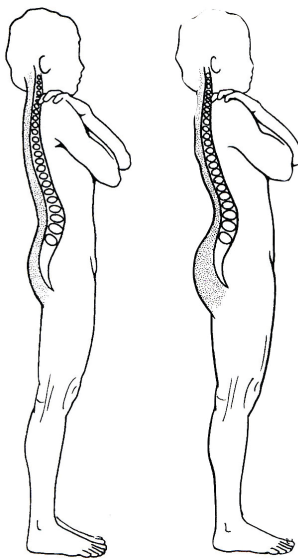


Figure 2-18: Effect of the Gluteus Muscles on the Appearance of the Pelvis⁴⁶

might include over-contraction of the abdominal muscles or the gluteus muscles. Over-contraction of the abdominal muscles can leave the abdomen stiff, which limits the downward descent of the diaphragm, reducing one's ability to take a complete breath. Over-contraction of the gluteus muscles creates undesirable tension in the lower back, which can also retard the full descent of the diaphragm. Both responses are an undesirable result of what was a well-intentioned cue.

⁴⁶ Calais-Germain 35.

Exercises and Images

The following exercises are aimed at strengthening the supporting muscles that govern pelvic placement while engendering a sense of flexibility and freedom in the hips.

Pelvic Freedom and Strength

- Pelvic Floor Exercise: Strengthens the deep muscles of the pelvis and the transverse abdominus. Helps develop kinesthetic awareness.
 1. Sit on the front edge of a chair.
 2. The three inferior bones of the pelvis (pubis in the front, the sitz bones on the sides, and the tailbone in the back) form a diamond. Imagine that an elevator shaft extends from this triangle straight up to the navel.
 3. Imagine that there are three floors for this elevator: floor one is on the ground, floor two is between the ground and the hipbone, and floor three is at the hipbones.
 4. Exhale- lift the elevator to floor 2. This will be a very slight contraction. Inhale while maintaining the contraction. Exhale and release the contraction.
 5. Exhale- lift the elevator to floor 3.
 6. Inhale while maintaining the contraction. At this point, one may feel a tightening sensation around the abdomen, almost like a girdle. This is the action of the transverse abdominus, which contracts the abdomen in all directions.
 7. Exhale and release the contraction.
 8. Practice maintaining the contraction at the third floor for a few seconds. Gradually increase the duration you are able to maintain this contraction. The deep pelvic muscles that are strengthened in this exercise are essential to maintaining proper pelvic placement.
 9. At first it may be difficult to feel the contraction of these muscles. The muscles of the pelvic floor do not have many nerve endings and are somewhat difficult to feel. Continue to practice the exercise, concentrating on the imagery and the girdle-like feeling of the transversus. Over time, this exercise will develop one's kinesthetic awareness enough to notice the subtle movements of these muscles.

- Pelvic Tilts- Promotes freedom of the pelvis. Helps identify the pelvic range of motion. Increases flexibility of the lumbar spine.
 1. Lie on the floor with knees bent, feet flat on the floor, hands on the hipbones.
 2. Gently rock pelvis backward so that the lower back presses gently into the floor.
 3. Rock the pelvis forward so that the lower back arches slightly away from the floor.
 4. Continue the rocking motion moving from backward tilt to forward tilt. Move as slowly as needed to achieve a smooth, jerk-free motion.
 5. Repeat 5-7 times.

- Pelvic Rolls- Promotes freedom of the pelvis. Increases flexibility of the lumbar spine. Strengthens abdominal muscles, gluteus muscles, and hamstrings.
 1. Lie on the floor, knees bent; feet flat on the floor, slightly wider than hips' distance apart.
 2. Exhale- contract the abdominal muscles so that the pelvis tilts backward and the lower back presses gently into the floor. It may help to think of gently pulling the hip bones toward your ribs.
 3. Press into the legs and lift the pelvis off the floor. Imagine that as the hips rise, the spine peels off the floor one vertebra at a time.
 4. Continue to lift the pelvis until the knees, pelvis, and shoulders are in one line.
 5. Inhale- maintain this lifted position.
 6. Exhale- Gently lower the pelvis back to the floor, articulating through the spine one vertebra at a time.
 7. Repeat 3-4 times.
 8. Focus on a smooth motion that allows the spine to peel gently off the floor and then gently lie back down as if laying down a pearl necklace one pearl at a time.

Forward (Anterior) Tilt/Lordosis

- Pelvic Tilts- see above.

- Pelvic Rolls- see above.

- Cat Stretch- Increases flexibility of the lumbar and thoracic spine. Strengthens and coordinates abdominal and gluteal muscles.
 1. Begin on all fours, hands directly under the shoulders and knees directly under the hips.
 2. Exhale- allow the tailbone to drop gently (like a dog sticking its tail between its legs). This will cause the lower back to round slightly. Allow the motion to continue through the entire spine, rolling vertebra by vertebra and eventually causing the crown of the head to drop toward the ground.
 3. Inhale- maintain this flexed position.
 4. Exhale- allow the tailbone to float upward. The lower back will come into a slight bow. Allow this motion to continue through the entire spine, rolling vertebra by vertebra until the crown of the head is reaching forward and up.
 5. Inhale- return to the starting position.
 6. During the exercise, focus on: reaching through the crown of the head to keep the spine long, contracting the abdominal muscles slightly to protect the lower spine, and allowing both the rounding and bowing of the spine to be a gentle stretch.

- Rolling the Spine
 1. Begin standing. Exhale- allow the head to succumb to gravity and fall forward.
 2. Allow the rest of the body to follow suit: bend the knees, and roll down the spine into a forward bend. Again, imagine that the spine is moving one vertebra at a time. Pay particular attention that the lower back rolls gently and does not move as one flat unit.
 3. Hang in the forward bend for a few seconds, keeping the knees bent to protect your lower back. Breathe easily into the lower back.
 4. Exhale- press into the feet and stand back up by rolling up the spine. Try to stack the spine one vertebra at a time. Imagine that there is space between each vertebra as it stacks. The neck and head will be the last thing to stack.

- Postural Cues and Images
 1. Floating Pubic Bone- Produces the same effect as “tucking the tailbone,” but relies more on the abdominal muscles and does not induce overactivity of the gluteals. In a standing position, imagine that the pubic bone is gently and slightly rising.

2. Imagine a line of energy runs from the pubic bone up the front of the body. It catches your sternum and gently lifts the ribcage. It extends through the back of the head and lengthens the entire spine.
3. Currents of the Pelvis- Provides a tactile cue for pelvic placement:⁴⁷
 - a. Gently brush up the front of the hips toward the waist with the fingertips, encouraging the hipbones to float upward.
 - b. Gently brush up the front, over the top and sides, and finally down the back of the hip bones.

Backward (Posterior) Tilt/Flat Back

- Pelvic Tilts- see above
- Cat Stretch- see above
- Multifidi contraction- Strengthens and increases awareness of the multifidi, one of several deep postural muscles that run from the spine to the pelvis posteriorly.
 1. Lie prone (face down) with feet shoulder-width apart. Rest the forehead on the floor or on a folded towel. It is important that the head remain in a neutral position and not turn to the side.
 2. Without using the glutes, allow the pelvis to rock slightly forward so that the tailbone moves toward the head. Hold briefly and release. This action contracts the multifidi.
 3. Repeat step 2 and only imagine that the pelvis will rock forward. The thought of the tilting one's pelvis should be enough to contract these muscles. Be sure to use the muscles of the back, not those of the hips or legs.
- Postural Cues and Images
 1. Bend the knees almost into a squat. Notice the crease in the hips. Stand and maintain a feeling of softness across the front of the hips.

⁴⁷ Melissa Noble, interview by author, Bloomington, IN December 16, 2010.

Shoulder Girdle

The shoulders are a common source of tension and pain. This pain often originates from prolonged muscular imbalances in the shoulder girdle. If the muscles of the shoulder girdle are consistently contracted, elevating the shoulders and curling them forward, they will become fatigued and form painful knots. Similarly, if the shoulders are forcibly depressed, excessively pulling the shoulders down and back, the muscles of the shoulder girdle are overly stretched which also results in muscle tension. Because of the larynx's proximity to the shoulder girdle, tension of the shoulder muscles will often create tension within the larynx. Additionally, the shoulder blades attach to the sternum via the clavicles. If the shoulder blades are misaligned there is a good chance the sternum will not be able to find an efficiently high posture, which can affect one's ability to breathe. Thus, the position of the shoulder blades is essential for a free and efficient singing posture.

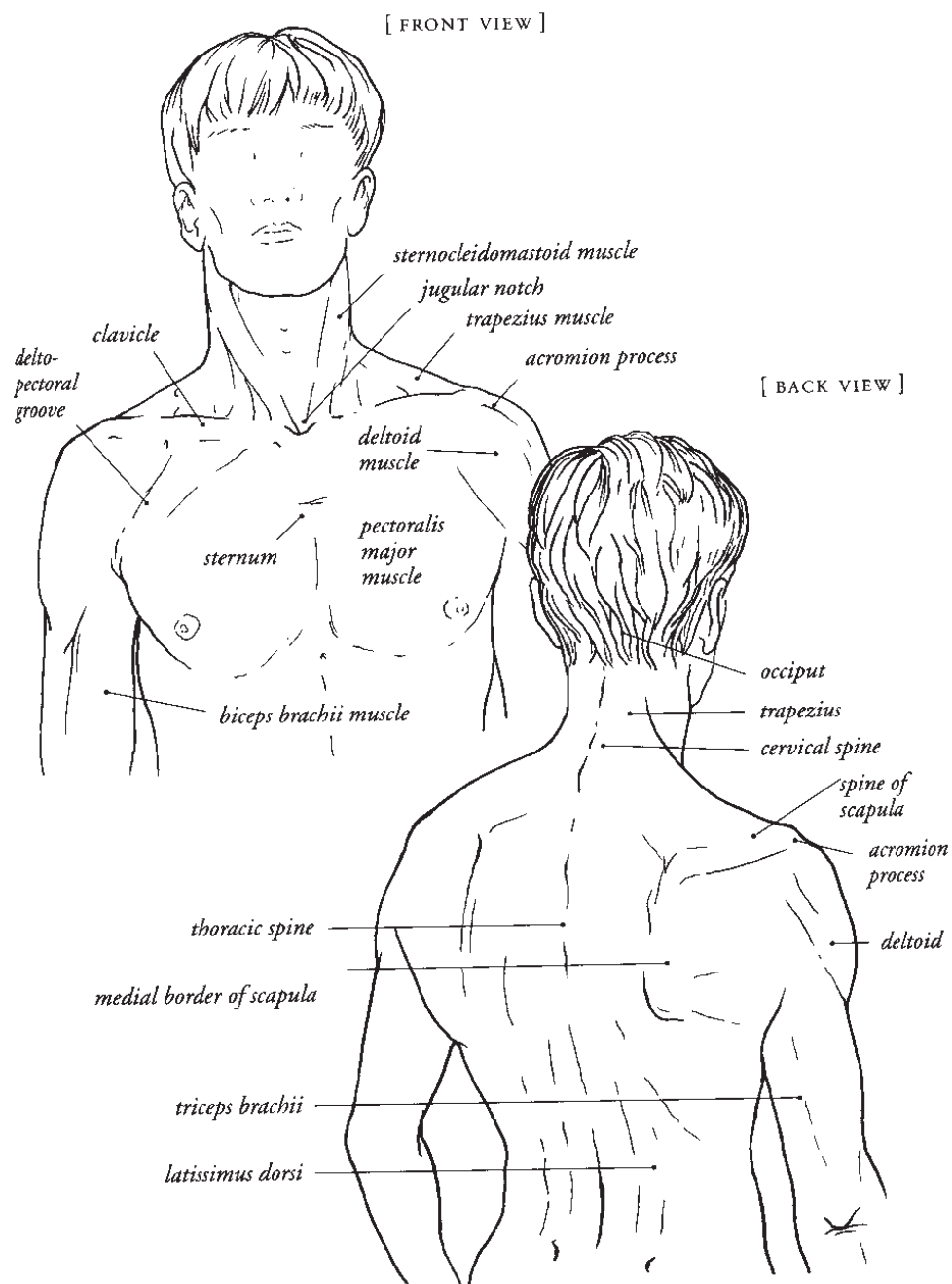


Figure 2-19: Landmarks of the Upper Torso⁴⁸

⁴⁸ Calais-Germain, 103.

Anatomy of the Shoulder Girdle

The shoulder consists of three bones and several muscles that support and stabilize movements of the arms in relationship to the torso. The anterior portion of the shoulder girdle is composed

of the sternum in the middle and the two clavicles on either side. The **sternum** is a flat bone onto

which the upper ten ribs attach.⁵⁰ Because of its rather inflexible attachment to the ribcage, placement of the sternum has a direct impact on the position of the ribcage and

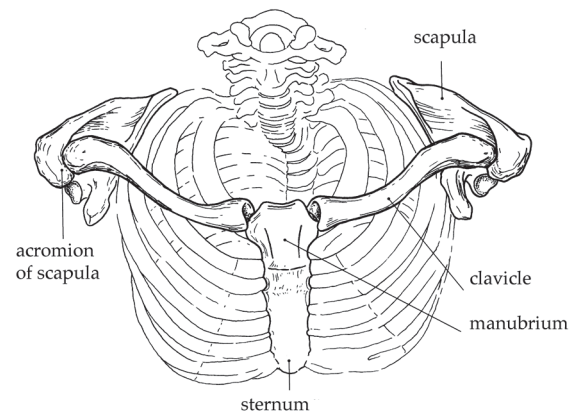


Figure 2-20: The Shoulder Girdle⁴⁹

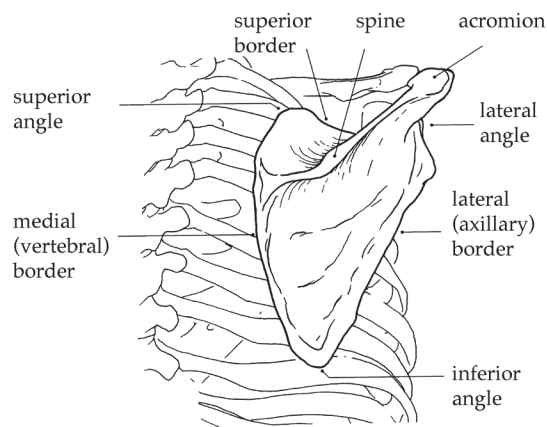


Figure 2-21: The Scapula⁵²

vice-versa. The **clavicles (collar bones)** attach to the sternum at the sternoclavicular joint, a joint whose saddle shape allows the clavicles a rather large range of motion.⁵¹

The scapulae form the posterior portion of the shoulder girdle. The

scapulae (shoulder blades) are flat and

triangular with three borders (superior, medial, and lateral) and three angles (superior, inferior, and lateral). At the top of the scapula is a triangular ridge called the scapular

⁴⁹ Ibid., 110.

⁵⁰ Ibid., 60.

⁵¹ Ibid., 150.

⁵² Ibid., 112.

spine. The root of this spine originates on the scapula's medial border.⁵³ The clavicle articulates with the scapulae on the lateral edge of the scapular spine at the acromion process.⁵⁴ Besides this joint, only the muscles of the upper back and shoulder girdle hold the scapulae in place in relationship to the ribcage and vertebral column.

One of the largest and frequently problematic muscles of the upper back and shoulder girdle is the trapezius. The **trapezius** is a large, diamond-shaped muscle that originates on the occiput (the posterior/inferior part of the skull) and on all of the cervical and thoracic vertebrae. It inserts on the lateral third of the clavicle and on the scapular spine.⁵⁵ Because of its numerous origins, the trapezius is able to move the scapulae in several different ways: the upper fibers elevate and assist with upward rotation of the scapulae, the middle fibers assist with adduction of the scapulae, and the lower fibers depress and assist with upward rotation of the scapulae.⁵⁶ Chronic contraction of the upper fibers of the trapezius muscles is common among individuals whose poor postural concept results in an elevated shoulder girdle. This is especially common with individuals who sit at a desk or computer for long periods of time.⁵⁷ This can cause tightness in the shoulders, pain in the shoulders and neck, and possibly headaches.

⁵³ Ibid.

⁵⁴ Ibid., 113.

⁵⁵ Calais- Germain, 124.

⁵⁶ Ibid.

⁵⁷ Ibid.

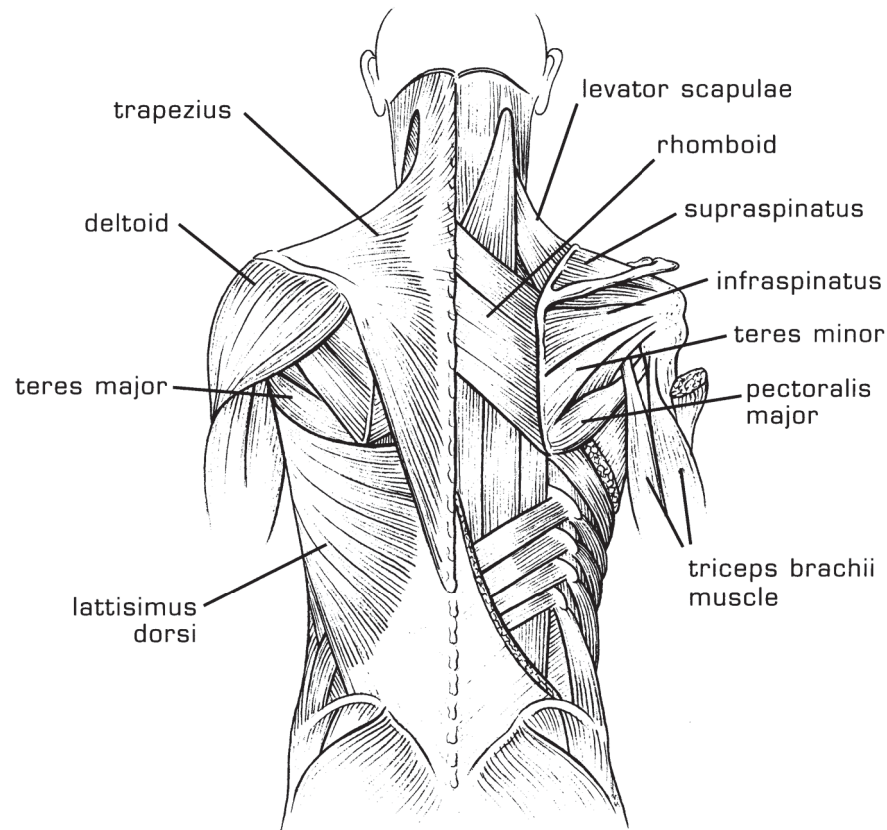


Figure 2-22: Muscles of the Back⁵⁸

Another muscle involved in elevating the scapulae is the **levator scapulae**. This muscle originates on the first four cervical vertebrae and inserts on the superior angle of the scapula. When the head is stationary, contraction elevates and downwardly rotates the scapula.⁵⁹ When the scapula is stationary, bilateral contraction extends the cervical spine and unilateral contraction aids in side-bending and rotation of the head.⁶⁰ As with

⁵⁸ Eric Franklin, *Relax Your Neck, Liberate Your Shoulders* (Hightstown, NJ: Princeton Book Company, 2002), 41.

⁵⁹ *Ibid.*, 123.

⁶⁰ *Ibid.*, 81.

the upper trapezius, this muscle is often over-worked in individuals who sit at desks or other such environments for long periods of time.

