

A Guide to Proper Breathing and Breath Training Techniques

The way we breathe plays a crucial role in shaping our emotional well-being and overall functionality. There exists a close connection between our breath and our emotions, each influencing the other through complex mechanisms. Optimal breathing involves effectively engaging the diaphragm, predominantly through nasal breaths, while inadequate breathing often manifests as shallow or irregular breaths originating from the chest and mouth.

Even subtle changes in our breathing patterns, such as deep breaths or sighs, can wield significant influence over our state of mind, much like the impact of maintaining good posture. By staying attuned to our breath, we can cultivate a sense of relaxation and enhance our ability to concentrate.

Additionally, various breathing techniques offer a range of benefits, from boosting energy levels to fostering tranquility. Let's explore these concepts further along with some of my articles and preferred techniques.

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INTRODUCTION: Proper Breathing

Proper Breathing impacts our Health in so many Ways. Unfortunately, some breathing experts suggest that close to **80%** of people breathe wrong with poor technique and that can have a detrimental effect to your overall health.



Breathing

We can live more than 50 days without food and about 7 days without water, but, without oxygen we cannot survive more than about 5 minutes.

In many cultures, breath
(*qi, chi, prana*)

is considered the vital link to energy, awareness, composure, and ultimately to transcendence.

Therefore Breath is Life

"Take a deep breath" is the part of every anxiety-reducing advice list ever written.

The way you breathe can impact your **emotions and your whole body**, helping to **regulate important functions such as heart rate and blood pressure**. It can also reinforce proper **body mechanics** that put less stress on your body as you move.

Breathing Manages Emotions & Stress Levels

There is so much going on in the world in combination with just living and working has exacerbated the anxiety that many of us feel every day, and studies show that this stress is interfering with our ability to do our best work. But with the right breathing exercises, you can learn to handle your stress, manage negative emotions, and perform at your best.

Breathing Matters

Research shows that different **emotions** are associated with different forms of breathing, and so changing how we breathe can change how we feel.

Joy: when you feel joy, your breathing will be **regular, deep and slow**.

Anxious and Anger: If you feel anxious or angry, your breathing will be **irregular, short, fast, and shallow**. When you follow breathing patterns associated with different emotions, you'll actually begin to feel those corresponding emotions.

What is Optimal Breathing?

Breathing, a fundamental biological function, may seem instinctual, yet many are surprised to discover that there are optimal and suboptimal methods of breathing.

The American Lung Association (ALA) offers invaluable guidance on proper breathing techniques:

Nasal Breathing: Utilizing the nose for breathing can slow the breath and enhance lung efficiency. It facilitates the intake of nitric oxide, aiding in oxygen distribution throughout the body. Nasal breathing also serves to filter toxins and allergens, prevent their entry into the body, warm cold air, and humidify dry air. However, mouth breathing becomes necessary during exercise or sinus congestion.

Diaphragmatic Breathing: The most efficient breathing method involves directing air toward the abdomen. Termed "belly breathing," this technique engages the diaphragm, causing the abdomen to expand as the lungs fill with air. It creates negative pressure within the chest, facilitating air intake.

To support healthy breathing and maintain lung function, consider the following tips:

- **Avoid Overthinking:** While understanding proper breathing techniques is beneficial, overanalyzing breathing can induce anxiety and lead to shortness of breath. Normal breathing is a subconscious, meticulously regulated process. The lungs and kidneys collaborate to maintain the blood's pH within a narrow range essential for bodily function. Receptors throughout the body monitor blood pH and oxygen levels, transmitting signals to the brain, which orchestrates nerve impulses dictating breathing frequency and depth.

In addition to these principles, effective breathing techniques encompass:

- **Slow and Controlled Breathing:** Aim for a slow and steady breathing pace, with longer exhales than inhales, to reduce stress and promote relaxation.
- **Consistent Breathing Rhythm:** Establish a regular breathing rhythm to regulate physiological processes, such as through techniques like box breathing.
- **Mindful Breathing:** Practice mindfulness by focusing on the sensation of each breath, letting go of distractions.
- **Breathing Exercises:** Explore various techniques such as the 4-7-8 method or alternate nostril breathing to achieve specific goals like stress reduction.
- **Maintaining Good Posture:** Sit or stand upright to facilitate optimal diaphragm movement.
- **Regular Practice:** Cultivate effective breathing techniques through daily practice, tailored to your health and preferences.

Remember to heed your body's signals and consult a healthcare professional if you have any concerns regarding breathing or respiratory health.

Why Changing Your Breathing Pattern is a Good Thing?

Research suggests that increasing breathing variability can lead to better overall health and resilience to stress. It indicates a more adaptable and balanced autonomic nervous system, which regulates functions like heart rate, blood pressure, and digestion. Additionally, breathing variability is associated with improved cognitive function and emotional regulation.

Intentionally cultivating breathing variability through practices like deep breathing exercises, mindfulness, and relaxation techniques can contribute to enhanced well-being and stress management. Incorporating variations in breathing patterns, such as sighing and extended exhalation, has been shown to offer numerous physiological and psychological benefits.

Sighing, often misunderstood as a sign of frustration, actually plays a crucial role in regulating breathing patterns and maintaining lung function. Scientific research has shown that sighs help prevent alveolar collapse in the lungs and stimulate the release of surfactant, which reduces surface tension and prevents lung collapse.

Prolonging exhalation through techniques like pursed-lip breathing or extending the exhale phase during deep breathing exercises activates the parasympathetic nervous system, promoting the body's "rest and digest" response. This can lead to decreased heart rate, lowered blood pressure, and increased feelings of calmness and well-being. Extended exhalation techniques have also been found to alleviate symptoms of anxiety, depression, and PTSD.

It's crucial to integrate these breathing techniques mindfully and adapt them to individual needs and circumstances. Additionally, maintaining regular practice of proper breathing techniques like diaphragmatic and nasal breathing is essential for overall respiratory health.

In summary, occasional variations in breathing patterns can enhance lung function, reduce stress, and promote relaxation, offering valuable tools for improving both physical and mental well-being. However, consulting with a healthcare professional before making significant changes to your breathing routine, especially if you have pre-existing respiratory conditions, is advisable.

The relationship between breathing and emotions

Emotions and breathing are intricately intertwined, each influencing the other through a sophisticated interplay of neurological, physiological, and biochemical mechanisms.

Neurological Mechanisms:

- **Amygdala and Limbic System:** Activated by emotions like fear, anxiety, and anger, these brain regions exert control over the autonomic nervous system (ANS), which regulates involuntary functions such as breathing.
- **The prefrontal cortex**, known for its role in higher cognitive functions, also holds sway over emotional responses, providing a pathway for voluntary control. This means that individuals can consciously influence how they react emotionally to various stimuli. Moreover, the prefrontal cortex communicates with brainstem respiratory centers, enabling it to adjust breathing patterns consciously. In essence, this cortical region allows us to intentionally regulate our breathing in response to emotional stimuli or as a means of managing stress and anxiety.

Physiological Mechanisms:

Autonomic Nervous System (ANS):

- **Sympathetic Nervous System (SNS):** During stress, it heightens breathing rate and depth.
- **Parasympathetic Nervous System (PNS):** Induces relaxation, reducing breathing rate and fostering deeper breaths.

Hormonal Response: Emotions trigger the release of stress hormones like cortisol and adrenaline, impacting breathing rate and depth. This hormonal surge can lead to rapid and shallow breathing, particularly during heightened emotional states.

Muscle Tension: Emotional states, particularly anxiety, induce muscle tension, affecting breathing patterns and making them shallower and less efficient. Increased tension can restrict diaphragmatic movement, contributing to shallow breathing from the chest.

