

BREATHING

The Importance of the Breath

Breath is perhaps the most profound force for life that we know of. It is hardly surprising then that the breath possesses a sacred significance for many cultures. In the ancient Indian language of Sanskrit, for example, prana is the life force coursing within us that ceases at the moment of death. We all need it and we can all learn to cherish it. If you want to understand more about how breathing actually works, this section is for you.

The Anatomy of Breathing

Breathing is essentially a delivery system. It is a brilliant way for a source of energy that lies outside the body (oxygen) to be delivered to all the cells within the body; and the waste product (carbon dioxide) to be delivered back to the world outside. If we do not take in oxygen and release carbon dioxide, our cells die, which is why breathing is the first and last act of conscious life.

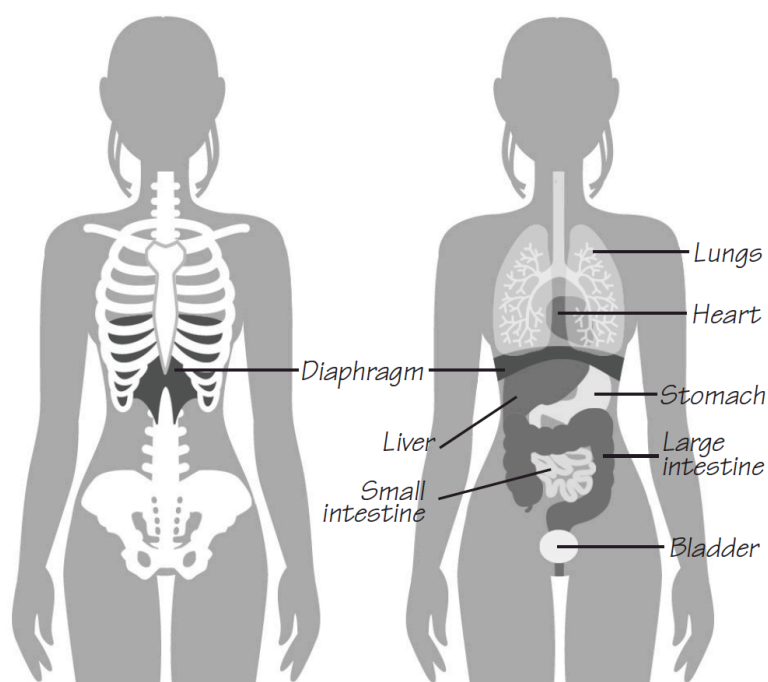
The complex biochemical and physiological process through which oxygen feeds the cells starts when the in-breath is triggered by the internal systems that regulate the rate of respiration in order to maintain a stable level of oxygen and carbon dioxide in the blood. The big muscle of the central thoracic diaphragm flattens down and the ribs expand, creating a partial vacuum in the chest cavity. As the air pressure in the chest is now lower than that in the atmosphere, air pours in, filling the lungs. It flows into tiny sacs in the lungs, where oxygen passes into the blood to be pumped around the body. When it reaches the cells, it is released into the tissues and transformed into energy. Simultaneously, the waste product – carbon dioxide – is released from the cells into the blood, where it travels back through the circulatory system to the lungs. It is then released from the blood into the air sacs to pour out of the body on the out-breath, at which point the diaphragm relaxes back into the chest, causing the lungs to deflate.

The whole process is initiated by two groups of respiratory muscles: the primary muscles, which are essential for full breathing, and the secondary, or accessory, muscles. In optimal breathing, the primary muscles do almost all the work. They are deeper and lower in the body and include the diaphragm, the intercostal muscles, which are between the ribs, and the deep abdominal muscles at the front of the belly. The accessory muscles, including the muscles in the neck, the shoulders and the upper ribs, are designed to do only about 20 per cent of the work. Of course, when we are stressed and anxious we tend to tighten the abdomen, preventing the primary respiratory muscles from functioning properly. This means the accessory muscles need to take over. However, they are not designed to do the main work of breathing

