

Quick Technique Lowers Blood Pressure in Minutes

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✓ Fact Checked

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STORY AT-A-GLANCE

- › Inspiratory muscle strength training can lower blood pressure, improve cardiovascular health and boost cognitive and physical performance in middle-aged adults who do not get the recommended amount of aerobic exercise
- › Inspiratory muscle strength training (IMST) involves inhaling through a hand-held device that restricts air flow. By making you work harder to breathe in, you strengthen the muscles used for inhalation
- › Most people breathe incorrectly and the ramifications for your health can be significant. One of the most common errors is over breathing, which depletes your carbon dioxide (CO₂) reserves, thus lowering tissue oxygenation and causing airway and blood vessel constriction
- › Mouth breathing has been linked to an increased risk of snoring, sleep apnea, asthma, abnormal facial development in children, poor oral hygiene, crooked teeth, poor posture, poor sports performance and attention-deficit hyperactivity disorder
- › Another near-universal breathing abnormality is breathing vertically rather than horizontally. Correct breathing will cause your midsection to widen while not raising your shoulders or puffing out the upper part of your chest. This is the horizontal breath

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The way you breathe has a significant impact on your health, and various breathing exercises have been shown to improve your health and well-being in a number of ways.

Researchers have found inspiratory muscle strength training – a technique that strengthens your respiratory musculature – can improve cardiovascular health, as well as cognitive and physical performance.

Inspiratory muscle strength training (IMST) involves inhaling through a hand-held device that restricts air flow. By making you work harder to breathe in, you strengthen the muscles used for inhalation. The inspiratory muscle trainer device was originally developed for people with respiratory conditions, and to help wean patients off mechanical ventilation.

As you might expect, your breathing muscles, including your diaphragm, will lose strength and atrophy from lack of use, just as other muscles in your body, and research¹ shows that strengthening the breathing muscles improves weaning outcome in patients that have become too weak to breathe on their own after being on a ventilator.

How Inspiratory Muscle Strength Training Benefits Your Health

In the featured study, the preliminary results of which were presented at the annual Experimental Biology conference² in Orlando, Florida, the researchers investigated how IMST might affect vascular, cognitive and physical health in middle-aged adults.

A previous study³ had shown patients with obstructive sleep apnea who used the device to perform 30 inhalations per day for six weeks lowered their systolic blood pressure by an average of 12 millimeters of mercury (mm/Hg).

As reported by Medical News Today,⁴ "Exercising for the same amount of time usually only lowers blood pressure by half that amount, and the benefits seem to exceed those normally achieved with hypertension medication."

Intrigued by these findings, the researchers, led by Daniel Craighead, postdoctoral researcher at the University of Colorado Boulder's Integrative Physiology of Aging Laboratory, decided to investigate whether IMST might be useful for middle-aged adults who resist exercise.^{5,6,7}

Indeed, those who used IMST not only lowered their blood pressure and improved their vascular health, they also improved their exercise tolerance, assessed through treadmill tests, and cognitive performance, assessed through cognitive tests. Craighead commented on the results:^{8,9}

"IMST is something you can do quickly in your home or office, without having to change your clothes, and so far it looks like it is very beneficial to lower blood pressure and possibly boost cognitive and physical performance.

High blood pressure is a major risk factor for cardiovascular disease, which is the number one cause of death in America. Having another option in the toolbox to help prevent it would be a real victory ...

I think IMST has slowly evolved from something used only by a very sick population to being something that people can adopt as a part of their everyday lifestyle. Maybe they won't do 30 minutes of aerobic exercise, but perhaps they'll do five minutes of this and get some benefits."

Over Breathing – One of the Most Common Breathing Errors

When it comes to breathing, most people actually do it incorrectly, and the ramifications for your health can be significant. One of the most common errors is over breathing. By breathing more than necessary, you deplete your carbon dioxide (CO₂) reserves. While it's important to remove CO₂ from your body, you need a balance of oxygen and CO₂ for optimal function.