PH Regulation:

Breathing changes alter blood pH:

- Rapid, shallow breathing leads to respiratory alkalosis (increased blood pH), which can result in sensations of lightheadedness or tingling.
- Slow, shallow breathing can cause respiratory acidosis (decreased blood pH), which may lead to feelings of confusion or drowsiness.

Blood Oxygenation:

Altered breathing affects blood oxygen and carbon dioxide levels, influencing brain function and emotional states:

- Inadequate oxygenation can lead to feelings of dizziness, lightheadedness, or panic.
- Disruption in carbon dioxide levels can trigger similar sensations, impacting emotional regulation.

Heart Rate Variability (HRV):

Breathing patterns influence HRV, a marker of emotional resilience:

- The rhythmic variation between heartbeats reflects the body's ability to adapt to stress and regulate emotions.
- Deep, rhythmic breathing fosters high HRV, indicative of adaptive stress responses and emotional regulation.

Feedback Loop:

- There's a feedback loop between breathing and emotions, where changes in one system can amplify or dampen the other. For instance, shallow breathing due to anxiety can further exacerbate feelings of stress, creating a cycle of heightened emotional arousal and shallow breathing.

Psychological Factors:

- **Cognitive Appraisal:** Perception and interpretation of emotions shape breathing patterns, with perceived threats often triggering rapid, shallow breaths.
- **Emotional Regulation Strategies:** Individuals use various strategies such as deep breathing or meditation to regulate emotions and breathing.

Cultural and Social Influences:

- **Cultural Norms:** Beliefs and practices influence breathing patterns and emotional expression.
- **Social Context:** Environmental cues and social interactions impact both emotions and breathing, affecting stress levels.

Clinical Implications:

- Dysregulated breathing is common in psychological disorders like anxiety, panic disorder, and PTSD, highlighting the importance of addressing it in treatment.
- Therapeutic interventions such as mindfulness-based stress reduction and biofeedback training can improve emotional well-being and physical health by targeting both emotions and breathing.

Understanding the complex relationship between emotions and breathing offers valuable insights into how these systems interact and can inform interventions aimed at promoting emotional resilience and overall well-being, even in areas where the prefrontal cortex's voluntary control over emotions is crucial.

Breathing and emotions are intricately linked, with emotions influencing breathing patterns and vice versa through a complex interplay of neurological, physiological, and psychological mechanisms.

Breath, Emotions, and the Vagus Nerve: Unraveling the Intricate Connection

Summary: The link between breathing and emotions is complex, involving physiological, neurological, and psychological factors. The autonomic nervous system (ANS) regulates breathing, with the sympathetic nervous system (SNS) triggering shallow breathing during stress and the parasympathetic nervous system (PNS) promoting relaxation with slower breaths. **The vagus nerve, a part of the PNS, plays a crucial role in modulating both breathing and emotions. Intentional breathing techniques can influence heart rate and emotions by engaging the vagus nerve.** Neurological pathways, including the amygdala and insula, contribute to regulating breathing in response to emotional stimuli. Understanding these mechanisms enables individuals to use breath as a tool for emotional regulation and overall well-being.

The link between breathing and emotions involves a complex interplay of physiological, neurological, and psychological factors. The autonomic nervous system (ANS), comprising the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS), regulates involuntary bodily functions such as breathing and heartbeat. In times of stress, the SNS triggers the body's "fight or flight" response, leading to shallow breathing and an accelerated heart rate, while the PNS promotes relaxation, resulting in deeper and slower breaths.

The vagus nerve, a critical component of the PNS, plays a pivotal role in modulating both breathing and emotional responses. Its extensive network of fibers oversees various functions, including heart rate and digestion, actively fostering relaxation and alleviating stress. Activation of the vagus nerve initiates physiological responses that counteract the effects of stress, promoting a state of calmness and emotional balance.

Importantly, intentional breathing techniques can directly influence heart rate and emotions by engaging the vagus nerve. By deliberately slowing down the breath, individuals can activate the PNS, leading to a decrease in heart rate and a sense of relaxation. Conversely, quickening the breath can activate the SNS, resulting in an increase in heart rate and heightened arousal.

Moreover, neurological pathways involving brain regions like the amygdala and insula contribute to the regulation of breathing in response to emotional stimuli. The amygdala, particularly involved in fear processing, can impact breathing patterns in reaction to perceived threats. Additionally, cognitive appraisal and emotional regulation strategies influence breathing patterns, affecting stress levels and emotional responses.

Understanding these mechanisms, including the role of the vagus nerve and intentional breathing techniques, empowers individuals to utilize breath as a tool for emotional regulation. By employing strategies to slow down or speed up their breathing, individuals can modulate heart rate and emotions, promoting relaxation or arousal as needed. This comprehensive understanding allows individuals to harness the power of breath to manage their emotional states and enhance overall well-being.

