

The Breathing Book

Tenor Trombone Edition

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6. *The Truth About the Diaphragm*

The diaphragm is a large dome-shaped structure which separates the thoracic cavity above from the abdominal cavity below. Your lungs rest on top of your diaphragm and, of course, the air goes in your lungs when you breathe. Air does not go below your diaphragm, in fact, if you believe air goes below your diaphragm, you are creating tension when you breathe. When you inhale, air behaves like air in your body, not like water. Air goes to all parts of the lungs immediately and equally. Air does not go to the bottom of the lungs first, as though filling up a glass of water. Trying to move air as if it were water to breathe creates tension and disrupts the natural movement of breathing.

Your diaphragm does not have many sensory receptors so you can't directly feel it move inside your body. What you can feel are the primary motion of rib movement and the secondary motion of abdominal expansion.

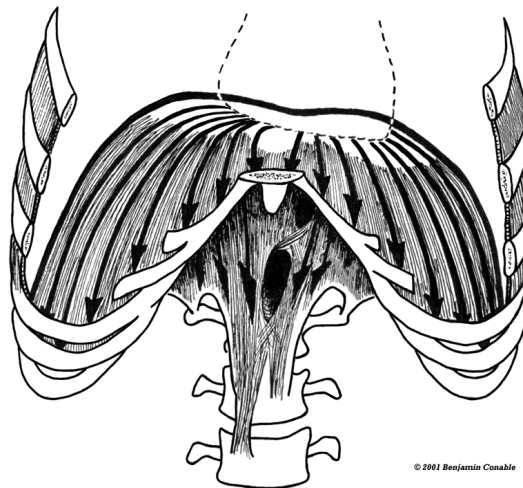
Your diaphragm and your external intercostals are the primary muscles of inspiration. As you inhale, the diaphragm contracts downward and the external intercostals swing the ribs up and out. The two movements depend upon one another because the diaphragm is attached to the ribs around the sides and the costal cartilage and the sternum in front.

The diaphragm contracts with every inhalation and relaxes with every exhalation. It is mainly muscle, although there is a circle of tendon in the middle called the central tendon (the white part in the image.) The muscle of the diaphragm contracts against the tendon, pulling it downward as you inhale. The phrase "breathe from the diaphragm" is confusing because it implies that there is some other way to breathe. It's like saying "smell with your nose"—there is no other way to do it!

The entire circumference of the diaphragm is connected all around to the inside of the sternum, the costal cartilage, the lowest ribs and the spine. Although you cannot touch the diaphragm, you can trace its position in the body. Try it now: looking at the illustration, trace the circumference of the diaphragm with your fingertips from the bottom of the sternum all the way around to your back. As you do so, bear in mind that the diaphragm domes well above the ribs that you are touching.

As you inhale, your diaphragm contracts, dragging the base of the lungs downward and increasing the circumference of the thoracic cavity. At the same time, the diaphragm pushes down hard on the contents of the abdominal cavity, squishing it out and down. This is where abdominal expansion comes from; it is a secondary motion which results from the diaphragm's downward motion. Pushing out your belly in an attempt to inhale does nothing more than create tension, so don't do it!

Since the diaphragm, ribs, costal cartilage and spine are connected, their motions depend upon one another. As the diaphragm makes its descent, the ribs swing up and out and the spine gathers. As the diaphragm makes its ascent, the ribs swing back down and in and the spine lengthens. All the motions happen together, not separated from one another. When you allow the motions to occur naturally, your breathing is organic and efficient, and your tone is resonant and free of tension.



6. The Truth About the Diaphragm

▲ = Inhale
 Time the inhale so it happens during this beat. Don't breathe in through the instrument.

□ = Blow
 Blow air through the instrument vigorously without creating a tone. Place the slide as though playing the indicated pitch.

♩ = 80

6.

Hold with empty lungs as you count the rests. Do not close your throat.

Are you moving your ribs?

Play

f Allow maximum resonance with minimum effort.

Stay relaxed as you hold and count.

Keep your elbows out of the way.

2

Hold with empty lungs as you count the rests. Do not close your throat.

Play

f

Be a bobblehead as you hold and count.

2

Hold with empty lungs as you count the rests. Do not close your throat.

Move like a bobblehead as you blow.

Play

f

Are you balanced?

Allow maximum resonance with minimum effort.