CO₂ is not just a waste product but has actual biological roles, one of which is assisting in oxygen utilization. When your CO₂ level is too low, changes in your blood pH impair your hemoglobin's ability to release oxygen to your cells. This is known as the Bohr effect.^{10,11}

CO₂ also helps relax the smooth muscles surrounding your blood vessels and airways, which is why over breathing results in both airway and blood vessel constriction. You can test this by taking five or six big breaths in and out of your mouth.

Most people will begin to experience some light-headedness or dizziness. While you might reason that taking bigger breaths through your mouth allows you to take more oxygen into your body, which should make you feel better, the opposite actually happens.

This is because you're expelling too much CO₂ from your lungs, which causes your blood vessels to constrict – hence the light-headedness. The reality is that the heavier you breathe, the less oxygen is delivered throughout your body due to lack of CO₂.

How Over Breathing Affects Your Health

Typical characteristics of over breathing include mouth breathing, upper chest breathing, sighing, noticeable breathing during rest and taking large breaths before talking. **Normal breathing** volume is between 4 and 7 liters of air per minute, which translates into 12 to 14 breaths per minute. Breathing more than this is often an indication of poor health.

For example, clinical trials¹² involving asthmatics show they breathe between 10 to 15 liters of air per minute and people with chronic heart disease tend to breathe between 15 to 18 liters of air per minute. Mouth breathing in particular is also associated with a number of health problems, including:

Dehydration

Snoring¹³

Sleep apnea^{14,15,16,17}

Asthma¹⁸ – In one study,¹⁹ young asthma patients had virtually no exercise-induced asthma after exercising while breathing through their noses. However, they did experience moderate bronchial constriction after exercising while mouth breathing. Research shows mouth breathing may increase asthma morbidity by increasing sensitization to inhaled allergens²⁰

Abnormal facial development²¹ – Children who breathe through their mouths tend to develop longer faces with altered jaw structures^{22,23,24,25,26,27}

Poor oral hygiene – Loss of moisture dries out your saliva and contributes to poor oral hygiene; dehydration causes your airways to constrict and makes nose breathing even more difficult, creating a vicious cycle

Reduced oxygen delivery to your heart, brain and other tissues due to constricted arterial blood flow²⁸

Crooked teeth²⁹

Poor posture³⁰

Poor sports performance³¹ – This occurs primarily as a side effect of postural changes associated with mouth breathing that decrease muscle strength and inhibits chest expansion.³² Breathing through your nose also boosts air resistance by approximately 50% compared to breathing through your mouth.

As a result, you end up increasing your oxygen intake by 10% to 20% when nose breathing.³³ The deeper and more rapid your breath (which is a hallmark of hyperventilation and mouth breathing), the more constricted your blood vessels will be and the less oxygen will be delivered to your tissues,³⁴ and this lack of oxygen will also hamper sports performance

Attention-deficit hyperactivity disorder³⁵

How to Breathe Properly

To minimize the problems associated with mouth breathing and over breathing, you need to breathe more lightly and through your nose. Ideally, your breath should be so light as to barely move the hairs inside your nose.

Breathing through your nose slows your breathing and makes it more regular, thereby improving oxygenation. Nasal breathing also activates your parasympathetic nervous system, which has a calming and blood pressure lowering effect.^{36,37}

The following steps will help your breath become lighter. While you may feel a slight air shortage at first, this should be tolerable for most people. If it becomes uncomfortable, take a 15-second break and then continue.

1. Place one hand on your upper chest and the other on your belly; feel your belly move slightly in and out with each breath, while your chest remains unmoving.
2. Close your mouth and breathe in and out through your nose. Focus your attention on the cold air coming into your nose and the slightly warmer air leaving it on the out breath.
3. Slowly decrease the volume of each breath, to the point it feels like you're almost not breathing at all. The crucial thing here is to develop a slight air hunger. This simply means there's a slight accumulation of carbon dioxide in your blood, which signals your brain to breathe.