Breathing and the Vagus Nerve and how it Impacts Health

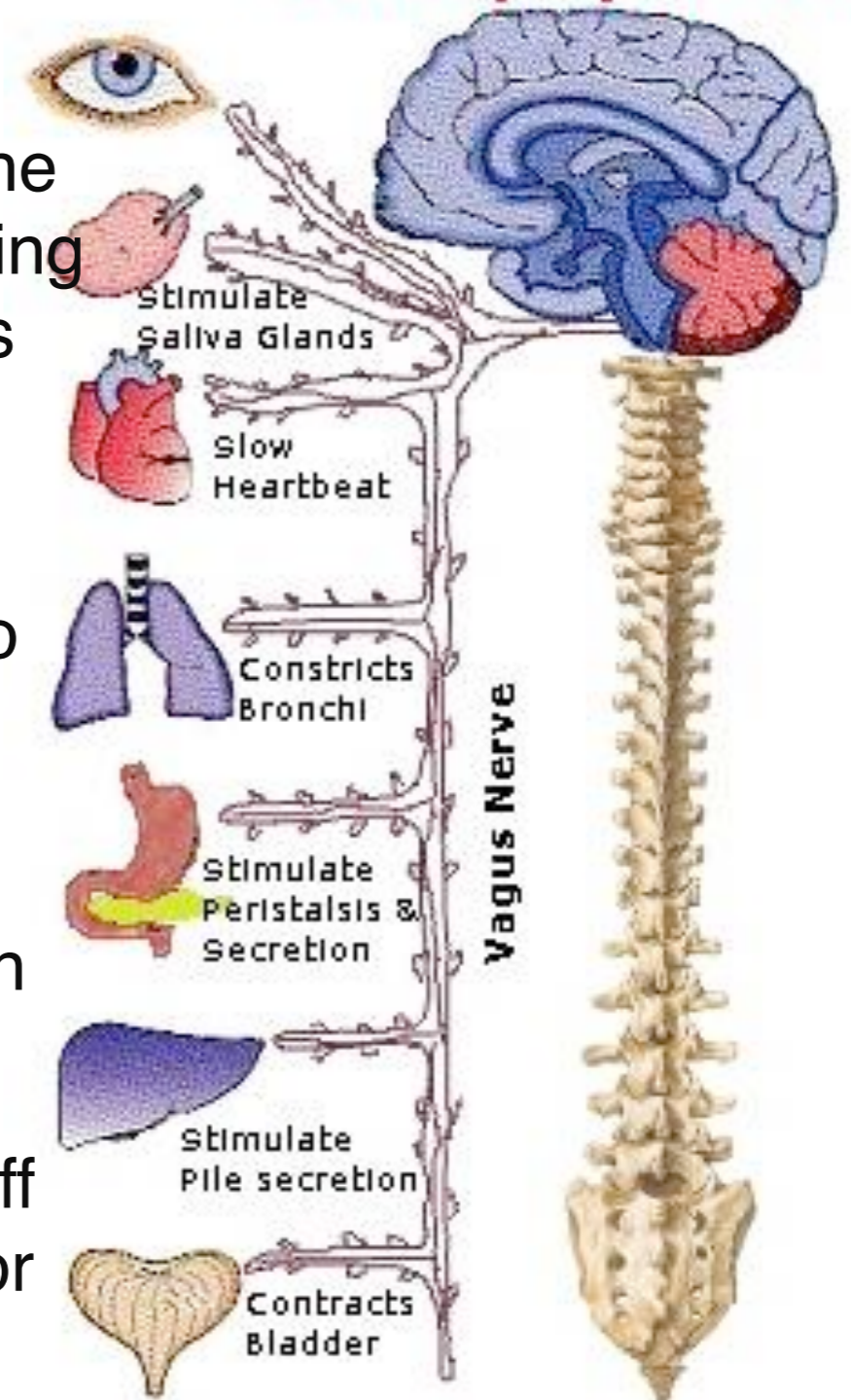
**INVOLUNTARY
Relax/Digest**

Parasympathetic

The stress response operates automatically, beyond conscious control. However, we can actively engage the relaxation response through the vagus nerve. Originating in the brain and extending to the diaphragm, the vagus nerve regulates the parasympathetic nervous system, which is associated with relaxation.

Deep, deliberate breathing serves as a powerful tool to stimulate the vagus nerve. When we take slow, deep breaths, consciously expanding the diaphragm, we activate the vagus nerve. This activation signals the parasympathetic nervous system to initiate a relaxation response.

Remarkably, even just one conscious breath can set off this chain of events, triggering a cascade of benefits for our physical and mental well-being.



Involuntary Nervous System and Breathing

The autonomic nervous system (ANS) governs the regulation of stress hormone levels in the body.

Among our bodily functions, breathing stands out as a unique phenomenon. While it naturally occurs without our conscious intervention, we also possess the remarkable ability to control its pace, depth, and frequency voluntarily. This dual nature of breathing makes it one of the few ways through which we can directly influence our autonomic nervous system and modulate the release of stress hormones.

Deep, slow breathing, despite being a voluntary action, can indeed influence the autonomic nervous system (ANS), which is typically considered involuntary. The vagus nerve, a major component of the ANS, is particularly sensitive to breathing patterns.

When we engage in deep, slow breathing, it stimulates the vagus nerve, which in turn activates the parasympathetic nervous system (PNS). The PNS is responsible for promoting relaxation and restoring the body to a calm state after stress or arousal. This process can lead to various physiological changes, such as reduced heart rate, lowered blood pressure, and enhanced digestion.

So, deep, slow breathing serves as a gateway to modulating the autonomic nervous system, primarily through its effects on the vagus nerve and subsequent activation of the parasympathetic nervous system.

The Sympathetic Nervous System
SNS turns up your nervous system. It helps us handle what we perceive to be emergencies and is in charge of the flight-or-fight and freeze and dissociate response.

Cortisol
Adrenalin
FIGHT or FLIGHT

The Parasympathetic Nervous System
PNS turns down the nervous system and helps us to be calm. It promotes relaxation, rest, sleep, and drowsiness by slowing our heart rate, slowing our breathing and muscle tension, and promotes digestion.

REST and DIGEST

The PNS counters the effects of SNS

More on Understanding the Psycho-Physiological Effects of Slow Breathing Techniques Based on a Large Review

Slow breathing techniques operate by synchronizing our physiological responses with deliberate breathing patterns, inducing a cascade of effects on both the body and mind. [See review.](#)

Physiologically, slow breathing prompts a shift towards parasympathetic dominance, evident in increased heart rate variability (HRV) and respiratory sinus arrhythmia (RSA). This shift signifies a state of relaxation and reduced stress, as the parasympathetic nervous system governs rest and digestion, countering the "fight or flight" response of the sympathetic nervous system. By modulating the autonomic nervous system in this way, slow breathing promotes calmness and emotional balance.

Respiratory rhythm established during slow breathing also influences cardiovascular function, optimizing oxygen uptake and circulation. This rhythmic breathing pattern enhances the efficiency of gas exchange in the lungs, leading to improved oxygenation of tissues and cardiovascular health. Moreover, the controlled pace of breathing stimulates baroreceptors in the lungs and blood vessels, regulating blood pressure and heart rate.

In parallel, slow breathing engages the central nervous system, particularly regions associated with emotional regulation and self-awareness. Increased alpha waves and decreased theta waves observed in the brain reflect a shift towards a relaxed and focused state of mind. These neural changes are linked to enhanced cognitive function, emotional stability, and mindfulness, contributing to overall well-being.

The vagus nerve plays a central role in mediating the interplay between the autonomic nervous system, brain function, and emotional regulation during slow breathing. As the primary conduit of parasympathetic signals, the vagus nerve transmits messages of calmness and relaxation throughout the body, fostering physiological and psychological equilibrium.

Furthermore, the intentional focus required for slow breathing directs attention away from intrusive thoughts and distractions, promoting mindfulness and present-moment awareness. This heightened cognitive engagement strengthens neural pathways associated with attentional control and emotional resilience, empowering individuals to navigate stressors and challenges more effectively.

In summary, slow breathing techniques harmonize various physiological and psychological processes, offering a holistic approach to health and well-being. By leveraging the body's innate capacity for self-regulation and resilience, slow breathing fosters mental and emotional wellness in today's fast-paced world.

How Blood pH and Breathing Patterns Shape Our Emotions

The pH level of our blood does play a significant role in regulating various bodily functions, including emotions. The pH of blood typically ranges between 7.35 and 7.45, with slight deviations from this range having notable effects on our physiology. This is known as acid-base balance, and it's crucial for maintaining homeostasis in the body.

Research suggests that alterations in blood pH can impact mood and emotional state. For instance, deviations towards acidity (lower pH) or alkalinity (higher pH) can lead to symptoms such as anxiety, irritability, and even depression. This is largely due to the sensitivity of the central nervous system to changes in pH levels. Studies have shown that individuals with certain mood disorders tend to exhibit abnormalities in their blood pH levels.

Now, onto how breathing affects blood pH: one of the primary mechanisms our body employs to regulate blood pH is through the respiratory system. When we breathe, we inhale oxygen and exhale carbon dioxide (CO₂). Carbon dioxide, when dissolved in the blood, forms carbonic acid, which can lower blood pH, making it more acidic. Conversely, exhaling more CO₂ can lead to a rise in blood pH, making it more alkaline.

This connection between breathing and blood pH demonstrates how our breathing patterns can influence our emotional state. Deep, slow breathing techniques, such as those practiced in mindfulness or meditation, can help regulate blood pH by expelling more CO₂, thus potentially calming the nervous system and promoting a sense of relaxation and well-being. On the other hand, shallow or rapid breathing, often associated with stress or anxiety, can lead to an accumulation of CO₂ in the blood, potentially contributing to feelings of tension or agitation.

In essence, the relationship between blood pH, breathing, and emotions underscores the intricate interplay between physiological processes and psychological experiences. By understanding and leveraging this connection, we can explore various breathing techniques as practical tools for managing emotions and promoting mental well-being.

The relationship between breathing and how we feel and live

Relaxation: Slow, deep breaths activate the relaxation response in our body, inducing calmness and reducing stress.

Elevation of Mood: Intentional breathing techniques can elevate our mood, helping us feel more positive and uplifted.

Excitement: Quick, shallow breaths stimulate our body, making us feel more alert and energized, ready for action.

Agitation: Conversely, erratic or shallow breathing patterns can contribute to feelings of agitation or anxiety, heightening tension in the body.

