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The Science Behind Your Sigh of Relief

What research has to say about sighing and how you can harness your breath to feel good anytime.



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If you breathed a sigh of relief when you saw that the Associated Press ^{*} called the presidential race for Joe Biden at 11:25 AM EST on November 7, 2020, you weren't alone.

Sighs of relief were heard around the world. The New York Times reported that “Biden Victory Brings Sighs of Relief Overseas,” while The Guardian published an op-ed entitled “Catastrophe has been averted. Let us all breathe a big, long sigh of relief.” But what is a sigh of relief?

Augmented breaths, or sighs, are a neurobiological phenomenon with physiological, psychological, and pathological implications. In simple terms, sighs consist of a normal breath followed by a second breath before your exhale. The communal sigh of relief on Saturday was noteworthy for its global ubiquity, but sighs are more common than you might think. In fact, people sigh an average of 12 times per hour.

Sighing may be so habitual because of the important roles that sighs play in the human body. A 2014 study in Progress in Brain Research describes the

three key functions of sighs. First, by filling the lungs so completely, sighing supports healthy lungs and alveoli. Second, sighing regulates arousal states, such as from fear to relaxation or from sleep to wakefulness. Third, sighs reset and regulate respiration.

If sighs are so statutory, it may be tempting to try to up your average. However, there's reason to believe that artificially increasing your sigh rate may not be as helpful as the real thing. One study in Physiology & Behavior found that while a spontaneous sigh induced a feeling of relief, an instructed sigh did not have the same benefit. Moreover, research on panic disorders suggests that increased sighing could actually elevate anxiety and even cause panic attacks.

Fortunately, there is a respiratory alternative that has many of the same benefits as a sigh of relief: deep breathing. Instead of two inhales to one exhale like sighing, deep breathing is a more balanced proposition. A deep breath includes one inhale that fills the lungs and one exhale that empties them. Deep breathing like this can relieve physiological tension and reduce blood pressure.

While deep breathing can technically be fast or slow, there does appear to be an ideal rate from a health perspective: 5.5 breaths per minute. This is what journalist James Nestor found while researching his New York Times

Bestselling book, Breath: The New Science of a Lost Art. In the book, which was released earlier this year, Nestor writes that “the most efficient breathing rhythm occurred when both the length of respirations and total breaths per minute were locked into a spooky symmetry: 5.5-second inhales followed by 5.5-second exhales, which works out almost exactly to 5.5 breaths a minute...The results were profound, even when practiced for just five to ten minutes a day.”

Among the research supporting Nestor’s finding is a 2014 study in the International Journal of Psychophysiology, which found that “Breathing at a rate of 5.5 breaths per minute with equal inhalation-to-exhalation ratio increases heart rate variability.” An increased heart rate variability is a good thing: According to the Harvard Health Blog, a higher heart rate variability indicates the nervous system is more balanced and the person is more relaxed.

Most breathing apps have a setting to select breaths per minute to support you in hitting this goal. But there is also a low-tech, low-math alternative. In an interview with Terry Gross on the NPR program Fresh Air, Nestor advised that people focus on “slow and low” breaths through the nose. With this simple approach, you don’t have to wait for the next high-stakes election for your breath to help you feel good.

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