After three or four minutes of air hunger, you'll start experiencing the beneficial effects of CO2 accumulation, such as an increase in body temperature, a sign of improved blood circulation, and an increase in saliva, which is a sign of parasympathetic nervous system activation, which is important for stress reduction.

While mouth breathing tends to lead to over breathing, failure to exhale fully may also be part of the problem that's causing you to over breathe. Oftentimes, it's a combination of sucking in excessive air and exhaling incompletely. You're your exhalation is incomplete, you end up with excess residual air in your lungs, and it is this that makes you feel short of breath.

The answer for this is not to breathe more but to breathe out more fully. You can train yourself to exhale more fully by making sure your exhale is slightly longer than your inhale, and by engaging your diaphragm to really squeeze the air out as you allow your

midsection to collapse inward. The vertical breathing exercise below will also help strengthen your diaphragm, which will allow you to exhale more fully.

Vertical Breathing – Another Common Breathing Mistake

Another near-universal breathing abnormality is breathing vertically rather than horizontally. This is something clinical psychologist Belisa Vranich points out in her book "Breathe," which details her breathing program.

Vertical breathing makes you feel a bit taller on the in-breath, as it raises your chest and shoulders. The problem is that this kind of breathing actually triggers your sympathetic nervous system. In other words, it triggers your stress response, which is the complete opposite of what you want.

Correct breathing will cause your midsection to widen while not raising your shoulders or puffing out the upper part of your chest. This is the horizontal breath. At first, you may find it difficult to take a proper breath, as your midsection and diaphragm may be tight. To relearn proper horizontal breathing, Vranich suggests the following exercise. In time, this exercise will teach your body to use the diaphragm to breathe.

1. Begin by relaxing and unbracing your midsection.
2. Take a deep breath in and actually feel the middle of your body get wider. Let your belly go.
3. On the exhale, roll backward, tipping your hips underneath you while pressing your fingers gently into your belly, giving it a little squeeze.

As mentioned earlier, feeling short of breath is often caused by insufficient exhalation. Engaging your diaphragm and intercostals – the muscles that run between your ribs, allowing your chest wall to move – will allow you to take more complete in and out breaths.

The Link Between Athletic Endurance and CO2 Tolerance

While breathing through your mouth may be particularly tempting during physical exertion, try to avoid this tendency as it will actually diminish your fitness and endurance. Ideally, you would exercise only to the extent that you can continue breathing through your nose the vast majority of the time.

If you feel the need to open your mouth, then slow down and recover. This helps your body to gradually develop a tolerance for increased CO₂. Dr. Konstantin Pavlovich Buteyko³⁸ – the Russian physician after whom the Buteyko Breathing Method is named – discovered that the level of CO₂ in your lungs correlates to your ability to hold your breath after normal exhalation.

This breath-holding capacity is known as your control pause or CP number. To identify your CP, which will give you an estimate of your CO₂ tolerance, perform the following self-test.

1. Sit straight without crossing your legs and breathe comfortably and steadily.
2. Take a small, silent breath in and out through your nose. After exhaling, pinch your nose to keep air from entering.
3. Start your stopwatch and hold your breath until you feel the first definite desire to breathe.
4. When you feel the first urge to breathe, resume breathing and note the time. This is your CP. The urge to breathe may come in the form of involuntary movements of your breathing muscles, or your tummy may jerk or your throat may contract.

Your inhalation should be calm and controlled, through your nose. If you feel like you must take a big breath, then you held your breath too long.

The following criteria are used to evaluate your CP result:

- **CP 40 to 60 seconds** – Indicates a normal, healthy breathing pattern and excellent physical endurance.

- **CP 20 to 40 seconds** – Indicates mild breathing impairment, moderate tolerance to physical exercise and potential for health problems in the future (most folks fall into this category).