Focus and Clarity: Controlled breathing techniques can enhance focus and clarity, helping us stay grounded and present in the moment.

Stress Reduction: Practicing mindful breathing can reduce the levels of stress hormones in our body, promoting a sense of peace and tranquility.

Improved Sleep: Deep breathing exercises before bedtime can relax the body and mind, facilitating better sleep quality and duration.

Enhanced Physical Performance: Athletes utilize specific breathing patterns to optimize oxygen intake and energy levels, improving endurance and performance during physical activities.

Emotional Regulation: By mastering various breathing methods, individuals gain better control over their emotional responses, allowing for greater resilience and adaptability in challenging situations.

Breathing serves as a powerful tool for navigating the complexities of our emotions and enhancing our overall well-being.

The Impact of Posture (Forward Head Posture and Rounded Shoulders) on Respiratory Function: Posture Matters, especially when doing breathing techniques.

Maintaining good posture is essential for overall health and well-being. However, modern lifestyles characterized by sedentary activities and prolonged screen time have led to an increase in postural deviations, such as forward head posture and rounded shoulders. While these deviations are commonly associated with musculoskeletal issues, emerging research suggests that they can also have significant implications for respiratory function. Forward head posture and rounded shoulders can have detrimental effects on respiratory function by impairing thoracic mobility, restricting ribcage movement, and altering respiratory muscle activity. However, research suggests that targeted interventions aimed at correcting these postural deviations can lead to improvements in breathing mechanics and lung function. By addressing forward head posture and rounded shoulders through postural correction exercises and ergonomic modifications, individuals can optimize their respiratory health and overall well-being. Maintaining awareness of posture and incorporating preventive measures into daily routines are essential steps toward mitigating the impact of postural deviations on respiratory function.

RESEARCH

The Effects of Forward Head Posture on Respiratory Function:

Forward head posture, characterized by the anterior positioning of the head in relation to the shoulders, can lead to increased strain on the muscles of the neck and upper back. This strain can restrict the movement of the ribcage and diaphragm, impairing respiratory mechanics. Research has shown that individuals with forward head posture exhibit altered activity in respiratory muscles, which can result in inefficient breathing patterns [Kim, T. H., et al. "Effects of forward head posture on respiratory muscle strength and cervical range of motion in normal adults." *Journal of Physical Therapy Science* 27.2 (2015): 393-395]. Additionally, forward head posture has been linked to decreased lung function, potentially leading to respiratory difficulties [Caneiro, J. P., et al. "The influence of different sitting postures on head/neck posture and muscle activity." *Journal of Back and Musculoskeletal Rehabilitation* 27.2 (2014): 159-165]. However, corrective measures such as postural correction exercises have been shown to improve respiratory function, highlighting the importance of addressing forward head posture for optimal breathing mechanics [O'Sullivan, K., et al. "Postural correction reduces thoracoabdominal pressure and increases peak expiratory flow in subjects with severe postural disorders." *Journal of Manipulative and Physiological Therapeutics* 37.9 (2014): 659-665].

The Role of Rounded Shoulders in Respiratory Impairment:

Rounded shoulders often accompany forward head posture and contribute to a slouched upper body position. This posture further exacerbates the strain on the muscles of the neck, upper back, and chest, restricting the movement of the ribcage and impairing thoracic mobility. Research indicates that individuals with rounded shoulder posture exhibit reduced thoracic mobility and decreased lung function compared to those with normal shoulder posture [Kaba, S. A., et al. "Effects of rounded-shoulder posture on chest expansion and lung function in young adults." *Journal of Manipulative and Physiological Therapeutics* 41.9 (2018): 763-768]. However, targeted interventions aimed at correcting rounded shoulder posture have been shown to improve respiratory function. A study examining the effects of postural correction exercises demonstrated significant improvements in respiratory muscle strength and lung function parameters in individuals with forward head and rounded shoulder posture [Hwang-Bo, G., et al. "Effects of forward head posture correction exercise and cranio-cervical flexion exercise on respiratory function in normal adults." *Journal of Physical Therapy Science* 28.4 (2016): 1289-1292].

Understanding Heart Rate Variability and the Power of Breath

In the intricate symphony of the human body, one vital rhythm often overlooked is heart rate variability (HRV). Despite its subtlety, HRV plays a significant role in overall health and well-being. So, what exactly is heart rate variability, and why is it crucial that it remains variable?

Unveiling Heart Rate Variability

Heart rate variability refers to the natural variation in the time intervals between consecutive heartbeats. Rather than beating like a metronome, a healthy heart adjusts its rhythm in response to internal and external factors, such as stress, physical activity, and even breathing patterns. This variability is regulated by the autonomic nervous system, comprising the sympathetic and parasympathetic branches, which governs involuntary bodily functions.

The Importance of Variability

While a steady heartbeat might seem desirable, it's the variability in heart rate that holds the key to health. A higher HRV reflects a flexible autonomic nervous system, capable of quickly adapting to changing demands. On the contrary, reduced HRV is associated with various health issues, including cardiovascular diseases, stress-related disorders, and even mortality risk.

Factors Influencing HRV

Several factors can influence HRV, including exercise, sleep quality, stress levels, and most notably, breathing patterns. Each breath we take sends signals to the brain, triggering responses that affect heart rate and, consequently, HRV.

The Breath of Life: Impact on HRV

Research has illuminated the profound connection between breathing and HRV. Techniques such as slow, deep breathing, diaphragmatic breathing, and paced breathing have been shown to increase HRV. By modulating the rhythm and depth of breaths, these practices stimulate the parasympathetic nervous system, promoting relaxation and reducing stress. Conversely, shallow, rapid breathing patterns can suppress HRV, indicating heightened sympathetic activity and increased stress levels.

Harnessing the Power of Breath

The breath, often taken for granted, emerges as a potent tool in regulating HRV and enhancing overall well-being. Incorporating mindful breathing practices into daily routines can foster a healthier autonomic nervous system, leading to improved cardiovascular health, stress resilience, and mental clarity.

Conclusion

In the pursuit of holistic health, understanding the significance of heart rate variability is paramount. Embracing practices that promote variability, particularly mindful breathing techniques, empowers individuals to cultivate resilience in the face of life's challenges. By honoring the breath as a conduit to harmony within, we unlock the potential for a vibrant, balanced life.

In essence, as we breathe, so shall we thrive.

Understanding Carbon Dioxide Tolerance Tests: Techniques and Training Tips

SUMMARY: Carbon dioxide tolerance testing is a method used to assess an individual's ability to tolerate elevated levels of carbon dioxide in the body. It involves measuring how long someone can hold their breath after exhaling completely, without feeling the immediate urge to breathe. This test provides insights into respiratory health and can indicate the efficiency of breathing patterns. By tracking changes in carbon dioxide tolerance over time, individuals can tailor breathing exercises to optimize respiratory health and overall fitness.

Carbon dioxide tolerance testing is gaining traction in the realm of fitness and health, offering valuable insights into respiratory health and physical recovery. Patrick McKeown, in his book "The Oxygen Advantage," underscores the importance of monitoring carbon dioxide tolerance levels and provides guidance on enhancing it through tailored exercises. Additionally, Andrew Huberman's approach adds another dimension to this practice, emphasizing its role in assessing nervous system recovery post-exercise. Let's delve deeper into these testing methods and training techniques.

Assessing Carbon Dioxide Tolerance

McKeown proposes a simple yet effective carbon dioxide tolerance test. To perform this test, begin with a normal breath, then exhale completely and hold your breath while pinching your nose shut. The duration until you feel the urge to breathe again signifies your carbon dioxide tolerance level. McKeown suggests aiming for a tolerance of around 40 seconds for optimal fitness.