The **serratus anterior** is a thin muscle that covers the lateral ribcage. It originates on the upper ten ribs and inserts on the medial border of the scapula. Contraction of this muscle abducts the scapula.⁶¹ The **rhomboids** originate on the seventh cervical vertebra and on the first four thoracic vertebrae. They insert on the medial border of the scapula. Contraction of the rhomboids adducts the scapula and assists with downward rotation.⁶² When the serratus anterior and the rhomboids contract synergistically, they stabilize the scapula on the ribcage. This action provides a stable base for movements of the arms, especially pushing motions (such as a push-up).⁶³

The group of four muscles called the **rotator cuff** encapsulates the shoulder joint and ensures the humerus's stability within the joint, as well as assists with its mobility. Because of the shoulder's need for a wide range of motion, the bony structures and ligaments that surround the shoulder joint are relatively weak stabilizing structures. Though this allows for great flexibility, it causes vulnerability within the joint. The rotator cuff muscles ensure stability throughout the shoulder's range of motion.⁶⁴

Superficial to the rotator cuff are the three fibers of the **deltoid**. This round muscle gives the shoulder its characteristic shape. The three fibers (posterior, lateral, and anterior) originate on the spine of the scapula, the acromion, and the clavicle. Together,

⁶¹ Ibid., 120.

⁶² Ibid., 123.

⁶³ Ibid., 121.

⁶⁴ Ibid., 128.

they insert on the humerus. They aid in flexion, medial rotation, abduction, and extension of the arm.

The **pectoralis major** is one of the more prominent muscles of the chest. This large muscle originates on the clavicle, the sternum, and the first six ribs, and then fans laterally across the chest to insert into the humerus. When the ribcage is fixed, contraction of this muscle adducts and medially rotates the arm (the action of hugging). However, when the arm is fixed this muscle can participate in inspiration.⁶⁵

One of the largest muscles of the back is the **latissimus dorsi**. Literally meaning “widest back muscle,” it fans across most of the lower back toward the arm. It originates from the sacral and iliac crests and the seventh through twelfth thoracic vertebrae, wraps around the medial side of the humerus, and inserts onto the front of the humerus. It aids in extension, adduction, and medial rotation of the arm.⁶⁶

⁶⁵ Ibid., 130.

⁶⁶ Ibid., 131.

Anatomical Neutral

Determining the scapulae's relationship to ideal neutral is relatively simple. First, the scapulae should lie flat against the upper back.⁶⁸ This can be felt most easily when lying on the ground. "Winging," or the protrusion of the medial edge of the scapulae, is a result of weakness in one or more of the back muscles and is considered a misalignment.⁶⁹ In Figure 2-23, the protruding scapulae appear as two bumps on the upper portion of the back just beneath the level of the armpits. A student with winging severe enough to cause excessive discomfort should be referred to a physical therapist.

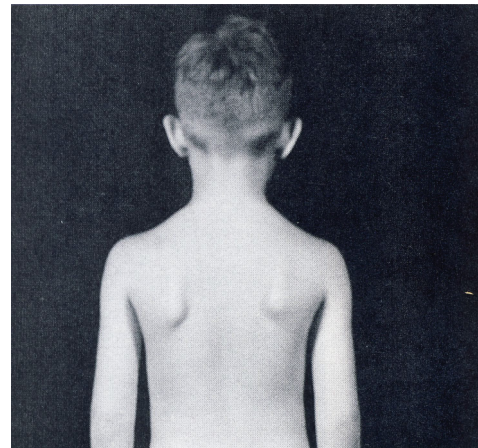


Figure 2-23: Winging in a Child⁶⁷

Second, the root of the spine of the scapulae (medial edge of the spine of the scapula) should be in line with the third thoracic vertebra (T3).⁷⁰ The large protruding vertebra at the base of the neck is the last vertebra of the cervical spine (C7). The third thoracic vertebra is approximately 1.5 – 2 inches beneath C7. The following technique will assist in finding T3 and comparing it to the upper edge of the scapulae:

1. Place a thumb on the protruding vertebra (C7) at the base of the neck. It can most easily be felt if the student allows his/her head to fall forward gently. Ask the student to gently lift his/her head back to neutral once C7 has been found.
2. The third thoracic vertebra (T3) will be approximately 1.5 – 2 inches beneath C7 on the spine. On people with a lower body fat percentage, it will feel like a small mound with two divots on either side, above and below.
3. Mark T3 with a finger from the other hand.

⁶⁷ Kendall, 29.

⁶⁸ Ibid., 61.

⁶⁹ Ibid., 79.

⁷⁰ Ellen Roth, cited in Melissa Noble interview.

4. Place a hand on top of the shoulder, the thumb resting on the scapulae. The thumb will naturally find the roof of the spine of the scapulae.
5. Compare the horizontal relationship between T3 and the root of the spine of each scapula. If the root of the spine of the scapula is higher than T3, the shoulder is elevated. If the root of the spine of the scapula is lower than T3, the shoulder is depressed.⁷¹

Exercises and Images

Knowing the scapulae's position relative to anatomical neutral, a teacher can determine which postural cues and exercises will be most beneficial to the student. The following exercises and images will be helpful in bringing a student toward correct scapular alignment.

Stabilizing the Scapulae

- **Scapular Awareness-** Develops kinesthetic awareness of the shoulder girdle.
 1. Lie supine (face up) with knees bent and feet flat on the floor. Hands should be at the sides with palms facing downward.
 2. Release the tension in the shoulders by imagining them sinking into the floor. It can be helpful to imagine lying in warm sand that gradually gives way to the weight of the shoulders.
 3. Feel the connection of the shoulder blades to the floor. The entirety of the flat shoulder blade should rest on the floor.
 4. Do not feel frustrated if this connection is difficult to feel. Developing the minute kinesthetic awareness needed for this exercise takes time and patience. Keep trying and the awareness will come. The other exercises will also help develop kinesthetic awareness.
- **Arm Circles-** Develops kinesthetic awareness of the shoulder girdle. Coordinates and strengthens muscles of the shoulder girdle.
 1. Lie supine (face up) with knees bent and feet flat on the floor. Hands should be at the sides with palms facing downward.
 2. Maintain the shoulder blades' connection with the floor. The scapulae will rotate, but should not come up off the floor during the exercise.

⁷¹ Ibid.

3. Inhale- raise the arms up toward the ceiling and then lower them overhead without losing the connection of the shoulder blades to the floor.
 4. Exhale- sweep the arms to the sides and return them to the starting position. Again, be sure to keep the connection between the shoulder blades and the floor.
 5. Repeat 3-5 times. You may also reverse the direction of the arms, sweeping them to the sides and above the head first, and then raising them toward the ceiling before returning to the starting position.
- **Scapular Elevation and Depression-** Develops kinesthetic awareness of the shoulder girdle. Releases tension in the shoulder muscles.
 1. Lie supine (face up) with knees bent and feet flat on the floor. Hands should be at the sides with palms facing downward.
 2. Maintain the shoulder blades' connection with the floor. The scapulae will slide along the floor, but shoulders should not come up off the floor during the exercise.
 3. Inhale- gently slide the shoulder blades toward the ears, maintaining their connection with the floor. It should feel as if the shoulder is moving toward the back of the ear rather than up toward the nose.
 4. Exhale- return the shoulders to neutral.
 5. Inhale- gently slide the shoulder blades down the back, away from the ears. Maintain their connection with the floor.
 6. Exhale- return to neutral.
 7. Repeat 3-5 times. The movements should be gentle. The goal is stabilization and awareness, not range of motion.
 - **Scapular Protraction and Retraction-** Develops kinesthetic awareness of the shoulder girdle. Releases tension in the shoulder muscles.
 1. Lie supine with knees bent and feet flat on the floor. Hands should be at the sides with palms facing downward.
 2. Inhale- raise the arms so that the hands are directly above the shoulders.
 3. Exhale- feel the weight of the arms sink into the shoulder socket.
 4. Inhale- gently reach toward the ceiling so that the shoulder blades spread apart (protraction).
 5. Exhale- allow the shoulder blades to come back to neutral.
 6. Inhale- gently pull the shoulder blades together (retraction).
 7. Exhale- allow the shoulder blades to return to neutral.
 8. Repeat 3-5 times. The movements should be gentle. The goal is stabilization and awareness, not range of motion.

Exercises and Cues for Elevated Scapulae

- Scapular Elevation and Depression- see above.

- Shoulder Shrugs- release of tension in the upper trapezius and surrounding muscles.
 1. Begin standing.
 2. Inhale- raise the shoulders toward the ears. Be sure to keep the front of the chest broad so that the shoulders do not cave in.
 3. Exhale- allow the shoulders to return to neutral.
 4. Repeat 3-5 times.
- Shoulder Circles- releases tension in the upper trapezius and surrounding muscles.
 1. Begin standing.
 2. While breathing easily, roll the shoulders gently up, forward, down, and back. Repeat 5-7 times
 3. Continue to breathe easily. Reverse the direction of the circles, rolling the shoulders up, back, down, and forward. Repeat 5-7 times.
- Postural cues and images
 1. Floating collarbones, falling shoulder blades.⁷²
 - a. Imagine that the collarbones are attached to balloons and are floating upward. The arms hang as the collarbones float.
 - b. As the collarbones float upward, imagine that the shoulder blades fall gently.
 2. Currents of the trapezius.⁷³
 - a. Imagine a flow downward from the back of the head and outward toward the shoulder.
 - b. Imagine a flow upward from the middle of the spine toward the spine of the scapulae.
 3. Trace the currents of the trapezius.⁷⁵
 - a. Have a partner trace the currents of the trapezius- refer to above.⁷⁶

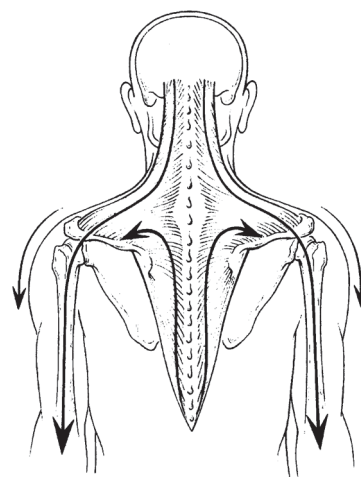


Figure 2-24: Currents of the Trapezius⁷⁴

⁷² Franklin, 29.

⁷³ Ibid.

⁷⁴ Ibid., 47.

⁷⁵ Ibid.

- b. Using the back of the hands, lightly brush up the spine toward the head and then over the shoulders and down the arm.
 - c. Repeat 3-5 times.
- 4. Imagine small weights attached to the bottom of the scapulae.⁷⁷

Exercises and Cues for Depressed Scapulae

- Scapular Elevation and Depression- see above.
- Shoulder Shrugs- see above. Emphasize a gentle release downward.
- Shoulder Circles- see above. Emphasize a gentle release downward.
- Trapezius Arm Lift⁷⁸
 - 1. Lie prone (face down) with the forehead resting on a folded towel.
 - 2. Place the hands behind the head, lightly clasping them.
 - 3. In this position, feel the placement of the scapulae on the back.
 - 4. Inhale- lift the elbows off the floor, moving the scapulae as little as possible.
 - 5. Exhale- release the arms back down.
 - 6. Repeat 5-7 times.
 - 7. Increase the repetitions as strength builds, or move on to Trapezius Arm Extension.
- Trapezius Arm Extension⁷⁹
 - 1. Lie prone (face down) with the forehead resting on a folded towel.
 - 2. Place the hands behind the head, lightly clasping them.
 - 3. In this position, feel the placement of the scapulae on the back.
 - 4. While inhaling, lift the elbows off the floor, moving the scapulae as little as possible.
 - 5. Exhale, hold this position.
 - 6. Inhale, reach the arms overhead (parallel to the floor), maintaining the position of the scapulae as much as possible.
 - 7. Exhale, return the hands to the back of the head.

⁷⁶ Several of the exercises advocated in this document suggest the use of a partner. Direct kinesthetic contact can be an extremely powerful pedagogical tool; however the author recognizes that in many instances it is inappropriate for the instructor to physically touch a student. In such cases, a teacher might consider asking the student to bring a roommate, friend, or family member to the next lesson to participate in the exercise. With young students (i.e. high school or younger) one could ask the parents or guardians to help. Such precautions will allow the student to experience the kinesthetic learning of partner exercises while maintaining a safe learning environment.

⁷⁷ Ibid.

⁷⁸ Melissa Noble, interview.

⁷⁹ Ibid.

8. Repeat 5-7 times.
 9. Increase the repetitions or add 2 or 3 lbs. weight to the hands as strength increases.
- Postural Cues and Images
 1. Currents of the Trapezius- see above.
 2. Trace the Currents of the Trapezius – see above.
 3. Multi-dimensional chest⁸⁰
 - a. Think of the chest as having six dimensions: a front, a back, two sides, a top, and a bottom. Of these six, five can be directly controlled. The chest can be broad across the front and back, and can feel wide at both sides. One can think of a gentle lift of the entire torso. The sixth dimension (the bottom) is controlled by the descent of the diaphragm. If the first five dimensions have been adequately expanded, the diaphragm has no choice but to descend for inhalation.

⁸⁰ Brian Horne, interview by author, Bloomington, IN, December 12, 2010.

Ribcage and Chest

The position of the ribcage and the action of the intercostal muscles during inhalation are one of the most common topics addressed in voice lessons. Breath is a vital part of a vocal technique and the alignment or misalignment of the ribcage can make or break one's ability to breathe efficiently. If the front of the ribcage collapses, the ribs cannot expand and the diaphragm cannot descend completely. Conversely, if the ribcage is forcibly raised beyond a comfortable, anatomically neutral position, the excess muscular tension required to maintain this posture will also limit one's ability to take a comfortable, full breath.

Anatomy of the Ribcage

The ribcage is composed of twelve pairs of **rib bones**, which attach in the back to the thoracic spine. In the front, the top ten ribs attach to the **sternum** via an elastic cartilage, which increases the ribcage's flexibility. The bottom two ribs (called the floating ribs) do not attach directly to the sternum - this allows them significantly more mobility.⁸¹ Two pairs of muscles (the external and internal intercostals) occupy the space between the ribs and help to control their movements. The **external intercostals** run downward and forward to the rib below. When they contract, they lift the ribs up and out, expanding the lungs and causing inhalation.⁸² When the external intercostal muscles release, the elastic recoil of the lungs in addition to the weight of the ribcage causes the ribs to shrink back to their resting position, resulting in exhalation. When singing, one

⁸¹ Calais-Germain, 81.

⁸² Ibid., 89.

attempts to retard this motion by continuing to engage the external intercostals during exhalation. This keeps the ribcage open and allows singers more control over the breath flow/pressure ratio. The **internal intercostals** run downward and forward to the rib below. When they contract they help to pull the ribs together, collapsing the ribcage and assisting with forced exhalation.⁸³ Singers, in general, do not to use these muscles as a means of controlling exhalation. Instead, they work to keep the ribcage open by engaging the external intercostal muscles throughout exhalation. This will be covered in more detail in CHAPTER II.

Anatomical Neutral

Proper ribcage placement is, in part, a product of good pelvic and scapular alignment. If both the pelvis and the scapulae are brought into proper alignment, chances are good that the chest will follow also. A properly placed ribcage will allow for neutral curves in both the lower and upper back. The shoulders will be properly placed on the back, and there will be a general sense of width across both the front and back of the upper torso.⁸⁴

There are two main categories of ribcage misalignments.⁸⁵ The first is kyphosis (or, more simply, slouching) (Figure 2-3). In this posture, the natural curve of the upper

⁸³ Ibid.

⁸⁴ Kendall, 61.

⁸⁵ Twists or rotation of the ribcage as well as the pelvis are also common postural misalignments; however, addressing those issues is outside the scope of this document. If a student exhibits a significant twist or rotation of either the ribcage or pelvis, he/she should be referred to a physical therapist or to a practitioner of one of the movement modalities referred to at the end of the chapter.

back is abnormally accentuated.⁸⁶ In extreme cases, this excessive curvature forms what is commonly referred to as a “dowager’s hump.” The shoulders may elevate and abduct, overworking the muscles of the upper back and neck. The front of the ribcage and sternum may sink in, collapsing the chest, and limiting one’s capacity to inhale. The head may protrude forward of midline, hyperextending the cervical spine, which overworks the muscles of the neck and introduces unwanted tension into the larynx. This posture is extremely prevalent in beginning students or anyone with a poor concept of postural alignment. Rectifying issues with the pelvis, scapulae, and head will often bring the chest and sternum into proper alignment.

The second major posture affecting the ribcage is the so-called “military” posture (Figure 2-4). Often, this posture will be advocated as an acceptable alternative to kyphosis and may be a misconstrued result of the cue “lift your sternum” or “shoulder blades down your back.” From the front, this posture may look acceptable: the thoracic spine will either be near neutral or slightly flattened, the sternum will be raised, and the student may have a sense of width across the front part of his/her chest. However, the scapulae will likely be adducted and depressed and the pelvis may tilt anteriorly, which will overarch the lower back.⁸⁷ The amount of muscular tension required to maintain this posture will reduce a student’s ability to breathe and move with freedom.

In some instances, a student’s torso may shift or twist slightly to one side. Such misalignments are the result of muscular imbalances caused by improper day-to-day use. Remedies for this type of imbalance are beyond the scope of this document. These students should be referred to a movement specialist such as those discussed on page 49.

⁸⁶ Kendall, 66.

⁸⁷ Ibid., 67.

Exercises and Images

The easiest way to rectify issues concerning the ribcage is to bring the pelvis, shoulders, and head into proper alignment. Even so, the following exercises and images may help to bring a sense of kinesthetic awareness to the ribcage and the upper torso in general.

Ribcage Stabilization and Placement

- Arm Circles- see exercise under STABILIZING THE SCAPULAE.
 1. While performing this exercise, pay close attention to the ribcage. As the arms raise over the head, keep the connection between the ribcage and the floor. In some students, the ribcage will elevate as the arms move overhead. Encourage the student to limit the range of motion or to engage the abdominal muscles so that the ribcage remains stable and connected to the floor.
 2. This same exercise can be performed in a standing position. Again, pay attention to the stabilization of the ribcage as the arms move overhead.
- Ribcage placement
 1. Begin in a standing position. While maintaining width across the front and back of the torso, raise the arms above the head. Make sure that the shoulders do not elevate excessively toward the ears.
 2. Notice the placement of the ribcage. It should be comfortably high.
 3. Keeping the ribcage in this relatively high position, allow the arms to pivot in their sockets and come to rest by the sides of the body.

Images and Postural Cues

- Six dimensions of the chest
 1. Think of the chest as having six dimensions: a front, a back, two sides, a top, and a bottom. Of these six, five can be directly controlled. The chest can be broad across the front and back, and can feel wide at both sides. One can think of a gentle lift of the entire torso. The sixth dimension (the bottom) is controlled by the descent of the diaphragm. If the first five dimensions have been adequately expanded, the diaphragm has no choice but to descend for inhalation.
- Lifting a box
 1. Think of the chest as a box (six dimensions). To open and elevate the chest, lift the entire box, not just the front, so that the box tilts backward (i.e. raising the sternum and collapsing the back).
- Circles of the ribcage
 1. Imagine that a circle of energy runs up the back along the spine, over the shoulders, down the sternum, along the ribs and then back up the spine.
 2. With the fingers, lightly brush down the sternum and ribs or have a partner trace the entire circle of energy with his/her fingers.
 3. This exercise is particularly helpful for students who have raised the sternum and ribcage abnormally high. It encourages balance between the front and back of the body.⁸⁸

⁸⁸ Melissa Noble, interview.

Head and Neck

Because of the position of the larynx within the neck, the relationship of the head and neck to the spine and torso is essential for a freely produced sound. Misalignments of the neck can result in unwanted tension in both the larynx and the articulators (particularly the tongue and jaw).

