

Debunking the Myth of Deep Breathing – in Yoga and in Life

The propaganda around the usefulness of deep breathing has proliferated without any authentic physiological evidence whatsoever. Yet, in fact, forcefully deepening the breath is amongst the most common of instructions – even from many yoga teachers.

Over 60 years ago, a Russian medical scientist, Konstantin Pavlovich Buteyko, made a startling chain of discoveries. When measuring the breathing of the terminally ill, he found that they all ventilated greatly above the recommended norm, and that as they approached their death, their breathing increased proportionally. This observation is routine – invariably, patients die gasping for breath, and this doesn't correspond with the notion that deeper breathing delivers more oxygen – in fact, the opposite.

Over breathing

Essential carbon dioxide

Dr. Buteyko's research revealed that breathing more than recommended physiological norms for the activity one is doing (or hyperventilation) actually reduces the uptake of oxygen in the body, because it disturbs the delicate balance of carbon dioxide and oxygen. Carbon dioxide is a vital component of every living organism. For humans, it is the chief regulator of the respiratory, cardiovascular, nervous, hormonal, digestive and immune systems.

Furthermore, carbon dioxide regulates the organism's pH. Insufficient levels of carbon dioxide causes respiratory alkalosis, which through a complex shunt mechanism then creates metabolic acidosis. In short, without a stable concentration of carbon dioxide, the human organism is thrown into chaos. Yet carbon dioxide is commonly mistakenly referred to as a waste gas... like a toxin the body needs to expel.

Carbon dioxide has the effect of liberating oxygen from the blood into the cells and tissue, and thus it plays a central role in oxygenation. This physiological principle is known as the "Bohr Law". So unless there are sufficient levels of carbon dioxide present, the haemoglobin doesn't effectively release oxygen from the blood into the cells and tissues.

Less than optimal levels of carbon dioxide also causes excessive loss of minerals, fluctuations in blood sugar and hormonal variations, which can then result in unnecessary hunger – when, in fact, the body is actually struggling to function effectively.

Unlike oxygen, the levels of carbon dioxide in the air which we breathe are very low (around 0.035%), which is 200 times lower than what our body requires... Over breathing dilutes the reserves of this substance in the body, and so, paradoxically, breathing too much **reduces** oxygenation.

The hyperventilation test

If you breathe as deeply and fast as you can, what happens?

- Dizziness
- Chest pain
- Nausea
- Fatigue
- Eventual collapse

According to Dr. Buteyko, this clearly demonstrates the reduction of oxygen uptake through over breathing and the subsequent lowering of carbon dioxide. Under any physical exertion, internal levels of carbon dioxide are elevated, and the breathing naturally increases, because the level of carbon dioxide also regulates the breathing pattern.

The mechanics of breathing

We breathe involuntarily, and surprisingly, the urge to breathe has virtually nothing to do with our immediate requirement for oxygen. The regulatory mechanism for taking a breath occurs when the level of carbon dioxide triggers the respiratory centre (in the medulla oblongata part of the brain) which, in turn, drives the Vagus nerve system and causes the mechanical action of breathing. Just hold your breath, and you will see this mechanism operate. As you hold your breath, the level of carbon dioxide elevates in the alveoli, and you will experience the urge to breathe. This is why we don't stop breathing when we sleep – unless we have sleep apnea, which, interestingly, is always accompanied by chronic hyperventilation.

Healthy vs. ill

Dr. Buteyko began measuring the breathing of healthy and sick patients, and found that all patients suffering from asthma, allergies, anxiety and some 200 hundred other conditions shared one common factor: without exception, they all ventilated above the recommended norm of 3-4 liters per minute at rest. However, when he checked those who breathed within the recommended norms, he discovered they demonstrated remarkable strength, stamina and mental stability, regardless of their age or physical disposition.

Yoga Contradiction?

It's a curious thing – most people believe that yoga advocates deep breathing, but this is in sharp contrast to what is prescribed in the Bhagavad-Gita:

“Shutting out all external sense objects, keeping the eyes and vision concentrated between the two eyebrows, suspending the inward and outward breaths within

the nostrils, and thus controlling the mind, senses and intelligence, the transcendentalist aiming at liberation, becomes free from desire, fear and anger. One who is always in this state is certainly liberated”.

This apparent contradiction is probably due to the Westernization of yoga – wherein its popularity has far exceeded the proficiency of many of its teachers. Another significant factor is that an average healthy person’s breathing in the days when yoga was evolving was considerably better than that of the average person today. And this is clearly primarily due to the dramatic lifestyle changes which have occurred for humans in the past century – and which are changing more quickly than ever before – especially with the advent of digital technology and the internet. Basically, the pace of our modern life, combined with a range of other factors such as diet, posture, medications and sedentary work requiring intense mental activity, has resulted in a huge increase in human ventilation... And yet this issue is never examined as a diagnostic procedure in modern medicine.