Performing this test upon waking ensures consistency, as it captures your respiratory system in a neutral state. By tracking changes in tolerance over time, individuals can tailor their breathing exercises accordingly, optimizing their respiratory health.

Enhancing Recovery Through Testing

Huberman's approach to carbon dioxide tolerance testing focuses on assessing nervous system recovery following physical exertion. Unlike McKeown's method, which measures the body's urge to breathe, Huberman's test evaluates the ability to control the diaphragm and activate the parasympathetic nervous system in the presence of carbon dioxide.

Huberman's test involves a series of inhalations and exhalations followed by a slow exhale, measuring the duration of the exhale rather than the urge to inhale. A longer exhale duration indicates a better-recovered nervous system, ready for further physical activity.

Integrating Testing Into Training

Both McKeown and Huberman advocate for incorporating carbon dioxide tolerance testing into regular training routines. McKeown's method serves as a long-term metric, guiding individuals on suitable breathing exercises based on their tolerance levels. On the other hand, Huberman's approach offers real-time feedback on nervous system recovery, aiding in the timing of subsequent workouts.

By understanding their carbon dioxide tolerance and nervous system recovery patterns, individuals can optimize their training schedules, preventing overexertion and promoting efficient recovery. These tests serve as valuable tools for fine-tuning respiratory health and overall fitness.

Conclusion

Carbon dioxide tolerance testing presents a holistic approach to assessing respiratory health and physical recovery. Whether measuring long-term tolerance levels or evaluating immediate nervous system recovery, these tests offer valuable insights into an individual's fitness and well-being. By incorporating these testing methods into regular routines, individuals can optimize their training efforts, promote efficient recovery, and enhance overall health and performance.

Breathing During Exercise

When it comes to breathing during exercise, there are several key strategies based on research that can optimize your performance and well-being. One key that is listed is very important to me is nasal breathing. Emphasizing nasal inhalation and mouth exhalation, especially during moderate to high-intensity aerobic activities, is crucial. While mouth breathing may be necessary during extreme aerobic exertion, focusing on nasal inhalation and controlled mouth exhalation is generally effective for most exercises, ensuring efficient oxygen intake and carbon dioxide release. However, individual preferences and physiological differences may affect how well someone tolerates nasal breathing during exercise. It's always a good idea to experiment and find the breathing pattern that works best for you.

- **Maintain a rhythmic pattern:** Establishing a consistent breathing rhythm can enhance your exercise experience. For example, inhaling through your nose for a set count, then exhaling through your mouth in a controlled manner helps regulate oxygen intake and carbon dioxide release.
- **Coordinate with movement:** Syncing your breath with your movements can be helpful. In activities like weightlifting, exhaling during exertion (such as lifting a weight) and inhaling during relaxation aids in stabilizing your core and optimizing performance, but it is more important that you breathe and not hold your breath.
- **Prioritize diaphragmatic breathing:** This involves breathing deeply, allowing your belly to expand as you inhale. Known as belly or diaphragmatic breathing, it maximizes oxygen intake and minimizes stress on respiratory muscles.
- **Avoid shallow breathing:** Shallow chest breathing can lead to fatigue and tension. Focusing on deep, full breaths ensures efficient oxygenation of muscles and reduces the risk of hyperventilation.
- **Embrace nasal breathing:** Research suggests that nasal breathing offers numerous benefits during exercise. It filters and humidifies air, improving lung function and oxygen uptake. Nasal breathing also helps regulate heart rate and reduce the risk of exercise-induced asthma.
- **Maintain relaxation:** Tension inhibits breathing efficiency. By staying relaxed and focusing on proper posture, you optimize oxygen delivery to muscles and minimize energy expenditure.
- **Listen to your body:** Adjust your breathing according to your body's cues. If you feel short of breath or light-headed, slow down and prioritize recovery. Over time, you'll develop a personalized breathing pattern that enhances your performance and comfort.

While exploring breathing techniques, it's essential to note the potential downsides of holding your breath during exercise. Breath-holding can increase blood pressure and lead to dizziness or fainting, compromising both safety and performance. Therefore, prioritize continuous, rhythmic breathing to sustain optimal physical and mental function during exercise.

By integrating these evidence-based breathing strategies into your workout routine, you can enhance your exercise experience, improve performance, and promote overall well-being. As always, consult with a healthcare professional before implementing any new exercise or breathing regimen, especially if you have pre-existing health conditions.

The Impact of Screen Use on Breathing: Understanding Email and Tech Apnea

In today's digital age, our lives are increasingly intertwined with screens. Whether we're hunched over computer monitors for work, tilting our heads down to scroll through social media feeds on smartphones, or tackling email inboxes, screen time has become an unavoidable part of modern living. However, emerging research suggests that this constant exposure to screens may have unintended consequences on our breathing patterns and overall well-being.

Email apnea, a term coined by Linda Stone, a former executive at Apple and Microsoft, describes the phenomenon of unconsciously holding one's breath or breathing shallowly while engaged in screen-based activities such as checking emails, browsing the internet, or using social media. While not extensively researched, some studies have begun to explore the relationship between screen use and altered breathing patterns.

A study published in the *Journal of Medical Internet Research* found that individuals using computers tended to breathe more shallowly and hold their breath more often compared to when they were engaged in other activities. Similarly, preliminary research into smartphone usage suggests similar effects. For example, a study published in *PLOS ONE* found that participants exhibited shallow breathing and periods of breath-holding while using their smartphones, particularly during activities like texting, browsing social media, or playing games.

One possible explanation for altered breathing patterns during screen use is the phenomenon of cognitive and physiological arousal. Engaging with screens can stimulate the sympathetic nervous system, leading to increased heart rate, shallower breathing, and changes in respiratory patterns. This arousal response may be driven by factors such as the content being viewed, the anticipation of receiving notifications or updates, or the cognitive demands of the task at hand.

Furthermore, the design of digital interfaces, with constant scrolling and rapid content updates common in email and social media apps, may encourage users to maintain a fixed gaze and shallow breathing, exacerbating the tendency to hold one's breath or breathe irregularly. Poor posture while using screens, such as hunching over or slouching, can further impact breathing by restricting the expansion of the lungs and reducing oxygen intake.

While further research is needed to fully understand the mechanisms underlying screen apnea and its potential health implications, these findings underscore the importance of mindfulness and conscious breathing practices during prolonged screen use. Techniques such as diaphragmatic breathing or mindfulness meditation can help individuals maintain healthy breathing patterns and mitigate the physiological effects of excessive screen time.

In addition, taking regular breaks, practicing good posture, and limiting screen use before bedtime can contribute to overall well-being. By being mindful of our breathing and implementing strategies to mitigate the effects of screen use, we can strive for a healthier balance in our digital lives.

Breathing Techniques for Relaxation, Focus, and Arousal

Relaxation Techniques:

Deep Breathing: Inhale deeply through your nose for a count of four, hold briefly, then exhale slowly through your mouth for a count of eight. Repeat several times to induce a state of relaxation.

Abdominal Breathing: Inhale to inflate your belly with air, then swell your chest. Exhale by first emptying your stomach, then your chest.

Diaphragmatic Breathing (slightly different than abdominal breathing): Focus on breathing deeply into your abdomen then up to first rib, allowing your diaphragm to fully expand with each inhale and contract gently with each exhale. This promotes relaxation and reduces stress.

Physiological Sigh: Incorporate occasional deep sighs, as they naturally reset your breathing pattern, enhancing relaxation and stress reduction.

Think Reassuring Thoughts While Breathing: With each inhalation, think soothing thoughts ("I am inhaling calm"). With each exhalation, imagine expelling fears and worries ("I am exhaling stress").