Anatomy of the Head and Neck

The neck, or **cervical spine**, is composed of the top seven vertebrae. These vertebrae are extremely flexible, which allows the neck and head a wide range of motion.⁹⁰ The spine meets the head at the **occipital joint**. Blandine Calais-Germain states, “the articulating surfaces [of the occipital joint] lie essentially on the outside of an imaginary sphere whose center is inside the skull. Thus, the occipital-atlas joint could be viewed as a ball-and-socket joint, potentially allowing movement in any direction.”⁹¹ Various muscles and ligaments, however, restrict the movement of the head so that it favors forward and backward motion over the other directions.

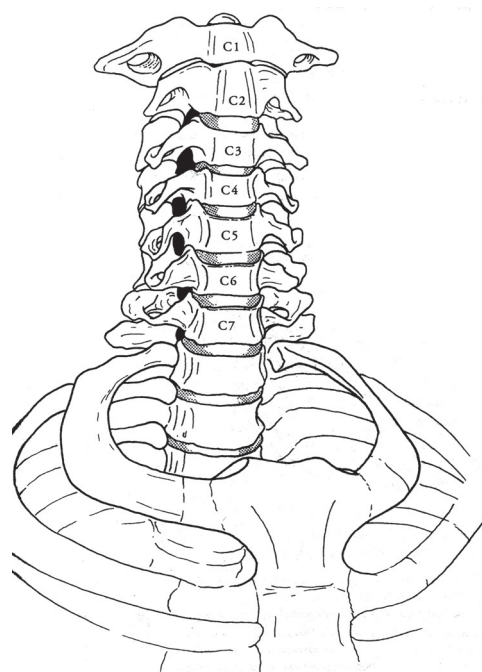


Figure 2-25: Cervical Spine⁸⁹

⁸⁹ Calais-Germain, 65.

⁹⁰ Ibid.

⁹¹ Ibid., 69.

The **deep neck muscles** have a limited ability to move the head, but are essential to maintaining its proper alignment.⁹² The cervicis and capitis branches of the **intermediate back muscles** are larger and are responsible for extension of the neck and rotation. They also assist with side-bending.⁹³ The **longus colli** and the **longus capitis** are primarily responsible for flexing and straightening the neck.⁹⁴ The **scalenes** and the **sternocleidomastoid** are the most important anterior neck muscles. They laterally rotate and extend the neck.⁹⁵

Anatomical Neutral

In ideal alignment, the head balances easily on top of the spine with minimal muscular effort. When viewed from the side, a straight line should run from just behind the ear, through the middle of the shoulder, through the hip joint, and just forward of the anklebone. When viewed from the front, the head should face straight ahead, not turning to one side or the other, nor tilting left or right. The neck will maintain its even and natural curve.⁹⁶

Faulty postures of the neck and head will generally fall into one of two categories: those that exaggerate the curve of the cervical spine and those that remove the curve of the cervical spine. In the former, the extensor muscles at the back of the neck will be overworked and the front of the neck will be stretched, shortening the back of the neck. The head will move forward of midline and the chin may elevate. This places

⁹² Ibid., 76-77.

⁹³ Ibid., 78-79.

⁹⁴ Ibid., 84-85.

⁹⁵ Ibid., 86-88.

⁹⁶ Kendall, 61.

unnecessary tension on the larynx and will often cause it to rise, a position commonly found in young baritones and tenors as they sing through the passaggio. This fault is common among people with kyphosis (sunken chest) (Figure 2-3) and is prevalent in younger, untrained singers.

In the second fault, the flexor muscles at the front of the neck will be overworked and the back of the neck will be stretched. The head may shift behind midline. The compression felt at the front of the neck will often cause the larynx to lower forcibly. This will darken the sound at the expense of laryngeal freedom and is, therefore, not advised.

Exercises and Images

In general, cues regarding the head and neck relationship should encourage a lift of the entire head, not just one portion. The following images and exercises will help students find a balanced head alignment that allows for free movement and phonation.

Head and neck exercises and images

- Bobble Head- encourages length and freedom of the head and neck (requires two people).⁹⁷
 1. A partner/teacher lightly grips the two boney points at the base of the student's skull (occipital ridge) with the thumb and middle finger of one hand and lightly grips the student's forehead with the thumb and middle finger of the other hand.
 2. The partner/teacher gently lifts the entire head very slightly, encouraging a lengthening of the entire spine.
 3. From here, the partner/teacher can move the head in small circles, shake the head yes and no, and move the head from side to side. Be

⁹⁷ Melissa Noble, interview.

careful to make these movements very small. Movements of a quarter to half an inch are sufficient.

4. When finished, the partner/teacher should gently remove his/her hands in an upward and outward motion, which will continue to encourage the spine to lengthen.
- Brush strokes- encourages length and freedom of the head and neck (requires two people).⁹⁸
 1. This exercise works best if the student is seated in a chair.
 2. The partner/teacher steps behind the student and places the backs of the fingers on the student's cheekbones.
 3. The partner/teacher lightly brushes up from the cheekbones across the temples and up the head.
 4. Repeat four or five times.
 - Head circles 1- encourages freedom in the neck and head.⁹⁹
 1. Imagine that a horizontal plate extends through the center of your head at the level of your eyes.
 2. Imagine that a marble is placed in the center of that plate.
 3. Very slowly, imagine that you could move your head to roll the marble in a circle around the plate.
 4. Can be particularly helpful to use while a student sings. It encourages the neck to be free while the tone is produced.
 - Head circles 2- encourages freedom in the neck and head.
 1. Use your nose to draw tiny circles in the air.
 2. Can be particularly helpful to use while a student sings. It encourages the neck to be free while the tone is produced.
 - Helium inside the head- encourages freedom in the neck and head and lengthening of the spine.¹⁰⁰
 1. Imagine that the head is a balloon filled with helium.
 2. The head rises away from the body.
 3. The neck and spine are the string attached to the balloon.
 4. The shoulders fall away from the rising balloon.

⁹⁸ Ibid.

⁹⁹ Ibid.

¹⁰⁰ Eric Franklin, *Dynamic Alignment Through Imagery* (Champaign, IL: Human Kinetics, 1996), 241.

- Diagonal alignment- encourages length through the entire spine.¹⁰¹
 1. Imagine that your body is connected through the following diagonal lines:
 - a. Tailbone to pubis.
 - b. Pubis to sacrum.
 - c. Sacrum to sternum.
 - d. Sternum to T7 (the vertebra in the middle of the upper back between the scapulae).
 - e. T7 to jugular notch (the hollow space at the top of your sternum).
 - f. Jugular notch to the base of the skull.
 - g. Imagine that each point along the diagonal alignment moves up and away along its diagonal line from the point beneath it.



Figure 2-26: Diagonal Alignment¹⁰²

¹⁰¹ Melissa Noble, interview.

¹⁰² Kendall, 60. Bold line added by author.

Movement Modalities

An important aspect of being a teacher is knowing the limitations of one's expertise. This is particularly relevant when discussing an individual's physical alignment. Certain structural abnormalities or muscular patterns are beyond the scope of most voice teachers' knowledge and these issues should be referred to a health specialist. Besides a physical therapist, medical doctor, or chiropractor, there are several movement modalities or methodologies that can be beneficial to students.

The Alexander Technique

The Alexander Technique (AT) is probably the most familiar of the movement modalities. F. M. Alexander was an actor who, through habitual misuse of his body, was frequently rendered hoarse and unable to speak. After several fruitless consultations with doctors and other specialists, he began a long period of self-study. Using mirrors to observe his body while he recited, Alexander began to notice certain movement tendencies and tension patterns in his body. Through his nine years of study, Alexander developed a technique to free the body of unwanted tension and improve coordination. This technique is known as the Alexander Technique.¹⁰³

The Alexander Technique is a hands-on body modality. In the course of a lesson, an Alexander teacher will observe the student's body alignment and movement patterns and then guide him/her toward a more free and efficient use of his/her body. Physical

¹⁰³ Glen Park, *A New Approach to the Alexander Technique*, (Freedom, CA: Crossing Press, 1998), 293.

and verbal cues are used to achieve these changes. Though many teachers offer group workshops, the principal form of Alexander work is one-on-one.

The Alexander Technique is extremely beneficial for singers because AT practitioners can work on students while they sing and help the student transfer the freedom he has found in a neutral posture to an active posture. This can be helpful to singers who exhibit unusual movement habits only during the act of singing.

As with many of the modalities, AT is a process and thus cannot be fully integrated in a few sporadic sessions. To gain the full benefits of AT, a student must be willing to commit personally (and also financially) to several consecutive lessons. The exact number will depend on the student and the AT practitioner.

The Feldenkrais Method

Feldenkrais is a modality similar to the Alexander Technique in that it is a movement-based approach to freeing the body. However, where the Alexander Technique consists almost entirely of one-on-one sessions with a practitioner, the bulk of Feldenkrais work can be done in a class setting. The method is taught in two parallel forms: Awareness Through Movement (ATM) and Functional Integration (FI). ATM is verbally-directed movement sequences designed primarily to be given to groups. Generally thirty to sixty minutes in length, each ATM class allows participants to engage in “precisely structured movement explorations that involve thinking, sensing, moving, and imagining.”¹⁰⁴ The goal is to help participants connect with their bodies, discover habitual muscle patterns of rigidity and explore new ways of moving.¹⁰⁵

¹⁰⁴ The Feldenkrais Educational Foundation of North America, “Awareness Through Movement Classes”, http://www.feldenkrais.com/method/awareness_through_movement_

Functional Integration is the hands-on portion of the Feldenkrais method.

Through gentle, non-invasive touching, practitioners can guide individuals toward more functional movement patterns. FI is generally performed with the student lying on a table designed for this purpose.¹⁰⁶

There are many benefits for singers who study the Feldenkrais Method. Samuel H. Nelson and Elizabeth Blades-Zeller have expanded upon these benefits in their book *Singing with Your Whole Self: The Feldenkrais Method and Voice*.¹⁰⁷ Nelson, a certified Feldenkrais practitioner, and Blades-Zeller, a voice teacher, have created numerous body awareness mini-lessons targeting specific needs such as “Taming Tongue Tension” and “Freeing the Neck to Turn Freely.” They are designed to lead a student through a five to six minute exploration of his/her body’s tension patterns and to help instruct the student in how to release unwanted tension. These lessons also help a student to develop a strong kinesthetic awareness: a skill lacking in many beginning singers. Similarly, they teach focus and concentration and can help calm an overactive or anxious mind.

Feldenkrais is exploratory in nature. Instead of giving students specific postural cues, Feldenkrais practitioners, during ATM, guide students to solving their own postural problems. The process may seem slower and more messy than direct manipulation; however, current thought on the psychology of learning indicates that procedural learning may have more “sticking power.” Even so, some students may have difficulty accepting

classes/ (accessed August 3, 2011).

¹⁰⁵ Ibid.

¹⁰⁶ The Feldenkrais Education Foundation of North America, “Functional Integration Lessons,” http://www.feldenkrais.com/method/functional_integration_lessons/ (accessed August 3, 2011).

¹⁰⁷ Samuel H. Nelson and Elizabeth Blades-Zeller, *Singing with Your Whole Self: The Feldenkrais Method and Voice* (Lanham, MD: Scarecrow Press, 2002).

the process and might feel that they are not “doing” enough. This may be exactly what such a student needs, but the teacher should be aware of these concerns and address them with the student before he/she begins work with Feldenkrais.

Somatics

Somatics is an offshoot of Feldenkrais. In the 1970s, Dr. Thomas Hanna began to understand that “our sensory-motor systems continually respond to daily stresses and traumas with specific muscular reflexes.”¹⁰⁸ If repeatedly triggered, the responses become habitual and the individual loses conscious control over that muscle’s ability to release completely; the individual no longer “remembers how to move about freely.”¹⁰⁹ This results in the stiffness, soreness, and restricted range of motion commonly associated with aging. Hanna calls this state sensory-motor amnesia (SMA). Somatics was developed as a means to treat SMA.¹¹⁰

Much like Feldenkrais, Somatics is both hands-on and exercise- based. During the hands-on portion, practitioners help patients regain control of the problem muscles or muscle groups. The patients are then assigned a series of exercises designed to assist them in increasing kinesthetic awareness, control, range of motion, and freedom of movement.¹¹¹

¹⁰⁸ Thomas Hanna, *Somatics: Reawakening the Minds Control of Movement, Flexibility, and Health*, (Jackson, TN: Da Capo Press, 1980), xii.

¹⁰⁹ Ibid., xiii.

¹¹⁰ Ibid., xiv.

¹¹¹ Eleanor Criswell Hanna, “Hanna Somatic Education,” in *The Illustrated Encyclopedia of Body-Mind Disciplines*, ed. Nancy Allison (New York: Rosen Publishing, 1999), 221.

A typical exercise module takes ten to fifteen minutes. Each module focuses on a different portion of the body, such as the back extensors, the trunk flexors, the hip joints and legs, the neck and shoulders, etc. The daily “cat stretch” is the culmination of all the modules and is designed to help maintain the level of awareness the individual achieved during the sessions.¹¹² Though most of his work focuses on the middle-aged and the elderly, Hanna’s exercises are beneficial for people of all ages. They promote flexibility and freedom and help students to develop kinesthetic awareness.

Pilates

Joseph H. Pilates developed the Pilates Method as a way to maintain his fitness while confined to a British internment camp for German nationals during World War I.¹¹³ Since that time, it has evolved into an exercise program that focuses on control, awareness, and functional strength. Through Pilates exercises, a person can learn to control and strengthen the deep postural muscles, allowing them more efficient alignment and a greater sense of ease and stability in movement.¹¹⁴

Students can study Pilates either in a class setting or privately. Most classes focus on the mat work repertoire. These exercises are performed on the floor and chiefly target the muscles of the core (pelvic floor, abdominals, and the back extensor). Private sessions allow the instructor to use various pieces of equipment to augment the mat repertoire, providing a more complete, full body strength routine. Consistent practice of

¹¹² Ibid., 98.

¹¹³ Leah Chaback, “Pilates Method of Body Conditioning,” in Allison, 260.

¹¹⁴ Ibid., 261.

Pilates can lead to increased flexibility, improved posture, and a greater sense of kinesthetic awareness.¹¹⁵

Laban Movement Analysis

Laban Movement Analysis (LMA) began in the early 1900s as a written system for Rudolf Laban to record dance. His work soon grew into a system of notating all types of movement. The belief that movement is an outward expression of inner intentions is central to LMA.¹¹⁶

Laban defines movements based on their qualities. These qualities are placed into four broad categories: body, effort, space, and shape. Body qualities explain how the movement is executed physically. Effort describes changes in the energy of the movement and addresses it in terms of weight, time and flow. Space describes how the body moves through space and addresses pathway, location, direction, etc. Shape refers to the forms the body makes and how the body moves between various forms. All movement is a complex layering of multiple qualities from each of these categories.¹¹⁷

Laban can be used to break a movement down into its component parts. The student can then determine which components are needed to create the most efficient and most expressive movement.

¹¹⁵ Ibid., 262.

¹¹⁶ Ed Groff, "Laban Movement Analysis," in Allison, 335-336.

¹¹⁷ Ibid., 336.

Skinner Releasing Technique

Skinner Releasing Technique (SRT) was developed by Joan Skinner in the early 1960s as an approach to achieve freedom in dance and movement. It uses image-guided floor work and movement studies to help the body release tension and find an efficient method of moving. The principle philosophy of SRT is that all human beings have the potential for free and graceful movement.¹¹⁸

SRT classes consist of three parts: tactile studies, image guided floor work, and movement studies. The tactile studies help students release habitual tension patterns. At the heart is the development of kinesthetic awareness. The floor work and movement studies are designed to guide the student via imagery from a place of rest and relaxation to free movement.¹¹⁹

Myofascial Release

Myofascial release is a hands-on technique that applies gentle pressure to reorganize and relieve tension in the body's fascia (connective tissue). Normal, healthy fascia is relaxed and wavy and has the ability to stretch with movement. Physical trauma can cause the fascia to become tight, restricting movement and can causing tension. Because all fascia is connected, traumatized fascia in one region can exert "drag" on fascia in other regions and has been known to cause pain, headaches, and restricted movement.¹²⁰

¹¹⁸ Skinner, Joan, "Skinner Releasing Technique," in Allison, 265-266.

¹¹⁹ Ibid., 266.

¹²⁰ Tara Welch, "Myofascial Release," in Allison, 159.

A typical myofascial release sessions lasts thirty to ninety minutes. Unlike massage, the therapist uses no oil and instead relies on contact heat and friction to stretch the fascia. The therapist uses gentle but firm pressure for 90 to 120 seconds. Myofascial release is particularly useful for people seeking long-term relief from chronic pain of immobility.¹²¹

Rolfing Structural Integration

Rolfing Structural Integration (Rolfing SI) I is a form of bodywork that reorganizes the body's fascia or connective tissue. Dr. Ida P. Rolf created this modality in the 1940s and 1950s after realizing that the body is made up of a seamless network of fascia rather than a collection of separate parts.¹²² By reorganizing the fascia, a Rolfing practitioner can encourage the body to release and realign. It can improve a person's posture, help relieve chronic pain, and restore flexibility.¹²³

Rolfing is based on three ideas. First, when the body is properly aligned, gravity works to lift the body rather than to drag it down. Second, the fascia of the body can be molded or changed. Third, releasing the fascia is key to aligning the body. This is accomplished through a series of private sessions with a Rolfing practitioner.¹²⁴

Typically, a client will commit to ten sessions. The so-called "Ten-Series" is a systematic approach to balance and optimize the body. The series is divided into three units: the first loosens and balances the surface fascia, the second examines the deep

¹²¹ Ibid.

¹²² Allan Davidson, "Rolfing," in Allison, 165-166.

¹²³ Ibid., 168.

¹²⁴ Ibid., 167.

tissues between the bottom of the pelvis and the top of the head, and the third integrates all the body's tissues in a way that encourages freedom of movement.¹²⁵ The client will usually lie on a low table and the Rolfer begins to work on the body using his/her fingers and hands. Some clients may find the amount of pressure painful.¹²⁶

Additionally, some practitioners are certified in a Rolfing Movement Integration (Rolfing MI) series. Much like Alexander and Feldenkrais, Rolfing MI helps clients identify movement patterns that promote strain or asymmetry in the body. The practitioner then guides the client toward a more economical way of moving.¹²⁷

Hellerwork

Hellerwork is an offshoot of Rolfing. Its creator, Joseph Heller, trained with Ida Rolf in 1972 and became the first president of the Rolf Institute in 1976.¹²⁸ As he continued to work as a Rolfer, he began to synthesize a new form of bodywork that focused on movement reeducation. He left the Rolf Institute in 1978 and founded Hellerwork.¹²⁹

As with Rolfing, Hellerwork uses concentrated deep tissue bodywork to reorganize and release tense fascia (connective tissue). A Hellerwork practitioner will work with his/her client through fascial reorganization, guided movement experiences, and discussions of the relationship between body sensations, emotions, and thought.

¹²⁵ Rolf Institute of Structural Integration, "The Rolfing Ten Series," <http://www.rolf.org/about/10-series> (accessed August 21, 2011).

¹²⁶ Davidson, 168.

¹²⁷ Rolf Institute of Structure Integration, "Rolf Movement Integration."

¹²⁸ Sandy Sullivan, "Hellerwork," in Allison, 222-223.

¹²⁹ Ibid., 223.

During the session, the practitioner discusses the attitudes and emotions that are associated with the areas of the body upon which the practitioner is working.¹³⁰

The benefits of Hellerwork include increased flexibility and adaptability, freedom from tension, and a greater sense of well-being. Practitioners also believe that by eliminating stress and pain, the body will also “be able to rid itself of repressed mental memories and physical and emotional traumas that function as an obstacle to good physical and mental health.”¹³¹

¹³⁰ Ibid.