To increase your CP from 20 to 40, physical exercise is necessary. You might begin by simply walking with one nostril occluded. As your CP increases, begin incorporating jogging, cycling, swimming, weightlifting or anything else to build up an air shortage.

- **CP 10 to 20 seconds** – Indicates significant breathing impairment and poor tolerance to physical exercise; nasal breath training and lifestyle modifications are recommended. If your CP is less than 20 seconds, never have your mouth open during exercise, as your breathing is too unstable. This is particularly important if you have asthma.
- **CP under 10 seconds** – Serious breathing impairment, very poor exercise tolerance and chronic health problems.

Short CP times correlate with low tolerance to CO₂ and chronically depleted CO₂ levels. As a result, the shorter your CP, the more easily you'll get breathless. The good news is that you will feel better and improve your exercise endurance with each five-second increase in your CP.

How to Increase Your CP and Boost Exercise Endurance

The following breath hold exercise will help increase your CP over time. While this exercise is perfectly safe for most, if you have any cardiac problems, high blood pressure, are pregnant, have Type 1 diabetes, panic attacks or any serious health concern, then do not hold your breath beyond the first urges to breathe.

Repeat this exercise several times in succession, waiting 30 to 60 seconds between rounds. Also, be sure to do it on a regular basis, ideally daily.

- Sitting up straight, take a small breath in through your nose and a small breath out. If your nose is quite blocked, take a tiny breath in through the corner of your mouth.

- Pinch your nose with your fingers and hold your breath. Keep your mouth closed.
- Gently nod your head or sway your body until you feel that you cannot hold your breath any longer.
- When you need to breathe in, let go of your nose and breathe gently through it, in and out, with your mouth closed. Calm your breathing as soon as possible.

For Optimal Health, Learn to Breathe Properly

As mentioned, a normal breathing volume is around 12 to 14 breaths per minute, but research³⁹ published in the medical journal *Breathe* suggests an optimal respiration rate is in the range of just six to 10 breaths per minute, and done in a way that activates your diaphragm.

Slowing your breathing to 10 breaths per minute or less has been shown to beneficially impact your respiratory, cardiovascular, cardiorespiratory and autonomic nervous systems.⁴⁰ As noted in the *Breathe* study:⁴¹

"Controlled, slow breathing appears to be an effective means of maximizing HRV [heart rate variability] and preserving autonomic function, both of which have been associated with decreased mortality in pathological states and longevity in the general population."

Aside from the breathing techniques already mentioned, there are many others that can be equally helpful. Following is a short list of a few additional breathing methods you can try, all of which are backed by scientific evidence⁴² showing their beneficial influence on human health.

Nadi Shodhana/Nadi Shuddhi (alternate nostril breathing) – With your right thumb, close the right nostril and inhale through your left nostril. Closing the left nostril, exhale through the right, following which, inhalation should be done through the right nostril. Closing the right nostril, breathe out through your left nostril. This is one round. The procedure is repeated for the desired number of rounds.

Surya Anuloma Viloma (right uninostril breathing) – Closing the left nostril, both inhalation and exhalation should be done through your right nostril, without altering the normal pace of breathing.

Chandra Anuloma Viloma (left uninostril breathing) – Similar to Surya Anuloma Viloma, breathing is done through your left nostril alone, by closing the right nostril.

Surya Bhedana (right nostril initiated breathing) – Closing the left nostril, inhalation should be done through your right nostril. At the end of inhalation, close the right nostril and exhale through the left nostril. This is one round. The procedure is repeated for the desired number of rounds.

Ujjayi (psychic breath) – Inhalation and exhalation are done through the nose at a normal pace, with partial contraction of the glottis, which produces a light snoring sound. You should be aware of the passage of breath through your throat during the practice.

Bhramari (female honeybee humming breath) – After a full inhalation, closing the ears using your index fingers, you should exhale making a soft humming sound similar to that of a honeybee.

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