

Our Natural Breathing We Breathe to Live!

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Purpose: The purpose of this paper is to bring your attention back to the profound knowledge that we were born with our *natural abdominal breathing*. Also, a few methods to help you retrain yourself in the use of some conscious ways to breath that can help you to obtain an optimal stress-free state in your body.

Let me take you through a short journey along the respiratory process. We breath in air through the nose, that is lined with a moist mucous membrane and some hair as a barrier. The air then is warmed up just an inch past the nose through an extensive vascular network. After passing through the tracheobronchial tree it reaches the alveoli, (an estimated 300 million) where the exchange of O₂ and carbon dioxide, and carbon monoxide and other gases takes place.

For the optimal respiration and oxygenation process to take place we need to have an adequate contraction and corresponding relaxation period of the thoracic cavity.

a) Mechanical function: The gas exchange is possible through the expansion and contraction of the respiratory muscles: the diaphragm - the major muscle of respiration, and the accessory muscles of inspiration, which include the scalene and sternocleidomastoid muscles. These help to raise the clavicles, the upper ribs, and the sternum to widen the thorax in three dimensions: front to back, side to side and top to bottom to allow the filling of air into the lungs.

The lungs, a sponge type tissue with 3 lobes on the right side and 2 on the left side, are covered by a membrane called pleura, which is lubricated with a fluid, the surfactant, to facilitate the sliding movements; it also keeps the lungs from collapsing. The lungs are protected by the rib- cage. The superior end of the ribcage is relatively narrow and has therefore a smaller amount of lung tissue in its cavity. This means also that the lung capacity

is smaller and there is less circulation to aid in the delivery of oxygenated blood, as compared to the lower end of the ribcage and lung, which is able to expand significantly more and has a large supply of arteries and veins, an important factor in the abdominal breathing process.

b) Gas exchange: The oxygen has to cross the alveolar-capillary membrane to be picked up by a red blood cell, that will carry it in the bloodstream to the left side of the heart. The heart will pump it then to a cell anywhere in the body. The cell uses it in its metabolism, producing carbon dioxide and other gases as a waste product that has to be delivered to the right side of the heart through the venous bloodstream and from there to the lungs again, where it is released into the alveoli, the bronchial tree and the nose during the exhalation phase. The alveoli fill and empty about 15,000 times a day. If they were lined up flat they would cover an entire racquetball court. The crossing of O₂ and carbon dioxide through the membrane wall of the alveoli is possible due to a difference between the atmospheric pressure and the intra-alveolar pressure.

c) The mechanism of control of the respiration is the central nervous system. It lies in the respiratory center, located in the lateral medulla oblongata of the brain stem. The impulses travel down the phrenic nerves to the diaphragm, and then down the intercostal nerves to the intercostal muscles, where the impulses change the rate and depth of the respiration. There are also the inspiratory and expiratory centers, located in the posterior medulla, which establish the involuntary rhythm of the breathing pattern.

In a relaxed state our automatic respiratory rate is between 12 and 14 breath per minute, but it can change and adjust quickly when the person is under stress, be it environmental, emotional or chemical. At this point the rate will increase and become more superficial, filling mostly the upper area of the chest. The

whole body suffers some changes instantly and goes into the fight-flight state, due to adrenalin outpour into the bloodstream triggered by the sympathetic branch of the autonomic nervous system. If the stress disappears the body will relax, specially the abdominal and chest muscles, and the breathing pattern will normalize again.

Our brain is surrounded by a layer of cerebral mass called cortex. If we are breathing under stress this area of the brain will help us to change *consciously* from high thoracic, shallow, rapid breathing to a relaxed abdominal breathing. We can consciously override our autonomic breathing pattern in order to protect our system. If we dive under water we can hold our breath and then take a few deep breath afterwards to compensate for the temporary lack of O₂.