¹³¹ Sullivan.

Chapter II

Breathing

The breathing mechanism is comprised of the lungs and airway, the respiratory muscles, and the skeletal support system. There are numerous ways these three systems can interact; however, only a properly balanced coordination among them will allow a singer complete breath control and manageability. Since breath functions as the actuator of sound, a properly coordinated breathing mechanism is essential to the foundation of a solid vocal technique.

Anatomy

The natural, biological function of the respiratory system is to exchange carbon dioxide from the bloodstream with oxygen from the outside air. This is the primary function of the lungs.. Because the lungs are organs and not muscles, they are incapable of moving independently. Rather, surrounding muscles contract to expand the lungs with each inhalation. As the lungs expand, the increasing volume within them creates a vacuum, which sucks in air. Air enters the body via the mouth or nose, travels through the larynx, and then into the trachea.

The trachea is a cartilaginous tube that connects the larynx to the lungs. Several incomplete rings of cartilage protect the trachea anteriorly and laterally and allow some flexibility of the trachea. Once the trachea reaches the level of the lungs, it branches off into the two bronchi, left and right of center. These

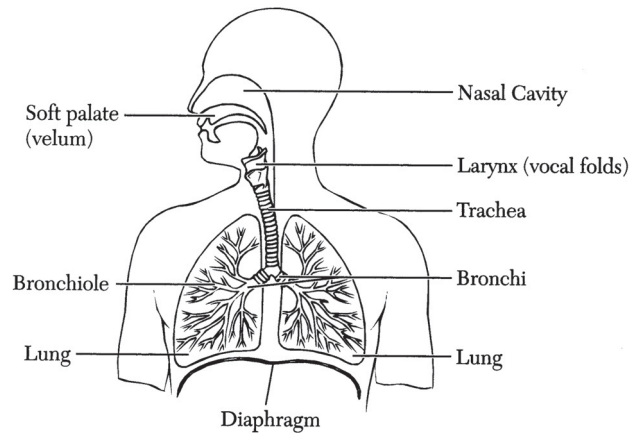


Figure 3-1: The Airway¹³²

further branch off into millions of bronchiole. The airway ends at the alveolar sacs where approximately 7,000,000 alveoli exchange carbon dioxide for oxygen.¹³³

The lungs are made of a porous, spongy material that is somewhat elastic in nature. They connect to the ribcage via the pleurae, or pleural sac. The pleural sac is a “serous (water permeable) membrane that causes the thorax and lungs to adhere to each other much in the same way a wet plastic bag will adhere to a window.”¹³⁴ Because of this connection, a change to the volume of the chest cavity will result in a change to the volume of the lungs. As the chest expands, the lungs expand also. The increase in volume within the lungs creates a vacuum, which sucks in air through the open airway. As the chest cavity falls, the volume of the lungs decreases and air is expelled out through the airway.

¹³² Clifton Ware, *Basics of Vocal Pedagogy* (Boston: McGraw Hill, 1998), 76.

¹³³ *Ibid.*, 77.

¹³⁴ Scott McCoy, *Your Voice: An Inside View* (Princeton: Inside View Press, 2004), 85.

The muscles responsible for moving the lungs can be divided into two groups: muscles of inhalation and muscles of exhalation. The chief muscle of inhalation is the diaphragm. Responsible for sixty to eighty percent of inhalation, the diaphragm is probably the most discussed muscle in regard to breath. It is a dome-shaped muscle, which attaches to the base of the sternum, along the ribs, and to the upper lumbar spine. When the diaphragm contracts, it flattens several inches. Because the bottom of the lungs attach to the top of the diaphragm, this contraction pulls the lungs downward, increasing

their volume and drawing in air, just as pulling the plunger of a syringe draws in medicine.

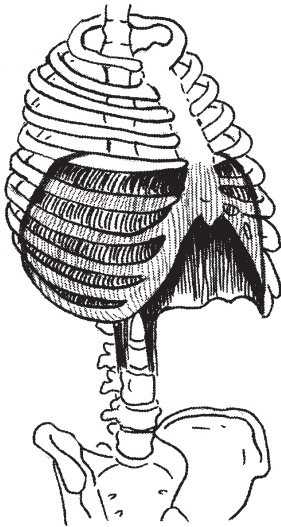


Figure 3-2: The Diaphragm within the Rib Cage¹³⁵

Contraction of the diaphragm presses downward on the organs of the lower abdomen. These organs, collectively called viscera, are displaced downward and outward in the characteristic model associated with correct breathing for singing. Many people falsely assume the expansion of the lower abdomen is caused by the inflation of the lungs. While it is true that the lungs have more than likely inflated, the lungs' position within the rib cage makes it impossible for them to exert any direct force on the abdomen. Rather, the abdomen protrudes as a result

of the diaphragm's descent and subsequent displacement of the abdominal viscera, not the expansion of the lungs directly.

In addition to the diaphragm, the external intercostal muscles also play an important role in inhalation. These muscles originate from the rib above and insert

¹³⁵ Meribeth Bunch Dayme, *The Performer's Voice: Realizing Your Vocal Potential* (New York: London, 2005), 39.

obliquely and medially to the rib below. Contraction of these muscles elevates and expands the ribcage. The increase in volume causes a vacuum within the lungs, which leads to inhalation. This action is most noticeable in the lower portion of the ribcage due to the more flexible nature of the lower six ribs. The bottom two ribs, called the “floating ribs,” are especially mobile because they lack a direct attachment to the sternum.

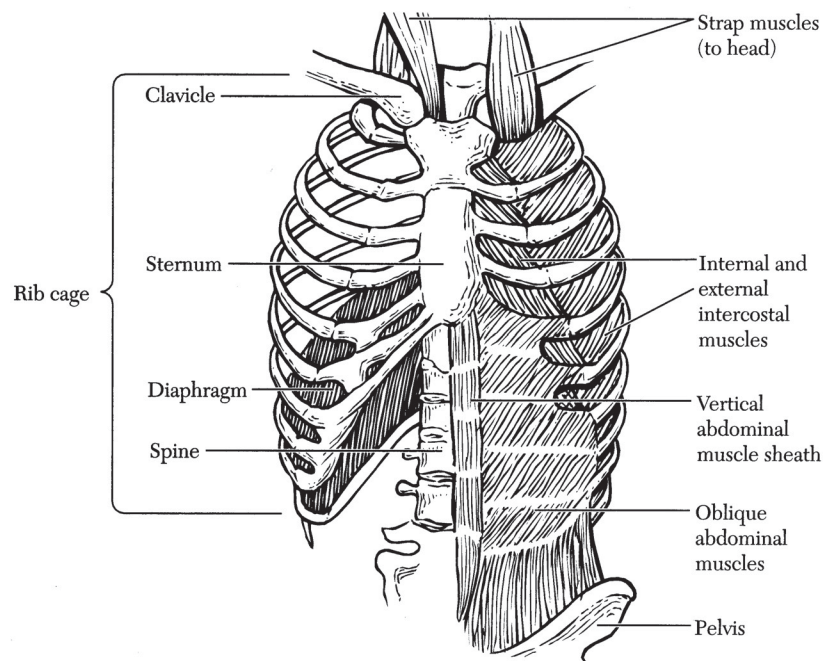


Figure 3-3: The Muscles of Respiration¹³⁶

The muscles of exhalation include the internal intercostal muscles and the abdominal muscles. The internal intercostal muscles are antagonists to the external intercostal muscles. They originate from the rib below and insert obliquely and laterally to the rib above. Contraction draws the upper rib downward and slightly inward, decreasing the dimensions of the thorax and lungs, causing exhalation. Typically, in

¹³⁶ Ware, 81.

singing, the action of these muscles is delayed until the very ends of phrases or for extremely loud phrases. Their powerful contraction can easily cause too much subglottic pressure.¹³⁷

A more appropriate way to manage exhalation is to use the muscles of the abdominal wall. Their effect on movement and alignment was discussed in Chapter Two. This chapter will focus on their involvement in the breathing process. The rectus abdominis, the muscles associated with “six-pack abs,” connects the sternum to the pelvis anteriorly. When contracted, the eight bellies (four on each side) flex the ribcage downward toward the pelvis. While this action is important to stabilize the thorax during large motions, it can adversely affect the diaphragm’s ability to descend completely and, thus, limits one’s ability to inhale deeply. For the singing process, it is advised that this muscle remain relatively relaxed beyond its postural role.

The internal and external oblique abdominis run obliquely on the sides of the abdomen, connecting the ribcage and the pelvis laterally. Bi-lateral contraction results in stabilization of the pelvis and ribcage and pressurization of the abdomen. The innermost abdominal muscle is the transversus abdominis, which wraps around the body much like a corset. Contraction of this muscle stabilizes the pelvis, elongates the torso, and compresses the abdomen. At the base of the abdomen are the muscles of the pelvic floor. These muscles support the abdominal viscera inferiorly, help stabilize the pelvis, and act synergistically with the transversus abdominis.

When the abdominal muscles contract, they press inward and upward on the abdominal viscera, which in turn presses inward and upward on the diaphragm. This

¹³⁷ McCoy, 91.

reduces the volume of the thorax and causes exhalation. The inward and upward pressure of the muscles of exhalation counters the downward and outward pressure of the muscles of inhalation. The resulting antagonism allows singers control over the amount of breath pressure used to create sound.

The Breathing Process

The purpose of the respiratory system is to provide fresh oxygen to the blood stream and to remove carbon dioxide waste. The breathing process requires no conscious thought (though one may control it consciously) and very little muscular effort. Singers, however, require much more conscious control of how air enters and exits their bodies.

Passive breathing (or breathing for life) occurs in three phases. During the first phase, inhalation, the brain signals the diaphragm to contract. The diaphragm contracts slightly (approximately 1.5 centimeters), increasing the volume of the thorax and lungs.¹³⁸ The increased volume creates a vacuum within the lungs and air enters to fill the void. The slight descent of the diaphragm mildly displaces the abdominal viscera, which causes a small expansion in the upper abdomen. The external intercostals remain relatively inactive during passive breathing, but may become involved as exertion increases or when more air is needed (e.g. yawning and sighing). In some instances, the muscles of the upper chest and neck assist with the breathing process by raising the sternum and upper ribs to expand the thorax and lungs. While this is not necessarily a problem for passive breathing, it is extraordinarily inefficient and not of particular use in the singing process.

¹³⁸ Ibid., 89.

The second phase of passive breathing is exhalation. During passive exhalation, the diaphragm relaxes and because of their elastic properties, the lungs shrink back to their at-rest shape. As the lungs shrink, air is expelled from them through the vocal tract and out of the body. The abdominal viscera and the ribcage also return to their at-rest positions. Little if any muscular involvement is required in passive exhalation.

The final phase of passive respiration is a brief recovery. If one were to quietly observe his breath, he would notice a slight pause after each exhalation. This pause allows the muscles of respiration a moment of rest. The average human breathes approximately 20,000 times per day; a moment of rest during each breathing cycle keeps the muscles (mainly the diaphragm) from fatiguing.¹³⁹

Active breathing (breathing for singing) involves much more conscious control and occurs in four phases. Like passive breathing, the first phase is inhalation. The diaphragm contracts more deeply than it does in passive breathing and descends a full two or three inches.¹⁴⁰ Additionally, the external intercostal muscles contract to lift and expand the ribcage. The combination of these muscles' actions expands the thorax and lungs inferiorly (diaphragm), laterally (external intercostals), anteriorly (external intercostals and diaphragm) and slightly posteriorly (external intercostals along with other muscles of the lower back). The increase in volume creates a vacuum, which causes inhalation.

The second phase of breathing for an active breath cycle is suspension. The larynx, from a biological viewpoint, serves two purposes: to keep food and liquid out of the lungs and to pressurize the thorax via the valsalva maneuver. During intense physical

¹³⁹ Ware, 72.

¹⁴⁰ McCoy, 89.

activity (such as heavy lifting) the body will attempt to exhale against a tightly adducted glottis, pressurizing and stabilizing the torso. While this is a necessary response for intense physical activity, the tightly closed glottis does not allow for a freely produced sound. The suspension phase seeks to counteract the larynx's natural desire to control air pressure within the lungs. During the suspension phase, the glottis remains open and free while the muscles of inhalation maintain the rib cage's expanded position. Air is neither inhaled nor exhaled. This opens the vocal tract and prepares the singer for the next phase.

During exhalation, the muscles of exhalation contract, compressing the abdominal viscera. The viscera is pressed upward against the bottom of the diaphragm, which in turn presses upward on the lungs, decreasing their volume and expelling air. Singers work to maintain rib expansion, particularly the action of the external intercostals, for the duration of the sung phrase. This allows the greatest control over air pressure and flow. Many inexperienced singers allow the rib cage to collapse, using the weight of the rib cage instead of the abdominal muscles to expel air. This type of exhalation allows very little control over air pressure and causes the rib cage and sternum to come out of alignment. It will be discussed in more detail under Methods of Breathing.

The final phase of active breathing is one of brief recovery. Though some repertoire does not allow a singer a chance to rest between phrases, it is ideal to find moments when the breathing system can pause and reset itself. This does not mean that a singer should allow the sternum and chest to fall. Instead, a singer should maintain his/her noble posture throughout the singing process and find moments when the body can return to passive breathing.

Methods of Breathing

Though there are many different pedagogies regarding proper breathing for singing, each falls into one of four broad categories.

CLAVICULAR BREATHING. Clavicular breathing relies on the muscles of the chest, shoulders, upper back, and neck to elevate the clavicles, scapulae, and upper rib cage for each inhalation. As they rise, the dimensions of the upper thorax increase, resulting in inhalation. Once these muscles relax, the rib cage collapses to its pre-breath position, decreasing the dimensions of the upper thorax and resulting in exhalation. This method of breathing is extremely prevalent in the untrained or beginning student.

While clavicular breathing does allow the respiratory system to exchange gases, it offers little added benefit. The amount of muscle required to elevate the rib cage is extraordinarily fatiguing. Additionally, the speed with which the chest collapses after inhalation expels the air rapidly and with little control. This method will generally limit the descent of the diaphragm and not allow a singer to take a full, complete breath. Responding to this lack of air, the focal folds will either fail to close completely during each vibratory cycle, producing a breathy sound, or tightly adduct due to their natural desire to control breath pressure, producing a tight or pinched sound.

COSTAL BREATHING. Costal breathing places emphasis on rib cage expansion. Students employing costal breathing use the external intercostal muscles to expand the rib cage in all directions, with particular attention on the sides and back. This is also the method of breathing advocated by many fitness practitioners and dancers because it allows the transversus abdominis to remain contracted during the entire breathing cycle.

Though not in itself problematic, it can encourage some people to limit the descent of the diaphragm, particularly those with a strong background in fitness or those who, for cosmetic reasons, overly contract the abdominal muscles during inhalation. As with clavicular breathing, the limited diaphragmatic descent does not allow for a full and complete breath. Additionally, the abdominal muscles are typically over-contracted, which reduces a singer's ability to control breath pressure and flow during exhalation.

ABDOMINAL BREATHING. Sometimes referred to as “belly breathing,” abdominal breathing seeks to actively engage the muscles of the lower abdomen. These muscles are completely released or even extended during inhalation to allow the complete descent of the diaphragm. In some pedagogies, students are taught to push the stomach out during inhalation. The abdominal force created by some practitioners of this method results in over-pressurization of the vocal mechanism and creates a pinched, pressed, or forced sound. Even when not taken to this extreme, sole focus on abdominal expansion neglects the importance of the ribs in the breathing process.

DIAPHRAGMATIC/COSTAL BREATHING. This method allows the full descent of the diaphragm and the elevation of the rib cage. The abdominal muscles relax during inhalation and gently engage during exhalation. The external intercostals expand the rib cage for inhalation and then work to keep it expanded during exhalation. By keeping the rib cage open, the external intercostals allow the abdominal muscles to take on the bulk of exhalatory control. In this way, a singer is able to take a full, complete breath and control how that breath is used in the singing process. This is the method of breathing taught in the “Italian School” of singing and is often referred to as *appoggio*.

Appoggio

The term *appoggio* comes from the Italian words *appoggiarsi a*, “to lean upon,” and is one of the hallmarks of the “Italian School” of singing. Richard Miller gives this definition of the term:

Appoggio cannot narrowly be defined as “breath support,” as is sometimes thought, because *appoggio* includes resonance factors as well as breath management... The historic Italian School did not separate the motor and resonance facets of phonation as have some other pedagogies. *Appoggio* is a system for combining and balancing muscles and organs of the trunk and neck, controlling their relationships to the supraglottal resonators, so that no exaggerated function of any one of them upsets the whole.¹⁴¹

The muscles of inhalation and exhalation balance themselves in such a way that the singer has complete control over how much air reaches the vocal folds and at what speed.

For *appoggio* breathing, the singer must first find a proper alignment of the head, neck, and rib cage. This alignment allows for optimal rib cage expansion during inhalation. Additionally, the elevated rib cage provides a stable foundation to the infralaryngeal muscles, which help to position the larynx comfortably low within the neck. This comfortably elevated rib cage position is maintained throughout the breathing cycle.

During inhalation, the rib cage expands anteriorly, laterally, and slightly posteriorly. The diaphragm descends, displacing the abdominal viscera, which causes the stomach to expand. As Miller describes, “the region between the sternum and the umbilicus moves outward on inspiration, but the chief outward movement occurs in the lateral planes.”¹⁴²

¹⁴¹ Richard Miller, *The Structure of Singing: System and Art in Vocal Technique* (Belmont, CA: Schirmer, 1996), 23.

¹⁴² Miller, 24-25.

At the start of exhalation, the singer should feel no sense of grabbing or holding in the throat. If the suspension phase of active breathing has been sufficiently established, the larynx and throat will remain open and free. The chest and sternum should remain comfortably elevated during the entire phase and the rib cage should remain relatively expanded. Obviously, the lateral expansion will fall toward the end of each phase, but the student should work to keep this expanded as long as is comfortable. The overall position of the torso should be the same at the end of each phrase as it was at the beginning: “posture need not be altered for the renewal of breath.”¹⁴³

Teaching Breathing

When teaching breathing in the studio, it is imperative to get the student to feel the desired sensations. Once the student is able to experience the feel of a complete breath, he/she will be more likely to make it a habit. Though it is important for students to understand the anatomy and physiology of the breathing mechanism, no amount of technical knowledge can compensate for a lack of experiential knowledge.

With all breathing exercises, it is important to guide students toward a general understanding of what their bodies are doing. Many students will have little idea of how they currently breathe and will lack the kinesthetic awareness to learn any new habits until they first discover their current habits. With that in mind, the following exercises and images should help students experience the sensations associated with a correct breathing technique.

¹⁴³ Ibid., 25.