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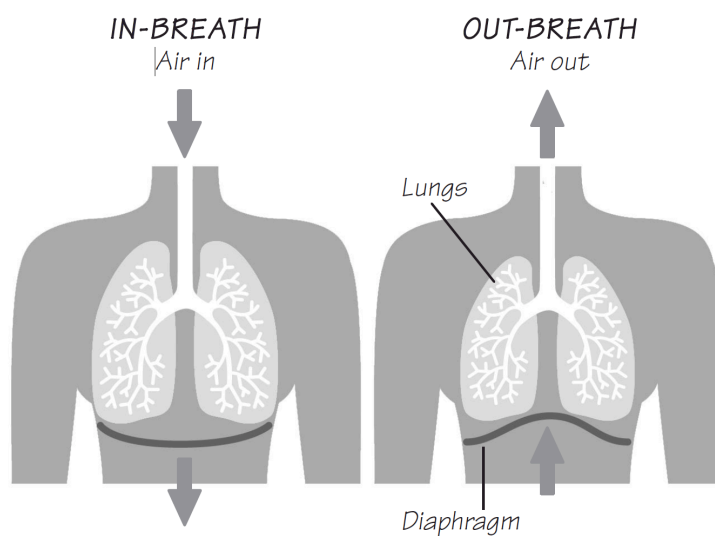
so, if this situation goes on for long, the result can be chronic shoulder tension, head-aches and fatigue.

The diaphragm (see below) is the most important primary respiratory muscle. A central tendon at the top of the dome-shaped diaphragm sits just beneath the heart, with fibres radiating out like the panels of a parachute. These attach, at the front, to a little bone at the tip of the breastbone called the xiphoid process; and, at the sides, to the insides of the lower ribs. At the back, two long tendons are connected to the first four lumbar vertebrae of the spine and these act like the handle of an umbrella. You may think that the breath only affects the front of the body, but these connections mean that the back of the body is also actively involved in the breath.



Whenever you breathe in, the diaphragm flattens and broadens (see below left). When you breathe out, it relaxes and rises back into the chest, resuming its natural dome shape (below right). It moves up and down in a regular, tireless rhythm. You can't feel this movement directly because the diaphragm lies so deep in the body, but you can discern it through its effects. Each time the diaphragm flattens on the in-breath, it displaces the inner organs, causing the belly to swell outwards and sideways. The organs are continually massaged, squeezed and rolled by this movement, bathing them in new blood, fluids and oxygen and draining waste. For example, the kidneys slide up and down beside the spine up to 3cm (1½in) with each breath cycle. The whole spine is simultaneously rocked and cradled.

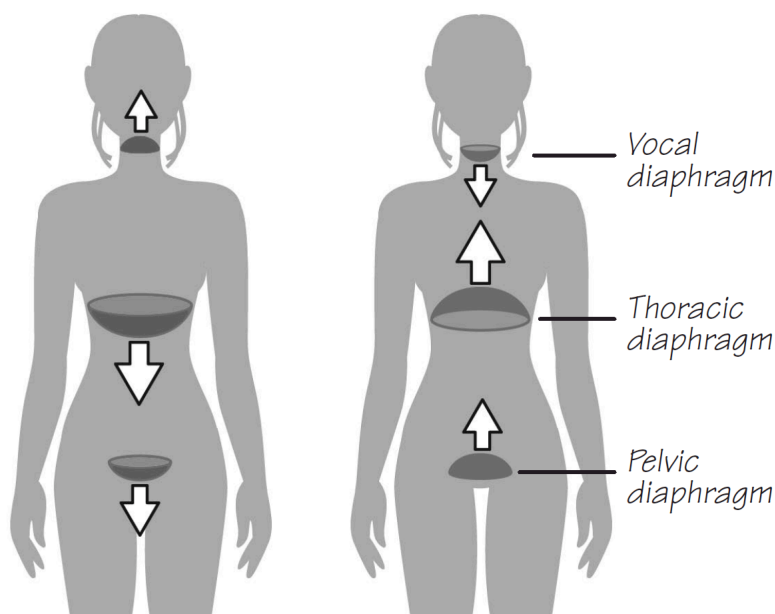
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This is full-bodied breathing, or diaphragmatic breathing, which stimulates the whole body and deeply affects our sense of wellbeing. If you are stressed or tense, your breathing will almost certainly be inhibited in some way, but, over time, understanding the basic anatomy of breathing and bringing your awareness to how you inhibit it, can gently release any patterns of holding. This allows your awareness to drop deep within the body and restores optimal, health-giving breathing patterns.