The Buteyko method

Dr. Buteyko developed a method to retrain the breathing pattern and consequently dramatically reverse many health problems while also enhancing fitness, endurance, flexibility, balance and strength – by retraining the respiratory centre. The idea is simple enough: retrain the breathing pattern towards the optimal, and the level of carbon dioxide will become more optimal, resulting in related health problems which occur due to a deficiency of carbon dioxide to diminish proportionally. Oxygenation, circulation, and all metabolic processes can be brought to their optimum, just through normalizing the breathing pattern. This may seem far-fetched, but it has been consistently observed for over half a century in those who effectively applied Buteyko’s method.

Some basic breathing tips

Dr. Buteyko devised a number of controlled breathing and breath-holding manoeuvres to improve the breathing – one of which is known as very shallow breathing or V.S.B.:

- Reduce the amount of air that travels up and down your nostrils, until you feel a slight lack of air
- Maintain this sensation while ensuring that the diaphragm remains relaxed.
- Keep the slight air hunger sensation for as long as possible – perhaps a minute or two at first, and aim to increase the duration with continued practice. Respiration rate will increase a little, but aim to keep breaths small.

Spectacular results

Buteyko's claims met with much resistance in Russia, yet when his philosophy arrived in the West in the early 1990s, within a few years it was hailed as a miracle treatment for asthmatics. Published medical trials concluded that it certainly worked, and asthmatics in their thousands learnt how to overcome their symptoms and safely eliminate their medications, just by retraining the way they breathed. Later, sufferers of allergies, angina, anxiety, insomnia, sleep apnea and even diabetes, hypertension and emphysema would learn the method, routinely demonstrating amazing results. Western doctors were initially skeptical, but after seeing the results, many also started to become strong advocates.

The health and fitness paradox

We all know of great athletes who have demonstrated tremendous fitness, but succumbed to health problems and even premature death, while we've heard of little old ladies who live into their nineties, who have never jogged or done a triathlon, which leads us to conclude that health and fitness are not mutually exclusive... There are other dynamics at work.

When we exercise, carbon dioxide is elevated, and that's why when many of us miss our regular workouts or yoga classes, we become easily tired, energy levels drop, and our mood declines. Chemically speaking, exercise-junkies are often addicted to carbon dioxide! If they habitually over breathe, their reserve of carbon dioxide falls, and the only way to get it back is through repeated physical exertion.

Improving fitness, yoga and performance

For some years, many, including the majority of Russian athletes, have known about breath control, and how it improves stamina, recovery, balance, flexibility, and performance. Those who exercise and practise Buteyko's method, also notice that the muscle ache attributed to lactic acid build up also reverses – it is believed that the increase in carbonic acid caused through reduced breathing is the reason – apparently lactic acid build up compensates for a deficiency of carbonic acid, which is one of the forms of carbon dioxide in the body.

In the West, the method has only recently been directed toward those who exercise, as practitioners had previously focused on the chronically ill, yet now numerous prominent athletes (including triathletes, squash champions, footballers, Olympic rowers etc.) as well as an increasing number of yoga teachers and practitioners are becoming converts, as they realize the all round benefits to their exercise as well as for their health and well-being.. At first it is not easy – but the results become apparent for most people within a very short period of time, as they realize that they can work out longer and harder with less effort.

It's worth noting that basically every yoga asana actually reduces the breathing due to compacting of the lungs as the body is stretched, bent or twisted – and yet many practitioners who have been wrongly educated, still struggle to breathe

deeply during these poses. Many of my students returned to their yoga classes after developing more optimal breathing, and found not just better results, but actual relief that they didn't have to fight to breathe more deeply. Very few people realize that they are already over breathing – not just in their yoga class, but all the time! Any panting, forced or noisy breathing would certainly indicate hyperventilation.... Healthy breathing is very light and gentle – and always silent – and always in and out through the nose. The nose not only regulates the flow in and out, but also acts as a humidifier/dehumidifier, temperature controller, and a filter (chemicals are introduced in the nostrils which kill bacteria and viruses!).

When a person is angry, upset, aggressive or over-excited, their breathing becomes deep, whereas a person in deep meditation is hardly breathing.... It is, in fact, this kind of light, almost invisible breathing while at rest (and the resulting optimal levels of carbon dioxide) which allows for the most efficient synapsing of brain cells and neurons... promoting a level of calmness and clarity which is impossible with deeper breathing.

Interestingly, around 4,000 years ago, the ancient Chinese sage, Lao-Zi said “the perfect man breathes as if he's not breathing”

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