Inhalation

1) Exercises

- a) Lying down- Have the student lie supine (face-up) and rest his/her hands on the belly. In this position, the body should naturally breathe deeply and there should be a gentle rise and fall of the belly as the diaphragm descends. Ask the student to focus on which parts of the body are moving and which are not. The student can repeat this each night for a few minutes before going to sleep. As awareness of these sensations builds, the student will be more likely to repeat them when standing.
- b) The “thinker” position- Have the student sit in a chair with elbows on knees and cheeks resting on hands.
 - Have the student inhale deeply and observe the natural breathing patterns (Does the chest rise? Do the ribs and lower back expand? Does one expand more than the other?).
 - Have the student take a deep breath and focus on expanding the upper chest and elevating the rib cage. Allow the student to exaggerate this motion so that he/she fully experiences a clavicular breath.
 - Focus the student's attention on the lower back. Ask the student to breathe as if the air could travel slowly across the roof of the mouth, down the spine and into the lower back so that the first place to expand is the lower back.
 - If appropriate, the teacher may place his/her hands or ask another student or parent to place his/her hands on the student's lower back. Often the tactile sensation of another's hands will increase awareness.
 - This exercise is particularly useful for isolating expansion in the lower back.
- c) Breathe into the hands
 - Have the student stand.
 - Have the student place one hand on the rib cage with the thumb near the posterior, bottom rib, index finger near the anterior bottom rib, and pinky finger reaching toward the hipbone.
 - Have the student place the other hand on the epigastrium (area directly beneath the sternum).
 - Ask the student to take a deep breath and observe what he/she feels.
 - Ask the student to take another deep breath and feel as if the area around the thumb in the back could be the first place to expand.
 - Alternately, ask the student to take another deep breath and feel the epigastric area beneath the front hand expand outward.
 - The student's hands may also be placed entirely in the front or more toward the back depending on each student's specific needs.
- d) Thumb in the side
 - Have the student place his/her thumbs in the space between the bottom rib and the hipbone.

- Ask the student to breathe in such a way as to press the thumbs out with the lateral expansion.
- e) Bouncing epigastrium
- Have the student place his/her hand on the epigastrium (area beneath the sternum).
 - Ask the student to pant like a dog. If the student has assumed a comfortably elevated sternum, this should cause the epigastrium to “bounce” with each pant.
 - If the student has difficulty experiencing the action of the diaphragm at the epigastrium, ask the student to cough. This will produce a marked pulsation in the area of the epigastrium.
- f) Blowing out¹⁴⁴
- Have the student stand with a comfortably elevated sternum and place both hands clasped behind the head.
 - Ask the student to exhale as much as possible, keeping the sternum in its comfortably elevated position.
 - Once the air is expelled, ask the student to wait five or six seconds until he/she feels a strong desire to inhale.
 - Ask the student to inhale, allowing the air to fill every bit of available space.
 - These same exercises can be done bending over to exhale and straightening before the inhalation.
- g) Monkey position¹⁴⁵
- Have the student stand with his/her feet wider than the shoulders. The knees should be bent, the upper body should lean slightly forward and the arms and shoulders should hang loosely.
 - Ask the student to bounce up and down, allowing the arms to hang limply and swing gently side-to-side. This will help the lower abdominal muscles release.
 - Bring the student’s awareness to the lower belly and ask him/her to inhale deep into the body as if the air could descend all the way into the pelvis.
- h) Ask the student to place his/her hands at the level of the bottom rib. Ask the student to breathe in such a way that all movement happens below the level of the hands.
- i) Sound of the air
- Ask the student to place one hand in front of the mouth so that the palm is facing sideways and the edge of the index finger is touching the lips.
 - Ask the student to take a shallow breath and notice the sound the air makes. It should make a rather high sound.

¹⁴⁴ Ware, 87

¹⁴⁵ Deborah Williamson, interview with author, May 15, 2011.

- Ask the student to take a deep breath and notice the sound the air makes. It should make a deeper sound.
- This exercise also helps to open the throat.

2) Images

- Smell the flower- Inhale through the nose as if gently smelling a flower.
- Sip some tea- Inhale through the mouth as if politely sipping tea.
- Upside-down atom bomb- Imagine the breath as an upside-down atom bomb or mushroom cloud. There is a thin “stalk” from the neck down toward the abdomen which then expands down and laterally.
- Inverted umbrella- Similar to the mushroom cloud, imagine the breath as an inverted umbrella, the handle ascending toward the neck and the expansive portion deep in the abdomen.
- Pelvis as a bowl- Imagine the pelvis is a bowl that is filled with air with each inhalation.
- Ping-pong ball at the base of the spine- Imagine that a ping-pong ball sits at the base of the spine (sacrum). Inhale as if the ping-pong ball could be filled with air.
- Water balloon breath- Imagine holding a water balloon in both hands. One hand holds the tie at the level of the sternum. The other hand supports the balloon from beneath. When the bottom hand releases the balloon, it drops downward. Ask the student to inhale and allow the breath to drop in the same manner as the water balloon.
- Imagine filling the bottom third of the lungs first.
- Take a slow breath and feel as if the air could curl along the roof of the mouth.
- Draw the student’s attention to the cooling sensation on the roof of the mouth as he/she inhales deeply.
- Beginning of a yawn¹⁴⁶- Ask the student to breathe as if starting a yawn, but not actually yawning.

¹⁴⁶ James McKinney, *Diagnosis and Correction of Vocal Faults* (Nashville: Genevox Music Group, 1994), 49.

Exhalation

1) Exercises

- a) Lamperti- Helps establish each phase of the active breathing cycle.
 - Have the student assume a proper physical alignment.
 - Ask the student to place one hand along the ribs laterally and the other on the epigastrium (soft spot beneath the sternum).
 - Ask the student to inhale on a count of four, feeling expansion along the ribs and at the epigastrium.
 - Ask the student to suspend the inhalation for a count of four. Be sure that the student is using the muscles of inhalation to suspend the breath and not closing the glottis. The larynx and throat should remain open.
 - Ask the student to exhale on a hiss for a count of four, using all of his/her air.
 - This exercise can be repeated increasing the duration.
- b) Speeds (or sounds) of air- Often, when asked to hiss, students will either use too much or too little air pressure. It is important for the student to experience both high pressure and high flow ratios in all breathing exercises as each works the breathing muscles in different ways.
 - Explain to the student that, as singers, we need to use various speeds of air to make various sounds.
 - Ask the student to exhale on a hiss. Ask them to hiss with “30 miles per hour (mph)” air. Depending on the student’s conceptualization of this cue, he/she will produce a highly pressurized hiss (high air pressure), a low- pressurized hiss (high air flow), or a moderately pressurized hiss (balanced pressure/flow).
 - Ask the student to experiment with faster or slower air. Ask the student to hiss with 60 mph air or with 15 mph air.
 - Alternately you can explain that consonants (even unvoiced) have some semblance of pitch. Demonstrate the different sound of a highly pressurized hiss (will be a high sound) and lowly pressurized hiss (will be a low sound). Ask the student to produce both of these.
 - In all hissing exercises, ask the student to be aware of surging in the air stream. Ask him/her to work toward a constant airflow, regardless of the pressure/flow ratio.
- c) Mirror work- helps increase awareness.
 - Ask the student to stand in front of a mirror.
 - Ask the student to observe his/her alignment. Address any changes that need to be made. Ask the student what differences he/she notices.
 - Ask the student to take a few passive breaths and notice what areas are moving and what areas are not. This is non-judgmental observation. For a student to change an aspect of his behavior, he must first be aware of it.
 - Ask the student to take a few deep breaths and notice what areas are moving and what areas are not. Again, this is non-judgmental observation.

- If the student breathes in a shallow manner, use one of the other exercises or images presented in this chapter to help him establish a low breath.
 - Ask the student to do the Lamperti exercise or any other similar breathing exercise. Draw the student's attention to his/her sternum. Ask him/her to stop the exhalation portion of the exercise as soon as he/she notices or feels the sternum drop. If this happens after only a few seconds, it is okay. Reassure that the student he/she is establishing new habits and that the body and muscles need time to incorporate the new movement patterns. By stopping the exercise before the old habit regains control, the student is reinforcing the new habit. As the student begins to have a more coordinated breathing mechanism the amount of time he/she can sustain the exhalation phase will increase.
- d) Wave breath- particularly useful in students who clutch the breath immediately before exhalation as it removes any phase between inhalation and exhalation.
- Explain that the breath is often analogous to a wave. Just as a wave will form until the moment it crests, so too the breath is inhaled until the moment of exhalation.
 - Ask the student to inhale until comfortably full. It is sometimes helpful to have the student engage the entire body by rocking back onto one foot.
 - As soon as the student is comfortably full, ask him/her to exhale. Again, it is often helpful to engage the body by having the student rock forward onto one foot.
 - In this exercise, it is important that the student begins to feel a natural rhythm to the breath. The breath is either coming in, or going out. There is no catch before the exhalation.
 - Over the course of time, the student can be taught the suspension phase if the teacher deems it necessary.
- e) Expanding the ribs
- Have the student place his/her hands at the level of the lower ribs.
 - Ask the student to feel as if the ribs were expanding into the hands as he/she exhales on a hiss.

2) Vocalise

a) Consonants that help to establish good breathing habits:

- [s] [f] [θ]- Provide some resistance to the air stream and help students feel *appoggio* sensations.
- [z] [v] [ð]- These are the voiced equivalents to the above. They require more breath energy and may be helpful to those whose exhalation is under-energized.
- [m] [n] [ŋ]- The nasal consonants also provide resistance to the air stream and help students feel *appoggio* sensations.

b) Lip trills and tongue trills

- Both require an adequate breath pressure/flow ratio. Many beginning students have difficulty performing these two exercises. As breath control and

articulatory freedom become established, students can learn to perform them more easily.

- c) Sirens, glides, and other “non-singing” sounds
 - Students tend to have fewer problems with speech-level sounds than they do with sung sounds. Using sirens, glides, or grunts may help them identify with correct breath concepts that are already established.
 - Many beginning students have difficulty producing a slow, even slide on [m]. This author has found a direct link between a student’s ability to slide smoothly on [m] and a student’s concept of breath. As the student reinforces correct breathing habits, he/she is often more able to produce an even slide.
 - d) Index card
 - Hold an index card vertically so that the long, thin edge is against the lips. Form the lips as if whistling and exhale and blow. This should make the card buzz.
 - With the same configuration, vocalize on a siren (the vowel will be some form of [u]). The card should continue to buzz for the entire range of the siren.
 - Still in the same configuration, sing any simple vocalise on [u]. Again, the card should continue to buzz.
 - It is often helpful to cue the student to focus only on taking in a low breath and then keeping the card buzzing.
 - e) Onset, pulsing, or staccati- These exercises can be extremely beneficial for coordinating the muscles of inhalation and exhalation.
 - Begin with longer durations so that the student has a longer time for the breath.
 - As coordination increases, decrease the duration of the sung sound and the time for the breath.
 - Focus the student’s attention on what areas are and are not moving. The chest should remain comfortably high and the ribs should remain expanded throughout. There will be a slight bounce of the epigastrium for each breath, but neither the rib cage nor the chest should move.
- 3) Images
- a) Standing in a barrel- Imagine standing in a barrel and expanding into the barrel all around on inhalation. During exhalation, imagine continuing to touch the barrel on all sides.
 - b) Blowing a pinwheel- Imagine blowing a pinwheel in such a way that it lightly and steadily turns. Make sure that the air does not surge. Maintain rib cage expansion during the exercise.
 - c) Blowing a candle- Imagine a lit candle a foot in front of the mouth. Blow as if you could make the flame flicker steadily, but not go out. Make sure that the air does not surge. Maintain rib cage expansion during the exercise.

Faults Related to Breathing

- 1) Faults Related to Methodology (see Methods of Breathing on page 68 for more information).
 - a) Clavicular Breathing- Clavicular breathing involves elevating the shoulders and sternum for each breath.
 - Physical characteristics- The student will often have a poor concept of proper physical alignment. The shoulders may be elevated and the chest may be sunken (see Categories of Misalignment on page 9). The shoulders and chest will elevate with each breath, resulting in a shallow inhalation that is inefficient and fatiguing.
 - Sound characteristics- The sung sound will be disconnected from the breath. The tensions created by constantly raising the sternum for each breath will transfer to the larynx, which may cause a pinched or strained sound. Because the voice is not supplied with adequate breath, the glottis will either be unable to close completely, resulting in a weak, breathy sound, or will grip tightly to control subglottic pressure, resulting in a pinched, edgy, or strident tone. Any of the following could describe the tone produced: weak, colorless, anemic, flat, dull, breathy, pinched, pressed, throaty, or unsupported. The tone will lack carrying power and the singer will lack endurance.
 - Corrective procedures:
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Inhalation exercises 1.A and 1.B as well as many of the images under Teaching Inhalation may be particularly helpful.
 3. Establish appropriate tonal concept and singing models.
 4. It is often necessary to focus more on abdominal expansion than rib expansion with these students. Some students may even need to consciously press out the lower abdomen during inhalation at first. As this action becomes more familiar, the student can phase this out and focus on more costal action.
 5. The teacher must be patient with this student. Clavicular breathing is usually deeply ingrained in the student's muscle memory. At first, the abdominal and rib cage expansion might be small and will feel very foreign, even wrong to the student. The student is developing the muscle coordination and strength to allow for a fuller inhalation. As strength and coordination develop, the clavicular method will fade away and be replaced by the more efficient diaphragmatic/costal method.
 - b) Costal Breathing- Costal breathing focuses on the expansion of the ribs. This method of breathing is only problematic if it restricts the descent of the diaphragm or induces unnecessary tension in the singer.

- Physical characteristics- For the most part, the student will be able to maintain a comfortably elevated sternum and will present proper physical alignment. The ribs will expand mostly laterally and somewhat anteriorly and posteriorly during inhalation. In some instances, the student's elbows may flare out to the side during inhalation. Some students will have little to no abdominal expansion. The abdominal muscles will be contracted. This is often in response to the postural cue, "suck in your gut," or the desire to have a "beach body."
- Sound characteristics- This method offers far more control to the classical singer. In general, the resulting sound will be acceptable. In some cases, however, the extreme rigidity of the abdominal muscles limits the descent of the diaphragm. Such singing may be described as ungrounded, unsupported, and weak. The sound will lack carrying power and the singer will lack endurance, often complaining of tension or fatigue in the torso and neck.
- Corrective procedures:
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Inhalation exercises 1.A, 1.E and 1.G as well as many of the images under Teaching Inhalation may be particularly helpful.
 3. Establish appropriate tonal concepts and singing models.
 4. In general, the student needs to be guided toward more abdominal expansion. Exercises that release the abdominal wall during inhalation can be helpful. It is often beneficial to make these students move while singing. Movement is the antithesis of tension- if the student is able to consciously move a chronically contracted muscle, it is likely that the contracted muscle will release.¹⁴⁷ Actions such as twisting, dancing, or side-bending can help a student release tension in the abdominal wall.
 5. Inform the student that though physical fitness is important, the abdominal muscles need to be flexible and supple in the singing process.

¹⁴⁷ There are some cases in which a chronically contracted muscle will actually cause abnormal movement. For example, a shaking jaw is often indicative of tension within one or more of the articulatory muscles. This movement is generally unconscious. The phrase "movement is the antithesis of tension" refers to conscious movement of a tense muscle to increase freedom and ease. As with all cues, the teacher must first understand the underlying cause of any fault before applying a specific cue.

- c) Abdominal Breathing- Abdominal breathing focuses on the downward descent of the diaphragm and the resulting displacement of the abdominal viscera. This method of breathing is only problematic when it limits the expansion of the low ribs or results in extreme distention of the abdomen.
- Physical characteristics- The rib cage and sternum will remain comfortably high and the student will exhibit a balanced physical alignment. During inhalation, the abdominal wall will expand considerably. This motion will chiefly be seen anteriorly, though it may have a lateral and posterior component. Some students, generally because of misconception, will forcibly press the abdomen outward during inhalation. These same students may have been taught to press outward during exhalation as a means to control breath pressure and flow. These students will appear rigid in the abdominal area and may also exhibit tension in the neck. In extreme cases, the student may seem to get shorter near the ends of long phrases in an attempt to distend the abdomen throughout the phrase.¹⁴⁸
 - Sound characteristics- As with costal breathing, this method can produce a successful singing sound. The low descent of the diaphragm allows the voice to be grounded and helps the singer access the stability and power of the lower body. However, students can take this method to the extreme. In such cases the sound may sound tense, strained, brittle, pinched, or pressed. These singers will often have difficulty in the upper portions of their range.
 - Corrective procedures:
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Inhalation exercises 1.B, 1.C, 1.D, and 1.G as well as many of the images under Teaching Inhalation may be particularly helpful.
 3. Establish appropriate tonal concept and singing models.
 4. It is often beneficial to make these students move while singing. Movement is the antithesis of tension.¹⁴⁹ Actions such as twisting, dancing, or side-bending can help a student release tension in the abdominal wall.
 5. These students will often press or push when singing. See HYPERFUNCTIONAL EXHALATION, pg. 83.

¹⁴⁸ McKinney, 60.

¹⁴⁹ Please refer to footnote 147.

2) Other Faults Related to Inhalation

a) Hypofunctional Inhalation- The student will fail to inhale a sufficient amount of air to support a classically sung sound.

- Physical characteristics- In many cases, the student will not have an appropriate concept of physical alignment. Additionally, the student may display an overall ennui or lethargy. While this may be a personality issue (the solution to which is beyond the scope of this document), it may also result from a misconception as to the amount of work required to produce a classical vocal sound. This is most commonly found in beginning students.
- Sound characteristics- The resulting sound may be described as breathy, pinched, flat, dull, lifeless, colorless, or strained. The student will generally lack enough breath to finish phrases and the sound will not have sufficient strength to carry in a hall or over an orchestra.
- Corrective procedures- Encourage the student to take a deeper breath.
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Inhalation exercises 1.E, 1.F, and 1.G as well as many of the images under Teaching Inhalation may be particularly helpful.
 3. Establish appropriate tonal concept and singing models.
 4. In general, guiding the student toward experiencing a full breath will help with this issue.

b) Hyperfunctional Inhalation- The student takes in too much air.

- Physical characteristics- The student may or may not have a properly aligned body. As the student attempts to take in as much air as possible, he will tense the muscles of the upper chest, the abdomen, and/or the neck. The breathing process will seem forced and rigid and will lack a fluid, natural rhythm.
- Sound characteristics- The sound may be described as strained, brittle, pinched, pressed, under-supported, or overblown. In general, this fault stems from the misconception that it requires a lot of air to sing long phrases. Such students will attempt to use their air sparingly, which results in a pinched, brittle, unconnected sound.
- Corrective procedures- Encourage the student to fill the lungs comfortably, but not to overfill them.
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Inhalation exercises 1.B, 1.C, 1.D, and 1.G as well as many of the images under Teaching Inhalation may be particularly helpful.
 3. Establish appropriate tonal concept and singing models.

4. Thimble experiment.
 - a. Ask the student to imagine (or provide him/her with) a thimble.
 - b. On the next inhalation, ask the student to inhale only the amount of air contained within one thimble.
 - c. Have the student sing a passage of music on this tiny sip of air.
 - d. Generally, the student should have relaxed enough to allow the vocal folds to use this tiny amount of air in a more efficient manner, allowing them to sing the entire phrase.
5. Explain to the student that breath control is more about how the air is used than how much air one has.

3) Faults Related to Exhalation

- a) Hypofunctional Exhalation- The student fails to energize the breath stream appropriately.
 - Physical characteristics- In many cases, the student will not have an appropriate concept of physical alignment. Additionally, the student may display an overall ennui or lethargy. While this may be a personality issue (the solution to which is beyond the scope of this document), it may also result from a misconception as to the amount of work required to produce a classical vocal sound. Shy or timid students tend to be more susceptible to this fault. As with hypofunctional inhalation, this is most commonly found in beginning students.
 - Sound characteristics- The sound may be described as breathy, unenergized, or weak, and will lack carrying power. The student will have difficulty with extended phrases because the lower breath energy does not allow the vocal folds to close completely. In some cases, the larynx will adduct tightly in an attempt to control the outflowing air. In such cases, the resulting sound will be pinched and strained. The sound will likely be straight or may exhibit either a flutter or wobble. These students will also have difficulty sustaining longer passages and may have noticeable breaks in the voice. The top of the voice may quit working all together.
 - Corrective procedures- encourage the student to energize the breath and the body.
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Exhalation exercises 1.B, 1.D, 2.C, 2.D, and 2.E, as well as many of the images under Teaching Exhalation may be particularly helpful.
 3. Establish appropriate tonal concept and singing models.
 4. It is important to teach these students how much breath energy is required for singing. In general, the student will need to energize and engage the entire body more completely. In addition to those above, the following exercises will help establish proper breath and body energy:
 - a. Ask the student to laugh like Santa Claus.
 - b. Ask the student to imitate an opera singer as they sing.