• *Pursed lips help create a slight resistance to the airflow, allowing for a slower and more controlled exhalation. This technique can enhance the effectiveness of the breathing exercise in inducing relaxation by prolonging the exhalation phase and promoting deeper breathing.*

Focus and Attention Techniques:

Box Breathing: Inhale for four counts, hold for four, exhale for four, and hold for four. This rhythmic cycle enhances focus and concentration.

Rhythmic Breathing: Pause briefly at the end of each inhalation, mentally counting "1, 2, 3" before exhaling. This counting while not breathing can also be done after exhaling or between each inhalation or exhalation.

Kalapathi Breathing: Also known as "skull-shining breath," this rapid, forceful breathing through the nose can increase mental clarity and focus.

Alternate Nostril Breathing: Inhale and exhale slowly through one nostril, while holding the other one closed using your finger. Alternate nostrils regularly to balance the flow of energy between the left and right sides of the brain, promoting mental balance and clarity.

Arousal Techniques:

Bellow Breathing: Inhale deeply and forcefully through your nose or mouth, expanding your belly and chest simultaneously. Exhale with equal force, emptying your lungs completely. Repeat for several breaths to increase arousal and energy levels.

Energizing Breath: Take quick, shallow breaths through your nose for a few seconds, then forcefully exhale through your mouth. Repeat to boost alertness and arousal.

Cyclical Sighing: Integrate occasional sighs throughout your breathing pattern to promote relaxation while maintaining alertness.

Other Techniques:

Humming Breathing: Inhale deeply through your nose, then exhale while producing a low-pitched humming sound. This technique can enhance relaxation and mental clarity.

These techniques offer a diverse range of benefits and can be tailored to suit your needs in various situations. Experiment with different methods to discover what works best for you in promoting relaxation, focus, and arousal. **Before engaging in any breathing technique or exercise regimen, it's essential to consult with a healthcare professional, especially if you have pre-existing physical conditions or concerns. They can provide personalized guidance and ensure that the chosen techniques are safe and suitable for your individual health needs. Additionally, always listen to your body and stop immediately if you experience any discomfort or adverse effects while practicing these techniques. Your well-being should always be the top priority.**

Breath Training and Techniques

Breath training might seem simple, but it's one of the most profound and effective ways to improve both body and mind. Proper breathing techniques can reduce stress, increase focus and concentration, enhance athletic performance, improve sleep quality, and even boost the immune system. Plus, it's accessible to everyone, regardless of age or fitness level.

Techniques

Relaxation Techniques:

Abdominal Breathing / Diaphragmatic Breathing / Deep Breathing

Physiological Sigh

Pursed Lips Breathing

Think Reassuring Thoughts While Breathing

Focus and Attention Techniques:

Box Breathing

Rhythmic Breathing

Kalapathi Breathing

Alternate Nostril Breathing

Arousal Techniques:

Bellow Breathing

Energizing Breath

Cyclical Sighing

Other Techniques:

Humming Breathing

Ocean Breath

Deep Core Breathing - Develop the Core with Breath

These breathing techniques can be potent, but it's crucial to avoid practicing them, particularly relaxation exercises, while driving or operating heavy machinery. Additionally, if you feel unwell or uncomfortable while using these techniques, it's essential to stop. As for seeking medical advice, it's recommended if you experience persistent and distressing symptoms, such as overwhelming anxiety, that interfere with your daily life.

Before we Start: Understanding the Connection Between Breathing and Emotions

SIMPLIFIED

- **Emotions and Breathing:**
 - Our emotions can affect how we breathe.
 - Likewise, the way we breathe can impact our emotions.
- **Involuntary Nature:**
 - Breathing is largely involuntary, similar to the stress response.
 - The stress response is governed by the involuntary sympathetic nervous system.
- **Relaxation Response:**
 - Conversely, relaxation is controlled by the involuntary parasympathetic nervous system.
 - Both breathing and relaxation are involuntary processes.
- **Impact of Breathing:**
 - Breathing can influence the activity of the parasympathetic nervous system.
 - Therefore, our breathing patterns can influence our parasympathetic nervous system, stress levels and emotional well-being.
- **Voluntary Control:**
 - Although breathing is mainly involuntary, we can voluntarily control it.
 - By consciously regulating our breath, we can affect our stress response and emotional state.

Our breathing patterns and emotions are intimately linked; when stressed, our breathing becomes faster and shallower, whereas slow, deep breathing can signal calmness to our bodies, influencing our emotional state positively. By practicing techniques like deep breathing, we can regulate our emotions and promote feelings of relaxation and well-being.

Abdominal / Diaphragmatic / Deep Breathing Video: [Slow](#)

[Abdominal/Diaphragmatic Breaths](#)

Diaphragmatic breathing, also known as belly breathing or abdominal breathing and even deep breathing, offers numerous benefits for both physical and mental health. There is a difference though. Here's a breakdown of its benefits, when to do it, how to do it, how often, and what research says:

Benefits:

- **Improved Respiratory Function:** Diaphragmatic breathing maximizes the use of the diaphragm, the primary muscle involved in breathing, leading to more efficient ventilation of the lungs and enhanced oxygen exchange.
- **Stress Reduction:** It activates the body's relaxation response, reducing stress hormones like cortisol and promoting a sense of calmness and relaxation.
- **Anxiety Relief:** Diaphragmatic breathing can help alleviate symptoms of anxiety and panic by slowing down the heart rate and promoting relaxation.
- **Better Posture:** Practicing diaphragmatic breathing encourages better posture by engaging the core muscles and promoting proper alignment of the spine.
- **Pain Management:** It can help reduce pain by promoting relaxation and reducing muscle tension throughout the body.

When to Do It:

- **During Stressful Situations:** Engage in diaphragmatic breathing when feeling stressed, anxious, or overwhelmed to induce relaxation and calmness.
- **Before Sleep:** Practice diaphragmatic breathing techniques before bedtime to promote relaxation and improve sleep quality.
- **During Meditation or Mindfulness Practices:** Incorporate diaphragmatic breathing into meditation or mindfulness exercises to enhance focus and relaxation.
- **During Exercise:** Utilize diaphragmatic breathing techniques during exercise, particularly activities that require endurance, to optimize breathing efficiency and performance.

How to Do It: [SEE VIDEO](#)

- **Find a Comfortable Position:** Sit or lie down in a comfortable position with your back straight and shoulders relaxed.
- **Place Your Hand on Your Abdomen:** Put one hand on your abdomen, just below your rib cage, to feel the movement of your diaphragm.
- **Inhale Deeply Through Your Nose:** Breathe in deeply and slowly through your nose, allowing your abdomen to expand as you inhale from the bottom of your abdomen up to your first rib.
- **Exhale Slowly Through Your Mouth:** Exhale slowly and evenly through your mouth, allowing your abdomen to contract as you exhale.
- **Focus on the Breath:** Pay attention to the rise and fall of your abdomen with each breath, and try to maintain a steady rhythm.

How Often:

- Practice diaphragmatic breathing regularly, ideally incorporating it into your daily routine.
- Aim for at least a few minutes of diaphragmatic breathing each day, but feel free to practice for longer periods if desired.
- Use diaphragmatic breathing techniques as needed throughout the day to manage stress, promote relaxation, and enhance overall well-being.

Research Insights:

- Studies have demonstrated the effectiveness of diaphragmatic breathing in reducing stress, anxiety, and physiological markers of stress such as heart rate and blood pressure.
- Research also suggests that diaphragmatic breathing can improve respiratory function, enhance relaxation, and promote overall well-being.

