

Science & Research  
on Breathing

## *For Adults*

**A biochemical feature of strong emotion is a rise in adrenaline and noradrenaline, which has been shown to boost the body's sensitivity to Co2 by about 30%, resulting in increased hyperventilation.**

*Chaitow et al. Recognising and treating breathing pattern disorders. 2014*

**Chronic stress is among the most common diagnoses in Sweden, commonly in the form of exhaustion syndrome. The majority of patients with this also have disturbed breathing (hyperventilation)**

*Restiniemi et al. Hyperventilation and exhaustion syndrome. 2014*

**The conclusion is that hyperventilation is common in exhaustion syndrome patients and that it can be reduced by systematic physical therapy such as grounding.**

*Restiniemi et al. Hyperventilation and exhaustion syndrome. 2014*

*For Adults continued...*

**Insomnia is a known risk factor for incidence and severity of depression, recurrence of depressive episodes & even suicide.**

**Several studies have shown OSA can contribute to development of depression.**

**When insomnia and OSA co-occurred depression scores were higher than insomnia alone**

**Estimate of prevalence of insomnia in OSA patients are as high as 67%**

*Grandner et al. Connecting insomnia, sleep apnea and depression. 2017*

**Daytime sleepiness, irritability, fatigue and cognitive dysfunction are also well-characterised consequences of OSA.**

*Grandner et al. Connecting insomnia, sleep apnea and depression. 2017*

**Holding the breath for 30 seconds or longer helped to open the nose and make breathing easier in the subjects tested.**

**Nasal resistance decreases as expired Co2 levels and exercise levels increase.**

*Hasegawa & Kern. The effect of breath holding, hyperventilation and exercise on nasal resistance. 1978*

*For Adults continued...*

**Findings show that individuals with panic disorder are prone to experience panic attacks when inhaling oxygen rich Co2. Giving rise to the hypothesis that physiological systems underlying the experience of suffocation may be important in the etiology of panic disorder.**

*Rassovsky et al. Suffocation and respiratory responses to carbon dioxide and breath holding challenges in individuals with panic disorder. 2010*

**In our study, cognitive therapy didn't change respiratory physiology but capnometry assisted respiratory training (CART) did effectively reduce hyperventilation.**

*Meuret et al. Respiratory and cognitive mediator of treatment change in panic disorder. 2010*

**CART proved an effective and powerful treatment that reduces panic by means of normalising respiratory physiology.**

*Meuret et al. Respiratory and cognitive mediator of treatment change in panic disorder. 2010*

**This is achieved by breathing slower, but most important, shallowly.**

*Meuret et al. Respiratory and cognitive mediator of treatment change in panic disorder. 2010*

*For Adults continued...*

**People who are anxious typically have lower end tidal Co2 levels and thus more likely to experience nasal congestion.**

*Chaitow et al. Recognising and treating breathing disorders: a multidisciplinary approach*

**When subjects breathed in through the nose & out through the mouth, nasal resistance increased 200% at 1 minute after the challenge and returned to baseline values after 10 minutes.**

*Strohl et al. Nasal flow-resistive responses to challenge with cold-dry air. 1992*