

Science & Research
on Breathing

For Women

Sex affects breathing control and vulnerability to some respiratory diseases. Women demonstrate better recovery after severe episode of hypoxia (low oxygen) & there are differences in sleep apnea and heart rate variability.

Gargalioni et al. 'Sex differences in breathing'. Comparative biochemistry and physiology. 2019

Airflow and gas exchange are known to be among many vital functions that change during the menstrual cycle, and studies have demonstrated, for example, the ventilatory response to hypoxia (low oxygen) and hypercapnia (high Co₂) vary throughout the 28 days, in connection with hormonal fluctuations.

Farha et al. Effects of menstrual cycle on lung function, variables in women with asthma. 2009

Female hormone progesterone, which is known to stimulate breathing, might contribute to respiratory changes seen at different times during the menstrual cycle.

Slatkovska et al. Phasic menstrual cycle effects on control of breathing in healthy women. 2006

For Women continued...

The menstrual cycle influences epilepsy, bipolar disorder, migraine and rheumatoid arthritis. Respiratory symptoms, such as breathlessness, coughing and wheezing vary considerably over 28 days, becoming worse between mid-luteal to mid-follicular phases, possibly due to influence of hormonal changes on airways.

Macsali et al. Menstrual cycle and respiratory symptoms in general nordic-baltic population. 2013

Macsali et al. Respiratory health in women: from menarche to menopause. 2012

At the same time breathing increased, during the luteal phase of the menstrual cycle, pain thresholds reduced. Indicating respiratory cyclic changes may influence pain. Researchers found several participants fulfilled diagnostic criteria for fibromyalgia during luteal phase of their cycle, but not during follicular phase.

Dunnett et al. The diagnosis of fibromyalgia in women may be influenced by menstrual cycle phase. 2007

For Women continued...

Researchers concluded that breathing exercises provide a “real and effective intervention” for women with fibromyalgia.

Tomas-carus et al. Breathing exercises must be a real and effective intervention to consider in women with fibromyalgia. 2018

Pain tolerance thresholds increased in all participants with fibromyalgia after one month. Sleep quality, duration and efficiency also improved as a result of the breathing practice.

Garrido et al. Effects of a respiratory functional training program on pain and sleep quality in patients with fibromyalgia. 2017

Women with pelvic floor pain frequently breathe into the upper chest. Dr Leon explained when normal diaphragmatic breathing is restored, pelvic floor muscles relax and easier to re-establish function in the pelvic floor.

Chaitow, Leon. Womens health, the pelvic floor paradox and a naturopathic approach. 2007

For Women continued...

Higher prevalence of sleep apnea in men, however, once women reach menopause, there is an increase in incidence of around 200%.

Gargalioni et al. Sex differences in breathing, comparative biochemistry and physiology. 2019

Women are between 2-3x more likely to develop panic disorder than men & studies demonstrate women with panic disorder experience worsening of symptoms and higher anxiety during pre-menstrual phase of cycle.

Gargalioni et al. Sex differences in breathing, comparative biochemistry and physiology. 2019

illni et al. Role of menstrual cycle phase and anxiety sensitivity in catastrophic misinterpretation of physical symptoms during a CO2 challenge. 2012

Symptoms of premenstrual syndrome (PMS) are directly related to hyperventilation. Women with PMS have higher-than-normal sensitivity to CO₂, resulting in 'pronounced hyperventilation'.

Ott et al. Symptoms of premenstrual syndrome may be caused by hyperventilation. 2006