Diaphragmatic breathing is a simple yet powerful technique that can be easily incorporated into daily life to promote physical and mental health.

SEE Diaphragmatic breathing SCRIPT NEXT PAGE. Video: [Slow Abdominal/Diaphragmatic Breaths](#)

Diaphragmatic Breathing How To

Diaphragmatic breathing or deep breathing from the diaphragm rather than the chest, is a great way to relax and reduce anxiety.

There are many ways to practice deep, diaphragmatic breathing.

This is my favorite.

1. Find a quiet place free of distractions. Lie on the floor or recline in a chair, loosen any tight clothing and remove glasses or contacts. Rest your hands in your lap or on the arms of the chair.
 2. Place one hand on your upper chest and the other hand on your stomach. Inhale, taking a deep breath from your abdomen as you count to **three**. As you inhale you should feel your stomach rise up and into your lower chest (first rib). The hand on your chest should not move.
 3. After a short pause of **two** count, slowly exhale while **counting to six**.
3 inhale - 2 pause - 6 exhale - 2 pause
- Many suggest the **4-7-8 breathing technique**, also known as “relaxing breath,” involves **breathing in for 4 seconds, holding the breath for 7 seconds, and exhaling for 8 seconds**. Find out what works for you.
4. Your stomach should fall back down as you exhale.
5. Continue this pattern of rhythmic breathing for **five to ten minutes**.

Stop if it does not feel right or you feel dizzy. Consult your doctor before starting any wellness program.

FIND WHAT WORKS FOR YOU!

Revised by C. Morin from McMaster University. Guided Relaxation CD.

Differences Abdominal/Diaphragmatic Breathing and Deep Breathing

Benefits of a few deep breaths: Taking a few deep breaths, even in a less formal setting, can be incredibly beneficial for your well-being. It's a quick and accessible way to activate your body's relaxation response, especially during moments of stress, anxiety, or tension. In everyday situations, such as during a hectic day at work, before an important meeting, or when feeling overwhelmed, pausing to take a few deep breaths can help calm your mind and body, allowing you to regain focus and composure. It's a simple yet effective tool for managing stress and promoting a sense of balance and clarity. In fact, incorporating this practice into your daily routine can have cumulative benefits over time, helping you build resilience to stress and maintain overall mental and emotional well-being. So, whether it's a formal deep breathing session or just a few intentional breaths throughout the day, taking moments to breathe deeply can definitely be a good thing. Interchangeably can be practiced together to achieve deep, efficient breathing.

Deep breathing, diaphragmatic breath, and abdominal breathing are often used interchangeably, though they each carry distinct nuances. Deep breathing entails slow, mindful breaths that are relatively straightforward and can be performed swiftly with minimal thought. In contrast, diaphragmatic breath and abdominal breathing demand more attention, necessitating a focused concentration on expanding the abdomen. Abdominal breathing specifically involves expanding the abdomen, while diaphragmatic breathing extends this expansion up to the lower ribs. Moreover, diaphragmatic breathing is best practiced in a seated position or while lying down to induce optimal relaxation.

Differences between a more formal diaphragmatic breathing practice and the informal approach of taking a few deep breaths:

Formality and Structure:

Diaphragmatic Breathing: In a formal diaphragmatic breathing session, you typically set aside dedicated time to focus solely on your breathing. This may involve finding a quiet space, assuming a comfortable position, and intentionally engaging in deep breathing exercises for a set duration, often guided by instructions or meditation techniques.

Taking a Few Deep Breaths: On the other hand, the informal approach involves taking deep breaths as needed throughout the day, without necessarily following a structured routine. It's more spontaneous and adaptable to various situations, allowing you to incorporate deep breathing into your daily activities whenever you feel the need to relax or recenter.

Time Commitment:

Diaphragmatic Breathing: Formal diaphragmatic breathing sessions may last anywhere from a few minutes to half an hour or more, depending on your preference and available time.

Taking a Few Deep Breaths: In contrast, taking a few deep breaths informally can be done in just a matter of seconds or minutes. It doesn't require a significant time commitment and can be seamlessly integrated into your daily life, such as during brief breaks at work, while commuting, or before important tasks.

Focus and Intensity:

Diaphragmatic Breathing: During a formal session, you might consciously focus all your attention on your breath, practicing slow, deliberate inhaleds and exhaleds while maintaining awareness of bodily sensations, thoughts, and emotions.

Taking a Few Deep Breaths: When taking a few deep breaths informally, the focus may be less intense and more pragmatic. You might take quick, deep breaths to quickly alleviate momentary stress or tension, without necessarily delving deeply into mindfulness or meditation practices.

Purpose and Benefits:

Diaphragmatic Breathing: Formal diaphragmatic breathing sessions are often aimed at cultivating mindfulness, relaxation, and stress reduction over the long term. They may offer deeper introspection and a greater sense of calm and well-being with consistent practice.

Taking a Few Deep Breaths: Informal deep breathing serves as a practical tool for managing immediate stressors and promoting momentary relaxation. While it may not yield the same depth of benefits as a formal practice, it can still help alleviate tension, improve focus, and enhance overall resilience throughout the day.

In essence, both formal diaphragmatic breathing and the informal practice of taking a few deep breaths offer valuable tools for promoting relaxation and well-being. The choice between them depends on your preferences, schedule, and specific needs in any given moment.

Differences Abdominal and Diaphragmatic Breathing

Abdominal and diaphragmatic breathing are great techniques to instill relaxation. They are closely related but not exactly the same thing. They both involve engaging the diaphragm, a dome-shaped muscle located at the base of the lungs, to facilitate deep breathing. However, there are slight differences between the two:

- **Abdominal Breathing:** Abdominal breathing, also known as belly breathing or diaphragmatic breathing, primarily focuses on expanding the abdomen during inhalation. When practicing abdominal breathing, you intentionally breathe deeply into your belly, allowing it to rise and fall with each breath. This technique emphasizes the downward movement of the diaphragm, which creates more space for the lungs to expand.
- **Diaphragmatic Breathing:** Diaphragmatic breathing specifically refers to the action of the diaphragm during breathing. It involves contracting the diaphragm downward during inhalation, which creates negative pressure in the chest cavity, allowing air to enter the lungs. **This type of breathing can involve the expansion of both the abdomen and the lower rib cage.**

In essence, abdominal breathing is a type of breathing that engages the diaphragm by focusing on the expansion of the abdomen, while diaphragmatic breathing refers more directly to the physiological action of the diaphragm itself.

Both abdominal and diaphragmatic breathing techniques are beneficial for improving respiratory function, reducing stress, and promoting relaxation. They are often used interchangeably and can be practiced together to achieve deep, efficient breathing.

Abdominal / Diaphragmatic Breathing with Mantra

benefits

Using a mantra with abdominal or diaphragmatic breathing can enhance its benefits by combining the physiological effects of deep breathing with the mental focus and relaxation induced by repeating a phrase or word (I simply use the color blue or the number one). Here's how incorporating a mantra can be beneficial:

- **Enhanced Focus:** Repeating a mantra while practicing abdominal or diaphragmatic breathing can help focus the mind and prevent distractions. This heightened focus can deepen the relaxation response and promote a greater sense of calmness.
- **Stress Reduction:** Mantras often have calming or positive associations, and repeating them can trigger the relaxation response. Combining a mantra with deep breathing amplifies its stress-reducing effects, making it an effective tool for managing stress and anxiety.
- **Mindfulness:** Using a mantra encourages mindfulness, the practice of being fully present and aware in the moment. By focusing on the mantra and the sensations of breathing, you cultivate mindfulness and develop greater self-awareness.
- **Positive Affirmation:** Mantras are often affirmations of positive beliefs or intentions. Repeating a mantra during abdominal or diaphragmatic breathing reinforces these positive messages, fostering a sense of self-empowerment and optimism.
- **Emotional Regulation:** Mantras can help regulate emotions by providing a calming anchor during challenging situations. When combined with deep breathing, they promote emotional stability and resilience.
- **Spiritual Connection:** For those with spiritual inclinations, using a mantra can deepen their spiritual practice and foster a sense of connection with their higher self or a higher power.