THE PELVIC AND VOCAL DIAPHRAGMS

People generally think the diaphragm within the chest is the only one that is important for breathing. There are, however, two other diaphragms that play a supporting role that allows the central diaphragm to work effectively. These are the pelvic and vocal diaphragms. (The word 'diaphragm' describes any membrane or muscle that separates two spaces in the body)



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If you look at illustrations above you will see how the three diaphragms are vertically aligned in the body. When you are breathing optimally all three diaphragms move - like swinging doors being blown open by the wind of the in-breath, and then swinging closed again as the out-breath leaves the body.

Pelvic diaphragm

The pelvic diaphragm is situated at the base of the torso. In order to picture its position, imagine you are sitting on a chair, on a flat diamond shape. The four points of the diamond comprise the anus at the back, the pubic bone at the front, and the boney tips deep in the buttocks are the two sides of the diamond. Although we generally think of the pelvis as being boney and immobile, the area within this diamond shape is made of soft tissue and can move with the breath. When we breathe in, the pelvic diaphragm billows downward and broadens, and when we exhale it retracts up into the body again. It is important to remember that this movement isn't conscious or active, and it is also a very small and subtle movement. It is completely receptive – like an echo of the larger movements of the main central diaphragm, in the same way the surface of an ocean has an undulating swell that is completely receptive to deeper currents. There is no need to 'do' anything to make the pelvic diaphragm participate in breathing. It will quite naturally move a little if you relax in this area.

To get a sense of the location of the pelvic diaphragm, make a tight fist with one hand and blow a few puffs of breath into the circle created between the curled fingers and thumb. As you do this you'll feel the pelvic diaphragm expanding downwards. To feel it retracting, simply suck your thumb. As you do this you'll feel the pelvic diaphragm lifting.

Vocal diaphragm

The vocal diaphragm is located at the back of the mouth, between the top of the wind pipe and the base of the tongue. If you are relaxed, this area will be quite soft. As you inhale, air will flow easily through this area on its way to your lungs and will flow freely out again on the exhalation. However, many of us are chronically tight and 'blocked' in this area. Think about when you have been nervous and had to speak: you will have noticed how the back of your mouth felt tight and blocked. Try saying a few sentences with this contraction and you'll probably find your voice sounds a little strained, high and perhaps nasally. Now do a few yawns and relax in this area. Does it feel different? Try saying a few sentences and see if the tone and pitch of your voice has changed – it will probably sound deeper and smoother. Remember what this feels like and see if you can bring awareness of softness in this area into your daily life.

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THE RELATIONSHIP BETWEEN THE THREE DIAPHRAGMS

If we are relaxed and peaceful, there are lovely undulating movements in all three diaphragms as the breath flows in and out. As the main central diaphragm descends and broadens inside the body with the in-breath, the pelvic and vocal diaphragms likewise broaden and open. As the main central diaphragm relaxes back up towards the chest on the out-breath, the pelvic and vocal diaphragms effortlessly draw inwards again (see above). Crucially, all three diaphragms are connected and they can only move freely if the throat, the belly and the pelvic floor are soft. As soon as you contract one of the diaphragms, the other two freeze and block as well. Likewise, if you soften in one area the other two areas will also release. You can do a long guided breath meditation investigating this connection, and how to release in all three areas, by downloading the three-diaphragm breath inquiry track from the Breathworks website (see Resources).