

OVERWHELMED STRESSED and ANXIOUS?

When in overwhelm and stressed, it is very difficult to think clearly and to look after ourselves in the best way we can. When living in this state even at a low level it can cause unhealthy breathing such as hyperventilation to become the norm.

What many are unaware of however, is that breathing poorly can actually cause stress and bring on a panic attack. Why is that?

Many of us are mildly over-breathing all of the time, even at rest; so much so that we don't realize, and hence the name hidden hyperventilation. There is no doubt that our lives are busier than ever - even during COVID-19 lock-downs - and whenever we add stress to the mix, the hidden hyperventilation gets worse.

The breathing rates and volumes considered normal for humans have increased over the past 50 years, however Dr Konstantin Buteyko¹ realized that this trend was not in fact a healthy one and it that it was having a detrimental effect on our health.

In large part, this is down to our biochemistry. Breathing more air than is healthy causes our blood pH to shift resulting in something called respiratory alkalosis. What this means is that efficient oxygen delivery to our brain and heart and muscles is reduced. Both of these effects are described by the Bohr effect.^{2 & 3}

Unfortunately when the bioavailability of oxygen to the brain is reduced as a result of over-breathing, it causes stress, and activates the sympathetic nervous system (SNS) or fight or flight response and the consequent release of adrenaline.

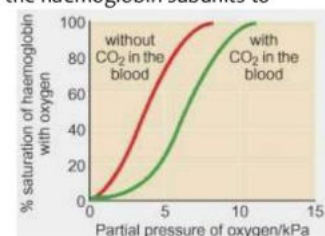
Breathing rate and volume further ramp up causing even less oxygen delivery and also vasoconstriction (tightening of blood vessels). It is a vicious cycle, and ultimately if the hyperventilation becomes severe enough a person will have a panic attack and/or faint.

Over time, when unnoticed or incorrectly diagnosed, the brain's respiratory center becomes acclimatized to lower levels of carbon dioxide (CO₂) and it then requires conscious practice to restore breathing to a healthy state.



Bohr effect

- Increased carbon dioxide levels lowers the pH of the blood
- This affects the ability of the haemoglobin subunits to transport oxygen
- A lower pH causes the Haemoglobin to release more oxygen
- A higher pH causes the Haemoglobin to hold onto more oxygen



At the Breathe Free Clinic, we assess your breathing tolerance to CO₂ and teach you how to improve habitual disordered breathing.

TAKE THE OVER-BREATHING (HYPERVENTILATION) QUIZ

(on the **Did You Know** Webpage)

A **First Aid** Tip you can use if you ever feel **Anxious** or **Panicky**:

1. **Cup your hands over mouth and nose**
2. **Try to breathe gently through your
Nose into your hands for 3 to 5 minutes**

This helps restore CO₂ levels in airways and blood to reverse the panic attack.

When CO₂ concentration is adequate, it soothes the irritability of the brain's consciousness centers and activates the vagus nerve⁴.



If you would like to learn more about how breathing well can help you to be calm more of the time **contact the Breathe Free Clinic** for a **free 20 minute consult**.

REFERENCES

- 1 Professor Konstantin Pavlovich Buteyko: https://en.wikipedia.org/wiki/Konstantin_Buteyko
- 2 Physiology, Bohr Effect: Andrew Benner; Aakash K. Patel; Karampal Singh; Anterpreet Dua. Last Update: August 15, 2021. <https://www.ncbi.nlm.nih.gov/books/NBK526028/>
- 3 Bohr Effect: https://en.wikipedia.org/wiki/Bohr_effect
- 4 Evidence-Based Role of Hypercapnia and Exhalation Phase in Vagus Nerve Stimulation: Insights into Hypercapnic Yoga Breathing Exercises” – Singh, U.P. *J Yoga Phys Ther*, no. 276 (2027):2