- c. Ask the student to sing louder.
 - d. “The Call”- Ask the student to call out as if they were trying to talk to a friend 50 yards away. Can use words like “Hello” and “Hi,” or sounds like [jaua], [nai], or [nei]. This is particularly helpful with men.
 - e. Ask the student to imagine singing in a large hall.
 - f. Ask the student to move, dance, or skip around while singing.
 - g. Ask the student to do wild gestures such as throwing a discus, throwing a baseball, shooting a basket, swimming, rowing a boat, etc. If the student plays a sport, try relating the gesture to that sport.
 - h. “Cleaning the piano”- have the student “polish” the piano with a piece of paper or a piece of cloth as they sing. The more vigorously they work, the more engaged the body will be.
 - i. Ask the student to do pliés or squats as he/she sings.
- b) Hyperfunctional Exhalation- The student uses too much air pressure for singing.
- Physical characteristics- The student may or may not have a basic understanding of proper alignment. The chest will be elevated, but the rib cage may or may not stay expanded during exhalation. Often, the student may elevate the chest too much, and may depress the scapulae (see Shoulder Girdle in Chapter II). During exhalation, the student may present unnecessary tension in the neck, shoulders, chest, and abdomen in an attempt to push the sound out. The student may be under the assumption that more support always equals a better sound.
 - Sound characteristics- The sound may be described as forced, pressed, pushed, edgy, tight, pinched, over-sung, or unstable. The singer may crack frequently, especially in the higher range, and may have a wobble.
 - Corrective procedures- More air does not necessarily equal a better sound. In general, try to help the student relax all unnecessary tension.
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Exhalation exercises 1.A, 1.B, 1.D, 2.B, 2.C, and 2.E, as well as many of the images under Teaching Exhalation, may be particularly helpful.
 3. Establish appropriate tonal concept and singing models.
 4. Ask the student to move while singing. Exercise 1.G (“The Monkey”) under Teaching Inhalation may be helpful.
 5. Ask the student to sing more softly. Have him/her pretend he/she is singing a lullaby.
 6. Ask the student to sing to a point only a foot in front of him/her.
 7. Warm up the student with light, rapid exercises. Agility work may also be helpful.
 8. Encourage the student to think of loud sounds as round or deep rather than pushed.

9. Ask the student to think of the breath dropping as pitch ascends or dynamic increases. Images such as “The Water Balloon” under Teaching Inhalation may be helpful.
- c) Diminishing Support- The student loses breath energy at the ends of phrases.
- Physical characteristics- The student will have a decent understanding of postural alignment. In some students, the chest will collapse near the end of the phrase. In others, the chest will remain comfortably elevated but the rib cage will collapse as the phrase ends.
 - Sound characteristics- The sound will begin with a solid connection to the breath; however, at the end of the phrase the pitch may sag or the vitality of the tone will diminish. Overall volume and carrying power will decrease. In some students the throat may grip to control subglottic pressure as the airflow diminishes. This will result in a tight sound at the ends of phrases or a glottal release to the tone.
 - Corrective procedures- Encourage the student to sing until the very end of the phrase. This is especially common at the ends of descending passages.
 1. Establish proper physical alignment.
 2. Establish a proper breathing concept. Exhalation exercises 1.A, 2.B, 2.D, as well as many of the images under Teaching Exhalation may be particularly helpful.
 3. Establish appropriate tonal concept and singing models.
 4. Ask the student to sing a vocalise that ends with a voiced consonant. Voiced consonants such as [z] and [v] require more active engagement of the breathing system.
 5. Ask the student to crescendo through the phrase. The last note should almost be louder than the first.
 6. In some cases, the student will decrescendo too much at the end of a “tender” phrase. Explain that soft singing must still be engaged.
 7. Explain to the student that allowing the ends of phrases to fizzle out is like taking the foot off the accelerator at the end of a car race.
 8. Ask the student to make the motion of throwing a ball or shooting a basket. The student should imagine that he/she is watching the ball move all the way until the end of the sung phrase.

Concluding Remarks

As was stated in the introduction, the purpose of this document is to help new teachers of singing develop their ability to detect and treat vocal faults with student-specific exercises and cues. The exercises and cues provided in this document are a good place to start for those new to the field and, hopefully, they will provide more experienced teachers with a few new ideas. The list is far from exhaustive, however. The sections on anatomy, kinesiology, and physiology have been presented so that readers might first understand how the multi-faceted vocal instrument works. A teacher can then determine why a student presents a specific vocal fault. Without understanding why a fault manifests, all cues and corrections will be proverbial “shots in the dark” with an equal chance of making negative as positive change. Readers are encouraged to use their understanding of the vocal mechanism to create new images and exercises as the need arises, for herein lies the art of teaching. As the performer must create anew every night on the stage, so too must the teacher constantly search for just the right cue or image that will lead each student toward positive and, hopefully, permanent change.

Appendix 1

Interviews with Prominent Teachers of Singing

The purpose of the following interviews is to determine the process successful teachers of singing use when working with students. Young or inexperienced teachers may have discerning ears and may have a general understanding of the underlying vocal faults in their students, but they may not have the best idea of where to begin. Though randomly vocalizing a student until something happens does work, having a generic checklist can shortcut the learning process immensely. The following established teachers of singing have graciously agreed to share their years of experience to help new teachers begin to develop their own checklist.

Teachers Interviewed

Dr. Chris Arneson, Westminster Choir College. NATS Master Teacher.

Dr. Robert Best, Baylor University.

Prof. Jack Coldiron, Baylor University. NATS Master Teacher.

Dr. Robert Harrison, Indiana University. NATS Master Teacher.

Prof. Mary Ann Hart, Indiana University.

Dr. Brian Horne, Indiana University.

Dr. Scott McCoy, Ohio State University. NATS Master Teacher.

Prof. Timothy Noble, Indiana University.

Prof. David Small, University of Texas at Austin. NATS Master Teacher.

Prof. Patricia Stiles, Indiana University.

Dr. Deborah Williamson, Baylor University.

Prof. Patricia Wise, Indiana University.

When working with a new student, what are your goals for the first semester from a technical standpoint?

Chris Arneson: Basic skills in breathing, phonation, resonance and articulation. Determining what repertoire I will use that will be aligned with my technical goals, but mostly, developing self-assurance in the singer.

Robert Best: Before one pursues a particular technical path with a student, a full assessment of the student's current abilities must take place. Every student has a history and it cannot be ignored, as that will have a tremendous impact on how the student processes new information. The teacher's ego in wanting to immediately change everything must be tempered with a full assessment of current technical ability, mental approach, and emotional well-being. The ability to listen and exercising patience are the two most vital components of an applied teacher. After such an assessment is complete, or complete enough to warrant a pedagogical plan, I then work towards establishing efficiency of function. Much of this involves how the student perceives his or her sound. Often times, the student overexerts him/herself, to "project" the sound forcibly, during phonation. If I can provide an honest assessment of the resulting product of a student, rather than relying on their "perception" of the sound, that is perhaps the greatest gift I can provide him/her.

Jack Coldiron: Some basic fundamentals: Discovering the personality of the student. Posture and physical alignment. Breathing for singing. Relaxing the lips, jaw and tongue. Finding the "true" voice. Establishing a good student/teacher relationship (the trust factor). Evaluating the musicality of the student.

Robert Harrison: Phonation: a decency of phonation is the goal. Some will master it more quickly than others, but I want them to master techniques of breathing so that they can create the most ideal phonatory sound. The sooner they master that, the sooner we can deal with colors and timbre. With a decent phonation, the resulting timbre can then take on the more important journey, and that's the journey of communicating.

Mary Ann Hart: I first have to assess where they are and find out how comfortable they are. Some people are very attached to their old teacher and old methods. I will often ask them what are their favorite warm-ups, what makes them sound really good, and I try to get an idea of their routine, if they have one. Most do not. Then, I start doing simple vowel equalization exercises. Some people will progress faster than others. Letting go of old habits sometimes takes longer than putting in new habits. It depends on what is

engrained and how deeply it is engrained.

Brian Horne: I want to make sure that we are on the same page, that we have the same terminology regarding breathing. So the first lesson is just on breath. I give them my philosophy of ideal posture and tell them what is going to happen physiologically so that they can start building proper muscle memory. That is the whole first lesson. At the start of every subsequent lesson for the next five or six weeks we drill that to make sure that their posture is where I want it, that their chest and sternum are doing what I want.

Secondly, when I vocalize them, I listen and try to even up the registers. To me, that is the most important thing before getting a louder sound, an even vibrato, a high or low range.

Scott McCoy: My goal is simply that by the end of the semester, they are singing better than they were at the beginning, and that, in the course of the semester, they will have an opportunity to identify where particular challenges are, and have gotten a good start on a strategy to resolve them.

Timothy Noble: It is important for me to get them in a good place technically. To understand how the breath works, how it connects to everything, making sure that they are making good sounds. Get them singing in a good way, just vocalizes. I use Vaccai. I use the exercises that my teacher used. I use the great scale that Lilli Lehman has in her book. Get them technically sound and gradually apply what they have hopefully learned to the music.

David Small: It depends on the student. Very generally, my first semester goals for most students would be to ascertain what the student's sonic ideal is and how close, or disparate, from mine it is. I try to ask in the first interview who their favorite singers are, and ask frequently throughout their study to whom they are listening. Because so much of singing is 'target awareness,' if my student and I are not at least aiming at a *similar* target the work is much harder and often very confusing to the student. Through this, and with all else in the studio, the first semester is often about making sure the student knows I am on their side and that the studio is possibly the safest place in the world: a place to be messy and to make mistakes, and a place where it is OK to be themselves and express their feelings.

General first semester technical goals would include alignment, helping the student understand and increase their awareness of the singing body and noticing inefficiencies (and efficiencies) in body use. In the first semester, I try to do more noticing of the student's habitual use than actual correction to avoid the student feeling as though nothing they're doing is right and *everything* has to be changed. Most often I will notice one key inefficient habit that seems to be getting in their way and begin addressing it.

During the first semester I also try to impress upon the student that our goal is to increase their ability to express the meaning and beauty of the music and the text. I try to introduce aspects of text analysis, musical phrase direction and such early and in each lesson so the student learns that technic serves expression and beauty.

Patricia Stiles: Well, that changes with each student, but generally I like to find out where they are. When I first started teaching, I worked a lot with students who had never sung before. It was important to find out what they knew and what they didn't. Even with some of my current students, I ask them to speak or intone the text with their best stage voices and I help them to learn how to move on into singing realizing what aspects of their speaking can enhance their singing. I find songs that stay in the middle of their range, and work from there.

Deborah Williamson: My goals from a technical standpoint when working in the first semester with a student who is new to me will vary according to the student's level of development, natural ability, previous experience, and current challenges. As a very basic first step I strive to understand as much about the student's current level in all of these categories as possible. I also try to ascertain the student's learning style (visual, aural, kinesthetic, etc.) and the vocabulary that "rings a bell" with that student... I ask a lot of questions such as "If I didn't know anything about breathing to sing, what would you tell me to do?" or "I really liked the result you just achieved. How would you describe what you had to think and do to get that result? What words do you use to describe your process?" Once the student has verbalized his or her process I will discuss that particular description with him or her and try to use those words as much as is appropriate and technically sound in order to achieve the results again in the future.

The most important value in this approach is that it develops trust. By showing respect for the student and truly listening to him or her, and by demonstrating that I have listened by remembering his or her own words and using them when possible, I am creating an environment in which the student feels honored and can take the risks involved in growing as a singer. It is my hope that, within the first semester, the student and I will have developed a personal rapport, a trusting relationship, and a common vocabulary to use in our work together.

Patricia Wise: First, freedom and evenness of emission and a clean sound. The second thing I look for is getting them on the breath. If they are already on the breath, I will praise that and find ways to make it more physically meaningful. So those are two goals: the sound and the support.

Of the many aspects of good vocal technique, which are the most important to you?

Chris Arneson: Breath and registration.

Robert Best: The first thing I look for in a singer is evenness of scale. If the scale is relatively even, then I know there is less physical manipulation by the extrinsic musculature than there would be otherwise. There are tremendous ramifications in the speed of progress a student is then able to make, and how versatile, at least potentially, that instrument will be in the future. Evenness of scale indicates a synergy of all components working together to an adequate degree (at a minimum). Another important aspect of good vocal technique, at least to me, is how the abdominals release during inhalation. Too often, in my opinion, singers overwork abdominal muscles in inhalation and don't release whatever tension happens to take place following exhalation. This is completely predictable since we have been developing our abdominal muscles since before we could stand as toddlers. Ergo, if I can "feel" it, I can "control" it. Too much tracheal (subglottic) air pressure is the result. In the *appoggio*, no overt pushing or pulling of the abdominals should occur (which is what I espouse in my teaching). In short, "effort" does not equal results. Efficiency of function equals results. In athletic parlance, lifting weights does not make you an athlete. One actually has to play the game in a coordinated manner combined with good physical condition. Synergy is the key. This requires activity, but not "effort" or tension.

Jack Coldiron: Freedom of production (breath support). Clear and resonant tone. Pleasing and colorful tone quality. Flexibility. Insistence on vibrato as a basic fundamental of singing.

Robert Harrison: If you had asked me that a number of times through my journey as a teacher, it probably would have been a number of things. However, what I believe right now, and probably where I'll stay for the rest of my teaching career is definitely on the element of breath. If you're not efficiently taking the air in, allowing the air into the lungs, and you're not expelling it with any correctness, resulting in decent phonation, there's no possibility of creating any kind of timbre, the type of which is needed to communicate the music.

Mary Ann Hart: I think freedom and comfort. If you are not comfortable when you are singing and it does not feel free, none of the rest really matters. It is all pretty inseparable. If you cannot breathe well, the sound is going to be compromised in some way.

Brian Horne: The first thing is vocal health. Their health and longevity is more important than any kind of immediate goal. A conservative, step-by-step approach is the most important thing in my mind, and hopefully it will be to them as well. Beyond that, an even breath production, an even scale from top to bottom, and a very natural sound so that they do not start manufacturing the sound.

Scott McCoy: What is most important to me is that no matter what the person sounds like, in terms of their vocal timbre or what they look like, that they say something to me

that moves me as a human being. That there is something in their music-making that engages my soul, makes me want to listen to them, makes me want to know them, makes me want to hear what they have got to say, because they have got something that's worth saying.

Timothy Noble: I think there are three things that are important: breath, placement ("putting it in the mask"), and getting the words out. Along with that teaching the agguistamento- letting the jaw go, keeping the larynx in a relaxed position, the pharyngeal area open. If the proper foundation of breath is present, it seems that everything else pretty much falls into place.

David Small: In teaching, I believe this largely depends on the student and where they are in their development. Ultimately, however, my own goals for the student would be to continually increase their awareness, efficiency and mastery of their singing body so they can communicate in their singing with more honesty and beauty. For some students, that is simply (or, usually, not so simply...) learning to sing in tune. For others it's discovering a more consistent resonance, or more clearly defined vowels, or learning to sing with consistent vibrancy and legato. For still others it involves learning to make interpretative and musical choices.

Patricia Stiles: The breath and then right after it the space. The breath must release into the resonance space. However, if the space is not open, the breath has nowhere to go and cannot move freely. I recommend usually inhaling passively by releasing the muscles of the chest and abdomen. This release of the muscles allows the lungs to open more and that causes air to be drawn in –inhalation. During the passive inhalation, one can allow the throat and upper resonance spaces to open. Then in singing there must always be enough excited, outward flow of the breath to fill the opened spaces, or they will close. This excited, outward flowing, vibrating air constitutes the sound. I often tell my students that they are a conduit through which the air and tone flow. I believe the engagement of the soft palate while singing is an integral facet of a sound which demonstrates the quality of high resonance. This engagement of the palate must be natural enough to allow for slight adjustments for each vowel change. Therefore trying to force the palate up can create tension and can have a negative effect on the sound.

Deborah Williamson: I believe that good singing finds its foundation in the breath management and that most of the technical problems that occur in singing are a result of an attempt to compensate for poor breath management. Therefore, I first introduce my particular choice of breath management, *appoggio*, and engage in regular warm-up exercises that deal with coordinated onset and release and a buoyant and elastic engagement of the abdominal muscles while maintaining, to the best of the singer's ability, the position of inspiration to the end of the phrase. Once an understanding and basic grasp of this coordination is established I start addressing the various compensatory behaviors, such as jaw or tongue tension, that are no longer necessary now that the appropriate muscles are involved in supporting the sound.

I am also a big proponent of appropriate resonance and of managing the transitions between the various registers of the voice. Once the student has a good

beginning toward proper breath management, s/he can more easily manage these concepts and the necessary adjustments to achieve the most beautiful sound possible, at a variety of dynamic levels, and throughout the range.

The ability to sing legato, to sing with agility, and to attain access to the singer's full vocal range are also important goals, and all, in my opinion, start with proper breath management.

In what order do you tend to address these aspects?

Chris Arneson: This is the order of events that I use as a guideline: relaxation, posture and alignment, respiration, phonation, support registration, resonance and articulation

Robert Best: I tend to address the mental aspects of singing first, as any progress in that regard will create positive change in the technique as a whole.

Jack Coldiron: 1) Finding the "true" voice - clear and free; 2) Support (posture and breathing); 3) Resonance - (tone development); 4) Flexibility

Robert Harrison: Always breath first. It all starts with how you get the air in, and how you manage the air so you can phonate. We can then create timbre and color by moving and shaping the articulatory system.

Brian Horne: Posture, breathing, evenness of scale, and a natural, free vibrato.

Scott McCoy: I tend to address them in the order that the student needs it, and that varies very much from person to person. I do not tend to teach anything in isolation. If I am working breath, it is always connected to sound, and never just as a breath exercise. I do the same thing with posture. We separate out the elements, but since we never do any of those things in isolation, I find that it works best if I do things in some semblance of the combination that they are actually going to have to accomplish. We may peel away certain layers, but it is pretty rare that we will focus for an extended period of time on one isolated element.

I don't think it is really possible to establish an order. If you look at the classic pedagogy text, you start with breathing, and then you do phonation, and then you do articulation – we are human beings and we are not wired in that manner, and while breathing is certainly the foundation of everything, if we do not have always in sight the end product, I do not see much point in working on it. So, I peel away the layers, figuring out from what challenges exist what needs to be improved. Then I work on multiple things essentially simultaneously, chipping away at the areas that need improvement. This helps the student to integrate everything.

Timothy Noble: Breath, breath, and then breath. And then a little bit more breath. And as the voice begins to open up, we can begin to address the *passaggi* in a constructive way.

David Small: The order also depends on the student and where they are in their development. Quite often that has to do with alignment and body awareness. In the majority of students, that has something to do with understanding how vowels are really produced and how little jaw involvement there needs to be and/or the head/neck/shoulder relationship. Sometimes the student needs to learn how much, or little, breath and energy is required in singing. Sometimes the student is doing many of the alignment/body use aspects well and it is possible to address resonance choices earlier.

I think unless they have a clear and true idea (sometimes called 'map') of what their singing body is, and is not, proceeding to other issues tends to be confusing for the student. In many other instruments the bulk of initial lessons is centered around 'what is this instrument and how do you hold it;' violin, for example. I think we would be wise to adopt a similar strategy.

