

Breath Support for Singing **(Everything you wanted to know about your diaphragm** **but were too afraid to ask!)**

What is the diaphragm?

- A very thin **muscle** separating the lungs from the abdomen.
- Dome-shaped – and moves up and down several inches in singers (less in people who are very sedentary).
- NB. Parts stay attached to the fascia with the heart and so the diaphragm is anchored at the top, along the inside of the ribs and to the spine.
- Also has blood vessels, gullet and 10th cranial nerve (vagus nerve) passing through it
- Where? Not as low as people think. At rest, it is halfway down your chest at the front. When it contracts it flattens and lowers slightly more at the back than at the front because we have more lung at the back.
- This [video clip](#) shows the diaphragm in action and explains why the ribs move as we breathe.
- Now you know where it is and what it is doing, try lying on the floor with your knees up and mindfully notice your breathing.

Questions – can you feel the diaphragm?

Can you feel the intercostal muscles between the ribs and the ribs themselves moving?

Can you feel the abdominal muscles below your belly button (six pack)?

Say zzz – long out-breath – Can you feel the abdomen now?

Answers below...

Diaphragm – more information

- It is fairly unlikely that you can **feel your diaphragm** (although if it were damaged you would know from referred pain).
- It is also quite difficult to **move it at will**.
- The diaphragm is mostly innervated by the **autonomic nervous system** (the body's internal control system); i.e. it carries on without us having to think about it. We do have a small amount of control over it, mostly because of the way it works in tandem with other muscles, especially the abdominal muscles which we can feel much more easily and which we have conscious control over.
- Breathing in - When the brain signals that the body is short of oxygen, it sends a signal via the autonomic nervous system to the diaphragm which contracts, shortens and moves down, thus creating a vacuum and sucking air into the lungs.
- Breathing out - At rest the breath is released as the diaphragm relaxes. When singing, the abdominal muscles contract, raise abdominal pressure, and push a gradually relaxing diaphragm against the lungs, causing air to be pushed out.

Implications for singers

- We don't ever need to mention the diaphragm in a group of singers.
- Instead we may want to mention the abdominal muscles as this is where conscious control comes from, but this is only necessary in advanced singers.

- We need to think about the out-breath more than the in-breath because that is the natural breath – it is when the muscle is relaxing. Then once the lungs are empty, the signal from the brain triggers and we have a big natural in-breath without any danger of over breathing, raising the shoulders, sucking in the belly or any of the other bad habits that we have learned over the years! **So it is probably not a good idea to say “breathe in”!**
- **Our brains are wired for sound.** As we know, the natural voice is to call to one another (as all mammals do). **We don't have to think about it** – the wiring has developed over millennia! It is the first thing we can do as babies even when our brains are immature.
- **So instructions on breathing are not necessary and even counter-productive.**

The benefits of moving the diaphragm

There is a fresh flow of oxygenated blood to the organs every time the diaphragm moves in an unrestricted way. Someone who is seated is not getting this. See [video clip](#).

Mindful breathing is extremely beneficial for us all – see below on trauma and read ***“The body keeps the score”*** by Van der Koch if you are at all interested.

A work-out for the diaphragm:

- Deeper breathing because of aerobic exercise
- Laughing, crying (sob voice), calling
- Standing. (When seated and/or slouched, movement is restricted)
- SINGING – difference between passive out-breath (muscle relaxing) and controlled singing on out-breath e.g. on zzzz (diaphragm has to release more slowly). This is why the British Lung Foundation programme **“Singing for Lung Health”** has developed. Learning more awareness of the abdominal muscles and how to control them helps people with a range of lung problems. We use mindful breathing to help develop this awareness.

A journey

Bad habits come about because of COPD and other lung problems. Children are shown how to suck in their belly when they breathe in, and this is wrong. Trauma and fear at any age also cause problems with the autonomic nervous system.

NB. Attempting to change people's breathing patterns and even focusing on the natural breath can be very emotional for some.