If we observe how a baby is breathing we would notice that it raises the lower part of its chest and its abdomen with every breath, lifting the spine off slightly with the in-breath and flattening it with the exhalation phase. Children usually continue breathing with the abdominal area until age 6, because they are more or less stress free until that time. As stressors start to affect our body in different areas, so it will affect our breathing also. This is triggered by the release of the Adrenalin hormone when in a situation of fear, anger, anxiety, doubt or insecurity, and then accompanied by the tensing of the diaphragm and other thoracic muscles, and the abdominal muscles. Since we are exposed to frequent stress in our daily lives, it is easy to see the reason for our tight chest-type breathing as opposed to the relaxed abdominal breathing of the child or the relaxed adult. Since there is a long chain of adverse reactions in the body secondary to a decreased O₂ content it is very important to maintain the best breathing habits possible. To make them automatic and an integral part of our life I like to name a few ways to re-educate ourselves for a better stress-free life. Being effectively relaxed will affect the mental as well as the physical levels of the being. We can accomplish this with medications of course, but a healthier way is by controlling the stimulus that travels through the Hypothalamus with the volitional participation of the cortex

Abdominal Breathing

Method I

- 1.- Rest on a firm surface, on your back, if you like, with a pillow under your knees and under your head.
- 2.- Place your hands on your abdomen and observe your breathing. Are you moving only your chest area? Are you moving your abdomen? Are your muscles relaxed or tight?
- 3.- Take a deep breath and bring that air into the bottom of your lungs, really filling them up all the way. Were your abdominal muscles tight or relaxed? If the diaphragm and the abdominal muscles are relaxed your abdomen will raise to a dome shape, allowing the air to fill the lungs to the lower lung area. At the same time you are inhaling, lift your back a little, while exhaling push your spine down towards the surface you are lying on. Repeat this type of breathing consciously for 5 minutes. It will become easier, and you will feel more and more relaxed. Make sure you are breathing through your nose when inhaling and exhaling, your mouth is not really equipped for an effective breathing job.
- 4.- You can do the same exercise sitting in a chair, leaning against the back of the chair, always curving your back when inhaling and flattening it when exhaling.
- 5.- If you need to release some "issues", just take a deep breath and bring it into the area of your body where you can "feel" the emotion or discomfort and then breath it out. After a few repeated breath you will feel the problem melting away.

Method II

- 1.- Either sit or lie comfortably. Put two fingers around your nose and close one nostril. Breath in and then out through the same nostril, then switch to the other side. Do this for 5 minutes. In PKP we learned to breath in through one nostril and out the other one. This will help to balance the Sodium/Potassium levels in the blood. Either way is fine.

Method III

- 1.- We all know the excellent effects the NV points have on our body. Since the shallow, upper chest type breathing is the result of

some stress I suggest to put the palm of the hand very lightly on the forehead and one finger of the same hand on the Lung NV point (baby soft-spot). The NV points on the forehead will help to relax the person. The Lung NV point will increase the circulation to the lungs and therefore aid for a deeper breath, slowing the rate down at the same time.

I would like to add some interesting information to my paper. During my trip to Chile in October 1995, I visited with some relatives that I had not seen for about 50 years. Dr. Ruben Rivera is a medical doctor and has dedicated 40 years of his career to observing the breathing type of relaxed patients and those that have some type of stress in their lives. He has been able to help thousands of patients to re-learn consciously the abdominal way of breathing and getting rid of their stress at the same time. He wrote a book about his findings, with the purpose to get other physicians involved in this re-training program but it has not been easy, his colleagues don't believe him.

In February 1996 I attended the Seminar "Society for the Universal Human", in

Portland OR. One of the speakers was Gay Hendricks, PhD, who teaches extensively around the World about "Conscious Breathing". He has observed hundreds of people, comparing their breathing pattern, and coming to the very same conclusion Dr. Rivera obtained: "We can retrain ourselves in the use of abdominal breathing to obtain relaxation, get rid of pain and discomfort, to obtain better results in sports, and to be HEALTHIER."

I thought it was remarkable for 2 people dedicating their lives to the same cause being continents apart!

Recommended Reading:

Hendricks, Gay, PhD, *Conscious Breathing*, Bantam Books 1995

Montgomery, Kate, Certified Sports Massage Therapist and Health Educator. TFH international Journal 1989.

Rivera, Rubén Rivera, MD, *Breathing and Emotional Stress*. 1995, Chile, So. America.