Patricia Wise: I sometimes have to change their posture. That might be number one. If they are not holding their head correctly, they cannot get a free tone. Then I want to make sure the tone is even, that we find the proper inner space, the inner lift, and what I call the *giro vocalis* – the circle of vowels – putting the vowels all in the same space. That makes for better resonance. And then breathing. Those are the main things.

How do you determine which technical aspects to address first?

Chris Arneson: Since there are usually more than a few, I start with areas of strength—those areas in which the singer demonstrates some skill.

Robert Best: By addressing large-scale aspects in the simplest manner possible. Why work on several small things, which you then have to remember usually in a particular order, when you can remember one or two changes on a macro level that will have a positive effect on numerous facets of a technique? Case in point, addressing a student's vocal self-image. If a particular sound is far too dark, then any changes to that production will help balance one's phonation to an acceptable level of *chiaroscuro*. This one large-scale change will have a tremendous positive impact on the entire vocal mechanism in lessening over-bulking of thyro-arytenoid muscles, lessening over-activity of extrinsic muscles, and lessening the amount of tracheal air pressure. Intonation will likely be improved, as well as any concerns pertaining to registration.

Jack Coldiron: Evaluating needs of the student will help in determining where to begin. In many, the fundamentals of posture, breathing and phonation must be addressed early on. Careful attention to the basic vocal gift is an essential responsibility of the teacher. Patience must be exhibited in order to establish proper procedures. Reasonable encouragement from the teacher is assumed.

Robert Harrison: I am always led to the breath and making sure that the breath gets in amply, comfortably, with the least amount of toil and work, and that it is expelled with the least amount of toil and work. I want all of the air that moves through the glottis to be converted to sound to the greatest possible degree. And from there, to me, you've got the cake baked. Adding timbre to it is nothing more than an adornment, like putting a wonderful icing on the cake. But there's no point icing the cake until it is baked. Get that air converted to fundamental frequencies, then you've got the fundamental material with which to sing.

Mary Ann Hart: What is the most annoying part of their sound? How can we get rid of that? Almost all of them respond to some breathing things, like lip trills, something to get the air moving. I then use non-vocal things to get away from the "I'm doing it right, I'm doing it wrong" thing, so the voice releases more.

Brian Horne: First, I observe them and listen to them. I address the visual things that are apparent before auditory things. If they have a posture that I think is not serving them well, or if they have a jaw position or anything else that is not natural and easy in their posture and their facial position, I would address that first.

Scott McCoy: That is determined by what is needed. If there is something that is a fairly easy fix, and there is something that is a more long-range fix, I work on them more or less concurrently, but try to master them in a logical order. For example, the person is having a registration issue. If there is something in the whole chain of the technique that is absolutely preventing proper registration from occurring, such as an elevated larynx, if you do not figure out how to address that foundational element first, everything else you are doing is in vain. All of it is going to change when you get that core foundational area fixed. So one must discriminate between things that are the band-aids and the cures. I have never really in my years of teaching had two students that were the same, that uniformly presented, "ok, now we need to do this, now we need to do that." I know there are teachers who have that kind of a systematic approach and are famously successful. Everybody comes in, you do the step one, then you do the step two, then you do the step three. It may work very well; it just does not work for me.

David Small: Again, it depends on the student. Most often, though, it has to do with an awareness of the instrument and an understanding of 'how to hold it' (alignment), although developing or increasing an awareness of the sonic ideal is key too.

Deborah Williamson: This will vary with each student. I usually approach teaching voice like one would peel an onion, and deal first with whatever is the outer layer, or

most “glaring” issue. These areas of technical challenge can usually be traced back to improper breath management; but will vary from one singer to the next.

When that “layer of the onion” is peeled away, I go for the next most obvious technical challenge. I find it is most helpful to focus on no more than one or two concepts at a time and to isolate those issues in the vocal exercises as well as the repertoire through consistent feedback and application of concepts and techniques to resolve the specific issues at hand... If the teacher loses focus of these objectives and “wanders around” from one issue to the next, the student will become frustrated and will not have a sense of accomplishment.

Patricia Wise: I do a quick diagnosis. I get them to stand in the middle of the room so I can see their posture and I check that out. Then I listen to the sound. With young singers, I mostly work to open up the sound, and to assure that they are using their support. Actually this is what I do with older singers too.

How would you describe a professional vocal production?

Chris Arneson: Consistently resonant tone that is vibrant and dynamically variable along with free articulation to allow clear communicative diction.

Robert Best: One that can convey great artistic depth and versatility with efficient resonance to project over an orchestra. Issues pertaining to solid intonation and impeccable diction should be a given.

Jack Coldiron: A voice of adequate size and strength, clear and resonant tone, variety of tonal possibilities (timbre), consistent vocal line, range of up to two octaves, and consistent vibrato.

Robert Harrison: I would describe it as someone who has a vocal efficiency. I’m not going to say beauty of voice, but they must demonstrate a vocal efficiency and they must possess sufficient voice to communicate the combination of words and music at an extremely high level – at a distinctive level that might exceed anyone else.

Mary Ann Hart: Free, consistent, has options for every note in terms of registration. A technique that knows percentages (30% head voice, 70% chest voice), whether you think of it in those terms or not. A voice that has color options.

Brian Horne: A natural beauty. A fairly wide range available to them with control over dynamics and various languages if it is an operatic voice. That they sing in tune, and rarely have issues with intonation.

In addition they need to have some way to emotionally connect with the audience. I tell my students that they need to bring in a new piece with all the notes and rhythms and diction and phrasing accurately learned, but that nobody ever won a Grammy or got a contract by being breathtakingly accurate. They need to find some way to be unique while still being true to the text and to the original tone of the music.

Scott McCoy: Professional vocal production is that which gets you hired. There needs to be an exquisite timbre, meaning that it is something that engages people's interest, and is something that is sustainable. There is no sense in having a sound that thrills people if you are only going to be able to do it for two years and then you are burned out. We have got to help singers establish a technique that will enable them to practice their craft over the long haul. That means that you have got to be holding something in reserve and you need to maintain enough flexibility while still baring enough of your insides to make it engaging.

Timothy Noble: I hear the depth of sound. I hear chiaroscuro. If a voice is connected to the breath, if the jaw is relaxed and the larynx is in a relaxed state, then the chest resonance and head resonance are both present in the voice. The resulting vocal production is mature and professional.

David Small: Assuming we are talking about classical operatic or recital singing, I would describe it as in tune, consistently vibrant, beautiful, genuinely expressive, and appropriately and consistently resonant. The singing should have carrying power appropriate to the genre and appropriate to the individual singer's body (energy/formant energy to allow the sound to 'get over' an orchestra in orchestral forms, etc.). A professional vocal production (which I often call 'commercially viable' singing) must have an appropriate range of dynamic possibilities, a variety of tonal color possibilities and a mastery of many other aspects such as pronunciation and stylistic refinement. Much of this applies to other genres, too.

Patricia Stiles: The professional singer will hopefully demonstrate freedom and release in the sound. If they release the breath into their resonance space, it will release out to the audience. They need to have a large enough voice to carry well. They also need to be able to communicate. It is not enough to stand on stage and think technically. I think there are times when you have to think about technique, such as before a high note or a challenging passage, but the technique needs to be organic enough that the singer is free to express the text or portray the character to the audience. They need to have physical and vocal resilience. They need to be able to hear criticism and not take it personally; to be able to stand on the stage and say, "This is what I have today. Take it or leave it."

Deborah Williamson: A professional vocal production has a certain refinement of tone due to balance throughout the mechanism in breath, resonance and registration. This results in considerable control and a lot of options in the use of dynamics, a wide variety of colors, expressiveness, diction, range, legato, and agility.

Patricia Wise: Endless legato. Instantly recognizable, working legato that brings the best of the resonance and tone color immediately into view, so to speak, into hearing. The singer opens his/her mouth, and from the first moment, even an untrained person will be able to hear instantly a professional sound. They will hear it emotionally.

How important to you is correct body alignment?

Chris Arneson: No alignment, no breath, no tone.

Robert Best: Body alignment is particularly important as a teacher since that's the portion of the instrument that we can actually see. We can't see if the lateral crico-arytenoids are adducting properly, or if the arytenoideus muscle is still underdeveloped in adolescent or young adult singers.

Jack Coldiron: In order to achieve maximum vocal production the body must realize a proper alignment.

Robert Harrison: I think it's absolutely essential. If the body begins to take on even the slightest degree of a fetal position, it's going to affect singing. Any bend, any bend in the spine, for example, is going to reduce lung capacity. When you reduce lung capacity you then reduce the amount of air that can get into the lungs; the lungs can't expand, because the space has been reduced.

Brian Horne: I think it is very important. Cosmetically, the way a singer looks affects the way he is perceived by the audience. Physiologically, there are things that have to be aligned in a certain way for efficient breathing and stamina.

Scott McCoy: That's a tricky question. It is part of our toolbox, and clearly in the early stages of singing, good technique is going to be complemented by knowing how to hold your instrument. On the other hand, once one starts working, one is confronted routinely with required physical postures that go completely contrary to everything that we have talked about in all of our voice training. You lie down on the stage, you drape yourself across a rock – stuff that we would think is absolutely counterproductive, and yet the great singers are able to maintain the full beauty of their sound, unperturbed by having to do this kind of stuff.

Timothy Noble: It is not something that I really go after. I expect my kids to have pretty good posture, and most of them do.

David Small: It is a key, if not *the* key, foundational technical issue. If the body is not used efficiently, achieving freedom of use, movement and expression in singing is immensely more challenging.

Patricia Stiles: It is very important for my students. It is one of the first things I mention. I have studied the Alexander Technique and Feldenkrais Method and have several of my own methods to address body alignment in singing. I remind them frequently, some more forcefully than others.

Deborah Williamson: Correct body alignment is of paramount importance as it directly relates to breath management. I have also found that most problems involving a low soft palate, rigid tongue and jaw issues can be traced back to a postural issue involving the head and shoulders.

How would you describe ideal body alignment?

Chris Arneson: Ideal body alignment is free and flexible, energetic and athletic. I associate alignment with breath. An exhilarated, open, body, ready to receive breath will be correctly aligned.

Robert Best: My ideal body alignment is to make certain that the head is suspended directly over the arches of the feet, the chest is comfortably upright and buoyant, shoulders are back and down, and the head is level. One should stand as if they could easily move in any direction at any time.

Jack Coldiron: A line extending downward from the head - through the ears, the shoulders, the hips, the knees and the ankles is recommended. Feet should remain flat on the floor.

Robert Harrison: I tell my students to imagine that they can see a straight line, not a rigidly straight line, but a comfortably vertical line from the base of the earlobe all the way down to the ankle. I find it important to get my students in to the noble posture, getting the chest in its comfortably highest position.

Mary Ann Hart: The neck is back, and the head is free to release. I know that when the neck is back, the jaw is much freer to release. Many, many singers thrust with the jaw, and use the jaw for support. When your head is aligned, the jaw can drop naturally with gravity to whatever position you need it to be in, and you do not feel the tension in the jaw that a lot of singers have.

Brian Horne: Everybody has a different body. I would like for a student to stand and look to me as though they are comfortable, and yet that they are taking it seriously. They are neither slouched nor too formal, but comfortable, and they look confident, intelligent, well-prepared, and enthusiastic about what they are about to do.

Scott McCoy: My goal with posture is the same as with any other element of technique: that it is flexible enough to be able to sustain the singing and that you know where there is a home base. You must be able to figure out what elements of that alignment are truly essential for what you are doing.

David Small: Correct body alignment should not be 'held' or 'posed' but fluid and efficient. Balanced.

Patricia Stiles: The joints need to be aligned: the shoulders over the hips and the knees free to move, the feet apart enough to maintain an athletic, but elegant stance. The shoulders should be down and the shoulder blades can lie flat on the back, which opens the chest. The head needs to be level as if one is looking somebody in the eyes. A good head position allows the neck to move freely. I have seen many successful singers who elevate their chin slightly. I find that, often, this position shortens the back of the neck and favors mouth resonance over head resonance. The whole body needs to be in a state of athletic readiness. Standing like this, I can run [snaps] just like that.

Deborah Williamson: Ideal body alignment maintains the natural curvature of the spine with the head resting on top. Alexander Technique and various Body mapping strategies can be very helpful in this regard.

Patricia Wise: In a way, it is like a puppet hanging from a string. Everybody is different, but in general the shoulders need to be down and back, the chest needs to be open, the sternum needs to be high, and the chin need to be on an even level, so that the head could fall in any direction. There will be no tension in the neck.

What are, in your opinion the most common postural faults you see in students?

Chris Arneson: The rotation and translation of the jaw and locked knees and hips are common postural faults along with a collapsed sternum.

Jack Coldiron: Feet not flat on the floor. Weight on one foot, distorting the entire body alignment. Shoulders slouched to the front compressing the upper torso and lungs.

Mary Ann Hart: Schlumping. Schlumping around.

Brian Horne: The shoulders are a little too bowed forward and the chest sinks just a little bit. Students relax the external intercostals and allow the ribs to sink, particularly during exhalation, so that the first step of their new inspiration, the new breath, has to be lifting the external intercostals. I believe that you are better off if you hold the external intercostals up and expanded so that the chest is in a stable position, whether you are at the beginning of the breath, in the middle of the breath, or at the end of the breath. When you renew the breath, you do not see any activity in the sternum: it is all down and out. The student should have a very strong stance that is well-grounded. I think men are generally okay with that, but I have a lot of young women who come in and have had dance training. They want to stand in kind of a feminine, third-position dance position, that I do not think is very strong.

Scott McCoy: In my younger students, it is the basic societal influences. Young people do not carry themselves in the way that people used to. In my undergraduate methods class, I will often cut out pages from the New York Times fashion magazine and have them assess the posture and alignment of the models that they see. These are the role models of many of the young people. That is what they aspire to look like: the slouched posture with a collapsed chest and a swayback, sticking out the butt

There is an element of figuring out what sort of presentation of the body is required just to look good on stage. And for the most part, that facilitates good singing. Clearly there is a tendency in our less experienced singers to be too casual, and not understand the energy that is required to maintain the open physical posture that will enable good singing. That does not mean that it has to be aligned in a specific way, but there has to be the openness that allows the freedom of the movement for the body.

Timothy Noble: They stand with their shoulders forward. You do that, the chest collapses, and you have no chance. The other thing is, sometimes they breathe in too high, too shallow, and then tension sets in. But those are the worst things.

David Small: I cannot say what the most common alignment issues are. Often a student displays several misunderstandings of body use, such as tucking their chin or raising their chin and slouching. All of these are issues of awareness and can be corrected by first getting the student to find a good alignment.

Patricia Stiles: They stand with the pelvis tipped forward so that the belly falls out of the pelvis. The Germans say that the *Bauch* is out of the *Becken*. They need to let the pelvis rock back, which will let the knees release and give more space for the breath. I also see people with rounded shoulders and a chin and head that push forward. I often tell my students to have a “long, beautiful neck.”

Deborah Williamson: The most common postural faults that I see in students are “slumping” shoulders and a head position that is too far forward. I think these faults are directly related to sitting at a computer. I also have noticed, especially in men, a tendency to rock the pelvis forward and eliminate the natural curve at the small of the back. This can create tension in the lower abdominal muscles and inhibit the ability to release those muscles when taking a breath.

Patricia Wise: Common postural faults are something wrong with the neck, the position of the upper back. The shoulders are often rounded. They lean to one side. They do not use the flare of the back. Awareness cures that. You want to observe and discover the habit. They have to say “oh my gosh, I never knew I did that.” Then you want to inhibit and replace the habit. Anything you change is going to feel wrong at first.

How important to you is a correct concept of breathing?

Chris Arneson: I do not address breathing, per se. I relate breathing to the need to express. The phrase that is to be sung, and its emotional content, dictates the kind of breath that is taken. The breath is part of the emotional expression. The body reacts flexibly to this approach.

Jack Coldiron: Breath is the power source of the voice. No breath - no voice. Efficient use of breath leads to free and efficient phonation.

Robert Harrison: If you don't have your breath, if the breath is taken away from you in one shape, manner, or form, the voice locks down and it cannot communicate. No air, no sound. No sound, no dollars.

Brian Horne: I think it is very important. The shoulders should be held back and the external intercostals expanded so that the ribcage is expanded in a noble position, like a rain barrel. Sometimes I use the image of a plastic baby bottle with a disposable plastic liner. The hard plastic outside is an example for what the ribs should and the disposable lining is like the lungs.

When you draw your breath in, the diaphragm will drop down, and the viscera will expand outward. You will see it as a downward and outward expansion. If the chest is not expanded enough at the beginning of the breath, then the diaphragm will not descend as much as it should. I think that to get the diaphragm really activated, everything else in all the other dimensions should be expanded already, because you have direct control over that. That way you get the diaphragm to descend to its greatest and most efficient extent.

I will say also that I think sometimes people worry too much about how much breath they are getting, and not about the efficiency with which it is used. They try to make it athletic. They dwell so much on how much breath they are getting that they do themselves a disservice, and I try to avoid that.

Scott McCoy: Clearly, we cannot sing if we cannot breathe. I firmly believe that there is no such thing as a correct method of breathing. I think there are many, many correct methods of breathing, and it is going to vary from person to person, and even from day to day, and from piece to piece. In the end, the correct method of breathing for us is the breath that enables us to sing expressively over a sustained period. So we have to figure out how to balance air flow and pressure and have to figure out how do we use the big

muscles of respiration so that we do not have to use the little muscles of our larynx to act so much as a valve regulating pressure. How that's going to play out in any given individual, I think, is extraordinarily variable.

Timothy Noble: The most important thing for me is the breath. That is the first thing.

David Small: It's key, perhaps right next to alignment.

Patricia Stiles: Of course the correct concept of breath is very important. However, I do not always address support directly. I do explain how to take a good breath and how I believe support occurs as the breath exits the vocal apparatus as sound. But I also set up situations where they can experience how a good breath feels and what good support is. When they discover for themselves, this knowledge is then their own. For example, I give them exercises such as [siŋ iŋ iŋ iŋ iŋ] or [fiŋ iŋ iŋ iŋ iŋ] working through all the vowels. If they sing the exercises correctly, they are supporting well. I say, "That was right! How did it feel? Now, what did you do to make that happen?" Sometimes you have to address it directly, but I try to make it as organic as possible.

What are, in your opinion, the most common breath related faults you see in students?

Jack Coldiron: Lack of knowledge of the breathing process. Clavicular, or chest breathing. Inability to inhale to the proper extent and inability to find the balance of coordination of the muscles in the breathing process. Lifting or pulling in of the abdominal area.

Robert Harrison: Well, in students' early days, it's common to see them take too little breath, catch breaths, for example, between phrases, where you quickly inhale and in short order you abruptly close the glottis to prevent any more air from going into the lung. Also, the inability to convert air fully into sound, engaging appoggio, for example.

Mary Ann Hart: I think you need to know what you are asking your body to do. Almost everyone needs to move the center of activity south, and to let more of the body be involved. I think feeling a lower center of gravity is really important. If you are over elevated it will compromise your throat. You need to have the neck back and a sort of upward feel to your body, but still have a base of groundedness. Many students, if you pushed them, they would fall right over. They are not on the ground. Have them feel where the ground meets the bottom of their foot. To me, you cannot get a good tone if you cannot let the upper part of your body be free.

Brian Horne: Two things: 1) they allow their shoulders to come forward and their chest to collapse during the latter part of the phrase; 2) they think that there are issues in their tone that are breath-related when they are really phonation-related. If the cords are not operating efficiently, for instance, the tone will not be clear. The student will complain about running out of breath quickly, but the problem won't be fixed by addressing breath.

Timothy Noble: Breathing high. A shallow breath is no good. You can get too much air, and a lot of singers tank up, and, at the end of the phrase, all that air has to come out. You have a hard time trying to control it. Less is more. But the biggest fault that I see is shallow breath.

David Small: It's hard to say what are the most common breath-related faults, but probably it would be inappropriate breath pressure (either too much or too little). How to address this depends on the student and what the root cause of the issue is. It can be an alignment issue. It can be the vocal folds aren't approximating efficiently (which could be 'user error' or could be medical). Often it's related to the singer's sonic ideal, such as trying to sound like Pavarotti or Justin Timberlake. It can seem like a breath issue and, in reality, be a resonance issue. It can be that the student is not expanding enough, or trying to expand too much, in their thorax. It can be that the student is doing fine with the inhalation but collapsing or otherwise being inefficient in their exhalation. It's key to discover the cause, so you're correcting the right problem and not creating a new set of problems.

Patricia Stiles: Students don't release the breath. They sing, but they hold the breath. Once they learn to release the breath they tell me, "That was so easy." They also suck in the air on the inhalation. If they learn to use the body correctly, the air will be drawn in and they will not feel the need to suck it in. One thing I learned late, though I think I was always doing it when I sang well, is to open the lower back. If the lower back opens then the entire body opens for the breath. There is more space. I feel that breathing mechanism goes from the armpits to the pelvis. I don't want my student to just fill up in the chest, but all the way down into the lower body.

Deborah Williamson: The most common breath related fault that I see in students is a breath that is too high, one that doesn't include a real release of the lower abdominal wall during inspiration. I also see a lot of students "tanking up" or drawing in so much air that they are creating a considerable amount of tension and locking in the body, rather than trusting that the vacuum that is created by simply opening the body (expanding the ribs, allowing the diaphragm to descend and the abdominals to release) will bring in exactly the right amount of air in a relaxed and buoyant manner that is most conducive to singing with ease.

Patricia Wise: What many singers do not know about is the release. Use the breath right to the end of the phrase and then release it for the next onset (in a continuous phrase or set of phrases), which is going to be perfect and energized and spontaneous. The release is the breath intake, the emotional onset, the clear onset, and all that happens in a second.

If one finishes with energy, the chances are strong that the intake and onset will be energized as well.

Also, students take in too much breath. Or they are locked and only take in from the top of the lungs. Once you know the music, your mind and your apparatus will know how much breath to take in, IF the release is complete. What will be enough for “Quando m’en vo?” It is a short phrase. But if it is going to be the long phrase, as if for Pamina, it is going to be more. Your mind knows how to do these things. Sing to the end of the phrase with absolutely as much breath as you need to finish it and a little bit more. It should be learned so that performance is then instinctive.

Appendix 2

Posture Analysis Guide for the Studio

Client: _____

Date: _____

Checklist:

___ Is the whole body forward of the plumb line?

___ Is the whole body behind the plumb line?

___ Are there parts of the body forward or behind the plumb line?

Which? _____

___ Are the head, thorax, and pelvis aligned in relation to each other?

SIDE VIEW

Feet

___ neutral

___ wide

___ narrow

Knees

___ neutral R L

___ hyperextended R L

___ flexed R L

Pelvis

___ neutral R L

___ anterior tilt R L

___ posterior tilt R L

Lumbar Spine

___ neutral

___ flat

___ excessive extension

Lower Thoracic Spine

___ neutral

___ flat

___ excessive flexion or extension

Upper Thoracic Spine

___ neutral

___ flat

___ excessive flexion or extension

Cervical Spine

___ neutral

___ flat

___ excessive extension

Head

___ neutral

___ forward

___ retracted

FRONT VIEW

Body

___ symmetrical

___ shifted R L

Pelvis

___ level

___ elevated R L

Shoulders

___ level

___ elevated R L

___ depressed R L

Head

___ neutral

___ rotated counter-clockwise

___ tilted R L

___ shifted R L

BACK VIEW

Body

___ symmetrical

___ shifted R L

Pelvis

___ level

___ elevated R L

Shoulders

___ level R L

___ protracted R L

___ retracted R L

___ elevated R L

___ depressed R L

Sequencing Through the Spine

___ are there flat areas?

___ are there lateral imbalances?

Index of Vocal Faults

The following index is a list of vocal faults as they manifest in a student's body or sound. One of the greatest challenges facing new teachers is being able to associate a perceived vocal fault with its underlying cause. This index lists various physical and vocal faults, provides a brief explanation to the underlying physiological cause, and refers the reader to appropriate sections of the main document for more information.

References in SMALL CAPS denote sections in the main document and references in italics denote entries within the index.

Faults that manifest in the singer's body

Anterior pelvic tilt- Common in students with Lordosis and/or Kyphosis. The pelvis rocks forward of neutral. Students with this alignment may appear to have a protruding buttocks, an abnormally curved lumbar (lower back) spine, and an unusually pronounced belly. For corrective procedures, refer to PELVIS AND LOWER BACK on page 16. See also *Lordosis*.

Body leans to one side- see *Imbalances*.

Body sways backward- see *Imbalances*.

Body sways forward- see *Imbalances*.

Chin- see *Head and Neck*.

Collapsed chest- see *Kyphosis*.

Excessive lumbar curve- see *Anterior pelvic tilt*.

Flattened spine- A neutral spine will exhibit a natural curve in the lower back (lumbar spine), upper and middle back (thoracic spine), and in the neck (cervical spine). Students who have, through muscular tension, flattened any area of the spine should be guided toward a more neutral physical alignment. For corrective procedures, refer PELVIS AND LOWER BACK on page 16.

Head and neck misalignments- Cervical alignment is essential to healthy vocal production. For detailed information on head and neck misalignments and corrective procedures, refer to HEAD AND NECK on page 45.

Head forward of midline- Common in students with Kyphosis. For corrective procedures, refer to HEAD AND NECK on page 45. See also *Kyphosis*.

Head juts forward at the beginning of phrases- The student is attempting to recruit unnecessary muscles to assist with phonation. Establishing proper alignment habits will assist with the issue. Additionally, establishing proper breathing habits will allow unnecessary muscles to relax. It may be necessary to cue the student to lengthen the back of the neck for several weeks until the new postural habits are established. For detailed corrective procedures, refer to HEAD AND NECK on page 45.

Chin elevates as pitch ascends- This action is part of the natural “yell” response which seeks to shorten the vocal tract as pitch ascends. The resonance factors associated with the “yell” response are beyond the scope of this document; however, the student needs to be taught general strategies for accessing the upper portions of his/her range. Additionally, ensuring a proper concept of physical alignment may be helpful. For corrective procedures regarding posture, refer to CHAPTER II.

Chin tucks as pitch descends- This action allows the student to access pitches otherwise outside of his/her range. It may also alter the way in which the student perceives his/her sound, giving it a darker, more robust quality in the student’s mind. This action is unnecessary. The resonance factors associated with this action are outside the scope of this document; however, ensuring a proper concept of physical alignment may be helpful. For corrective procedures regarding posture, refer to CHAPTER II.

Head leans to one side- see *Imbalances*.

Hips forward of midline- see *Sway Back*.

Hyperextended knees- The knees are locked and will, at times, appear to bow backward. Often associated with a sway-back posture. For corrective procedures, refer to PELVIS AND LOWER BACK on page 16. See also *Sway-Back*.

Imbalances- Deviations from midline are indications of a postural misalignment. Such deviations include: leaning back, leaning forward, tilting to one side, tilting the head to one side, etc. While students should feel free to shift their weight during performance, one’s neutral stance should be balanced and lined up in the most anatomically efficient way. For corrective procedures, refer to CHAPTER II.

Kyphosis- A postural misalignment which accentuates the curve of the upper thoracic spine. The shoulders may slump forward, the upper back may round, and the

chest may appear collapsed. For corrective procedures, refer to PELVIS AND LOWER BACK on page 16 and/or RIBCAGE AND CHEST on page 40.

Locked knees- see *Hyperextended knees*.

Lordosis- A postural misalignment which accentuates the curve of the lumbar spine. Typically caused by an anterior tilt of the pelvis. See also *Anterior pelvic tilt*.

Pigeon toes- The feet, rather than being parallel or slightly turned out, are turned in so that the toes angle toward each other. Such a posture reduces the stability of the leg. In extreme cases, pigeon toes may compromise the knee joint, leading to knee-related injuries or issues. For corrective procedures, refer to LEGS AND FEET on page 13.

Posterior pelvic tilt- The pelvis rocks backward of neutral. Students with this alignment may appear to have no curve in the lumbar spine, may shift their weight onto the heels, and may exhibit a shrunk or collapsed chest. For corrective procedures, refer to PELVIS AND LOWER BACK on page 16.

Rounded shoulders- see *Kyphosis*.

Sunken chest- see *Kyphosis*.

Sway-back- Sway-back refers to a postural misalignment in which the pelvis shifts forward of midline. The student may exhibit hyper-extended knees, a sunken chest, a hyper-extended neck and what appears to be an abnormally curved lumbar spine. For more detailed information refer to PELVIS AND LOWER BACK on page 16.

Tension- Unnecessary tension in the body will affect a singer's ability to phonate freely. Common areas of tension are the neck, the shoulders, the abdomen, and the legs. Establishing an efficient alignment will assist with relieving excess tension in the body. When in doubt, have the student move: movement is the antithesis of tension.¹⁵⁰ For cues and images to assist with relieving tension, refer to CHAPTER II.

¹⁵⁰ Please refer to footnote 147.

Faults that manifest in the singer's sound

Anemic- See *Hypofunctional inhalation*, *Hypofunctional exhalation*, and *Core, lack of*.

Breathy- Often caused when the vocal folds fail to close completely. Though this is specifically an issue with phonation, it can be addressed through breath, phonation, and resonance. Phonation and resonance are beyond the scope of this document. The main breath-related cause of incomplete vocal fold closure is too little air-flow or air-pressure. See also *Core, lack of* and *Hypofunctional Exhalation*.

Brittle- See *Hypofunctional inhalation* and *Hypofunctional exhalation*. May also be related to tension in the pharyngeal walls. See also *Open throat*.

Carrying power, lack of- May have several causes. Assuming the voice is healthy, a lack of carrying power may result from poor resonance strategies, incorrect breathing concept, or lack of physical maturation. Assure that the student is using his/her voice as efficiently as the body's current physicality will allow. See CHAPTER III for details on establishing a correct breathing technique.

Caught (in the throat)- See *Freedom of the Breath* and *Open Throat*. May also be related to articulatory tension or laryngeal position.

Colorless- See *Hypofunctional inhalation*; *Hypofunctional exhalation*; and *Core, lack of*.

Constricted- See *Freedom of the Breath* and *Open Throat*. May also be related to articulatory tension.

Core, lack of- Core, as it relates to singing, can be loosely defined as the focused, clear kernel of sound that is always present in a healthy singing voice. It is the result of freely vibrating vocal folds that completely close. Students who exhibit a lack of core have an imbalance in breath, phonation, or resonance. Phonation and resonance are beyond the scope of this document. The main breath imbalance is too little air-flow or air-pressure. See also *Breathy and Hypofunctional exhalation*.

Cracking- Excessive cracking may have several causes. 1) Hypofunctional exhalation, 2) Hyperfunctional exhalation, 3) Excessive tension in and around the larynx and pharynx, 4) Excessive tension in and around the articulators, particularly the tongue and jaw. See *Hypofunctional exhalation*, *Hyperfunctional exhalation*, and *Open throat*.

Diffuse- See *Core, lack of* and *Breathy*.

Dull- See *Hypofunctional inhalation*; *Hypofunctional exhalation*; and *Core, lack of*.

Dysphonic- The voice is unable to produce a clear sound in spoken or sung sounds because of illness, structural abnormality (e.g. nodules, polyps, cysts, hemorrhage, etc.), or a functionality. In the case of acute laryngitis, seasonal allergies, strep throat, or other such illness, rest and recovery should resolve the issues. In the absence of illness, the teacher must determine the severity of the dysphonia. Mild dysphonia may result from habitual speech patterns such as glottal fry, unsupported speaking, and frequent loud or prolonged usage. In these cases, learning appropriate postural and breathing habits may resolve the issues. In severe or chronic cases, students with dysphonia should be referred to a speech language pathologist or otolaryngologist.

Edgy- See *Hyperfunctional exhalation*. An edgy sound may also be caused by hyperfunctional phonation and resonance imbalances.

Endurance, lack of- May have several causes. Assuming the voice is healthy, well rested, and well hydrated, lack of endurance indicates that the vocal folds are not vibrating as freely and efficiently as possible. This may be a breathing, phonation, or resonance issue. Assure that the student has a good understanding of physical alignment and proper breathing technique. Lack of endurance may also be related to physical maturation and habits outside the voice lesson (e.g. yelling at sporting events, working in a smoky bar, long days speaking, etc.).

Flat (intonation)- Intonation issues may have numerous causes including misconception of breath. Flatting, when not related to poor musicianship or problems with hearing, may be caused by Hypofunctional exhalation, Hyperfunctional exhalation, or the excessive tension caused by both. See *Hypofunctional inhalation* and *Hypofunctional exhalation*.

Flat (timbre)- See *Hypofunctional inhalation*; *Hypofunctional exhalation*; and *Core, lack of*.

Flutter- An unusually fast vibrato that oscillates faster than eight times per second. Flutter is usually the result of tension within the vocal mechanism and insufficient or inappropriate breath flow and/or pressure. See *Hypofunctional exhalation*, *Grounding*, *Hyperfunctional exhalation*, and *Freedom of the breath*.

Forced- See *Hyperfunctional exhalation*.

Freedom of the breath- It is essential that the breath be allowed to flow freely. In some cases, students may fear running out of breath. They will reserve their breath, holding it back in the attempt to complete a long phrase. The vocal folds will lack sufficient breath pressure to vibrate freely and will either close incompletely, or, more likely in this case, grip tightly to control the air stream. In other cases, students will use too much breath pressure, assuming that more is better. Either way, the students should be taught to let their breath flow more freely. See *Hypofunctional exhalation* and *Hyperfunctional exhalation* for more detail and corrective procedures.

Fuzzy- See *Breathy* and *Core, lack of*.

Gravelly- See *Dysphonia*.

Grounding- A term used to describe the sensation of feeling connected to the floor. Many pedagogies use this sensation to help students identify with low breathing. Many students lose the downward and outward motion of the inhalatory muscles as a phrase continues, particularly as the pitch ascends. As a result, the student lacks appropriate breath control for the high note; the larynx may rise as a result. Asking the student to think down or to physically squat, bend, or plié as the pitch ascends may be helpful. See also *Hypofunctional inhalation* and *Hypofunctional exhalation*.

Harsh- May be caused by hypofunctional exhalation, hyperfunctional exhalation, or resonance imbalances. See *Hypofunctional exhalation* and *Hyperfunctional exhalation*.

Held- See *Freedom of the Breath*.

Hoarse- see *Dysphonia*.

Hyperfunctional exhalation- The student uses too much air pressure for singing. The extreme amount of subglottic pressure will not allow the vocal folds to vibrate freely. Refer to page 83 for detailed information.

Hyperfunctional inhalation- The student takes in too much air, overcrowding the lungs and causing excess tension in the breathing mechanism. Refer to page 81 for detailed information.

Hypofunctional exhalation- The student fails to energize the breath stream appropriately. The lack of appropriate air pressure will cause the vocal folds either to come together incompletely or to grip tightly in an attempt to control the flow of air. Refer to page 82 for detailed information.

Hypofunctional inhalation- The student will fail to inhale a sufficient amount of air to support a classically sung sound. Refer to page 81 for detailed information.

Intonation- There are numerous causes of intonation issues including, but not limited, to poor musicianship, inappropriate resonance tuning, misconception of breath, and problems with hearing. See *Flat (Intonation)* and *Sharp* for specific information.

Kermit-voiced- See *Freedom of the breath* and *Open throat*. May also be related to articulatory tension or laryngeal position.

Knödel- See *Freedom of the breath* and *Open throat*. May also be related to articulatory tension.

Lifeless- See *Hypofunctional inhalation*; *Hypofunctional exhalation*; and *Core, lack of*.

Noisy inhalation- A raspy or otherwise noisy inhalation indicates a constriction in the airway. See *Open throat*.

Obstructed- See *Freedom of the breath* and *Open throat*. May also be related to articulatory tension.

Open throat (*gola aperta*)- The term “open throat” refers to openness in the back of the throat, achieved by the gentle expansion of the pharynx and elevation of the soft palate. An open throat is an integral part of the *appoggio* technique and should be maintained during the entire singing process. Its relevance to resonance is beyond the scope of this document.

Over-singing- See *Hyperfunctional exhalation*.

Pinched- See *Freedom of the breath*, *Open throat*, *Hypofunctional exhalation*, and *Hyperfunctional exhalation*.

Pressed- See *Hyperfunctional exhalation*.

Pushed- See *Hyperfunctional exhalation*.

Rough- See *Dysphonia*.

Shaky- See *Hypofunctional inhalation* and *Hypofunctional exhalation*. May also be related to tension in the pharyngeal walls. See also *Open throat*.

Shallow- See *Hypofunctional inhalation* and *Hypofunctional exhalation*.

Sharp- Intonation issues may have numerous causes including a misconception of breath. Sharping, when not related to poor musicianship or problems with hearing, may be related to tension in the vocal mechanism or Hyperfunctional exhalation. See *Hyperfunctional exhalation*.

Shrill- May be caused by Hypofunctional exhalation, hyperfunctional exhalation, or resonance imbalances. See *Hypofunctional exhalation* and *hyperfunctional exhalation*.

Straight tone- Typically associated with inappropriate breathing technique or a lack of release in the vocal mechanism. If the student does not supply the vocal folds with appropriate breath flow or pressure, the vocal folds will be unable to vibrate freely. The student’s concept of good singing (i.e. popular genres) may also encourage the use of straight tone. See *Hypofunctional inhalation*, *Hypofunctional exhalation*, *Freedom of the breath*.

Strained- See *Hyperfunctional exhalation*.

Strident- May be caused by Hypofunctional exhalation, hyperfunctional exhalation, or resonance imbalances. See *Hypofunctional exhalation* and *hyperfunctional exhalation*.

Swallowed- Generally a resonance issue, though may be related to freedom and ease in the neck and throat. See *Freedom of the breath* and *Open throat*. May also be related to articulatory tension.

Tense- See *Hyperfunctional exhalation* and *Hypofunctional exhalation*.

Tight- See *Freedom of the Breath* and *Open Throat*. May also be related to articulatory tension.

Unconnected- See *Hypofunctional inhalation* and *Hypofunctional exhalation*.

Unfocused- See *Core, lack of* and *Breathy*.

Ungrounded- See *Grounding*, *Hypofunctional inhalation* and *Hypofunctional exhalation*.

Unstable- See *Hypofunctional inhalation* and *Hypofunctional exhalation*. May also be related to tension in the pharyngeal walls. See also *Open throat*.

Unsupported- See *Hypofunctional inhalation* and *Hypofunctional exhalation*.

Vibrato- See *Straight tone*, *Wobble*, and *Flutter*.

Weak- See *Hypofunctional inhalation*; *Hypofunctional exhalation*; *Core, lack of*.

White- See *Hypofunctional inhalation*; *Hypofunctional exhalation*; and *Core, lack of*.

Wobble- A unusually slow or wide vibrato with oscillations less than six times per second. Usually the result of tension within the vocal mechanism. Wobble may have a myriad of causes, including, but not limited to, physical alignment, breath, resonance, agility, prolonged misuse, and general sound concept. Refer to CHAPTERS I and II for specific details on teaching alignment and breathing. See *Hypofunctional exhalation* and *Hyperfunctional exhalation*.

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