When using a mantra with abdominal or diaphragmatic breathing, choose a phrase or word that resonates with you personally. It could be a traditional mantra from a spiritual tradition, a positive affirmation, or simply a word that evokes feelings of peace and tranquility. I simply use the color blue or the number one. Repeat the mantra silently or aloud with each breath, synchronizing its rhythm with your breathing pattern.

Overall, incorporating a mantra into abdominal or diaphragmatic breathing can enhance its benefits and make the practice more enjoyable and effective for promoting relaxation, stress reduction, and overall well-being.

Research on the combination of mantras with abdominal or diaphragmatic breathing specifically may be limited, but there is ample evidence supporting the individual benefits of both deep breathing techniques and mantra meditation. While studies directly examining the synergistic effects of combining mantras with abdominal or diaphragmatic breathing are less common, research on related topics provides insight into the potential benefits.

Here's a summary of relevant research findings:

Deep Breathing Techniques:

Numerous studies have demonstrated the effectiveness of deep breathing techniques, including abdominal and diaphragmatic breathing, in reducing stress, anxiety, and physiological markers of stress such as heart rate and blood pressure. These studies provide a strong foundation for the stress-reducing benefits of deep breathing.

Mantra Meditation:

Research on mantra meditation has shown that repeating a mantra can induce a relaxation response, reduce stress, and improve emotional well-being. Studies have also found that mantra meditation can enhance focus, attention, and mindfulness.

Mindfulness-Based Stress Reduction (MBSR):

Mindfulness-based interventions often incorporate deep breathing techniques and mantra meditation as key components. Research on mindfulness-based stress reduction (MBSR) programs has demonstrated their efficacy in reducing stress, anxiety, depression, and improving overall quality of life.

Practice Diaphragmatic Breathing with a Mantra

1. Sit quietly in a comfortable position.
2. Close your eyes.
3. Deeply relax all your muscles, beginning at your feet and progressing up to your face. Keep them relaxed. [Relax your tongue—and thoughts will cease.]
4. Breathe through your nose. Become aware of your breathing. As you breathe out, say the word "**one**"* silently to yourself. For example, breathe in, and then out, and say "one"*, in and out, and repeat "one."* Breathe easily and naturally.
5. Continue for 10 to 20 minutes. You may open your eyes to check the time, but do not use an alarm. When you finish, sit quietly for several minutes, at first with your eyes closed and later with your eyes opened. Do not stand up for a few minutes.
6. Do not worry about whether you are successful in achieving a deep level of relaxation. Maintain a passive attitude and permit relaxation to occur at its own pace. When distracting thoughts occur, try to ignore them by not dwelling upon them and return to repeating "one."*
7. With practice, the response should come with little effort. Practice the technique once or twice daily, but not within two hours after any meal, since the digestive processes seem to interfere with the elicitation of the Relaxation Response.

***Choose any soothing word preferably with no meaning or association, in order to avoid stimulation of unnecessary thoughts. I use the color blue.**

Revised by C. Morin from McMaster University. Guided Relaxation CD.

Practice Diaphragmatic Breathing with 4-7-8 Breathing

A technique created by Andrew Weil M.D., founder and director of the Andrew Weil Center for Integrative Medicine at the University of Arizona, this exercise can help calm your nervous system quickly. You can do this exercise either sitting or lying down.

Here's how to practice 4-7-8 breathing, according to Dr. Weil:

- Place one hand on your belly and the other on your chest.
- Count to four as you take a deep, slow breath from your belly.
- Hold your breath for seven counts.
- Breathe out for eight counts. Try to get all the air out of your lungs by the time you count to eight.
- Repeat three to seven times or until you feel calm.
- Take a few minutes to sit and feel the sensations in your body and mind before returning to your day.
- Do this seated or lying down, do not do this driving.

Connection Diaphragmatic Breathing and Lymphatic System

The lymphatic system is crucial for maintaining a healthy body. It helps remove toxins, waste products, and excess fluid from tissues, regulates immune responses by transporting immune cells, and absorbs fats and fat-soluble vitamins from the digestive system. Essentially, it supports the body's immune function, fluid balance, and nutrient absorption, making it essential for overall health.

The up and down movement of the diaphragm during deep abdominal breathing is an essential component for the sufficient return of lymphatic fluid back to the bloodstream. The movement of the diaphragm, combined with the outward and inward movements of the abdomen, assist in the return of venous blood back to the heart (Research). Unlike the heart in the blood circulatory system, the lymphatic system does not have an active pump to propel lymphatic fluid back to the bloodstream. Effective lymph flow depends on sufficient muscle and joint activity, especially if the functionality of the lymphatic system is compromised “Deep diaphragmatic breathing stimulates the cleansing of the lymph system by creating a vacuum effect which pulls the lymph through the bloodstream. **This increases the rate of toxic elimination by as much as 15 times the normal rate.**” Says Dr. Jack W. Shields, M.D. Well it's true that deep diaphragmatic breathing can stimulate the lymphatic system, the statement about it increasing the rate of toxic elimination by as much as 15 times the normal rate might be overstated. Deep breathing can indeed enhance lymphatic circulation, aiding in the removal of toxins from the body, but specific claims about the increase in elimination rate would likely need further scientific validation.

Purse Lip Breathing

Purse lip breathing, a breathing technique often recommended for individuals with respiratory conditions such as chronic obstructive pulmonary disease (COPD) or asthma. You can also do it when performing relaxation breathing and during exercise. Purse lip breathing involves inhaling through the nose and exhaling slowly through pursed lips, as if blowing out a candle. According to the American Lung Association, when you feel short of breath, pursed lip breathing helps get more oxygen into your lungs and calms you down so you can better control your breath

Benefits:

- **Improved Breathing Efficiency:** It helps to slow down the breathing rate and increase the efficiency of air exchange in the lungs.
- **Decreased Respiratory Rate:** It can reduce the feeling of breathlessness or shortness of breath by slowing down the respiratory rate.
- **Enhanced Oxygenation:** By prolonging exhalation, it can improve oxygenation of the blood.
- **Decreased Work of Breathing:** It reduces the work of breathing by keeping the airways open longer during exhalation.

When to Do It:

- **During Activities:** Use purse lip breathing during activities that cause shortness of breath, such as walking or climbing stairs.
- **During Exacerbations:** It can be particularly helpful during exacerbations of respiratory conditions.
- **During Relaxation:** It can also be used during relaxation exercises to promote calmness and reduce anxiety.

How to Do It:

- **Inhale:** Breathe in slowly and gently through your nose for about two seconds.
- **Exhale:** Pucker your lips as if you're going to whistle or blow out a candle. Exhale slowly and evenly through your pursed lips for about four seconds or longer. The exhalation should be twice as long as the inhalation.
- **Repeat:** Continue this pattern of breathing, focusing on a slow, steady rhythm.

How Often:

- Practice purse lip breathing whenever you feel short of breath or during activities that trigger breathlessness.
- It can be done as needed throughout the day, and it's beneficial to incorporate it into daily routines, especially for individuals with chronic respiratory conditions.

Research Insights:

- Numerous studies have demonstrated the effectiveness of purse lip breathing in improving symptoms and quality of life in individuals with COPD and asthma.
- Research suggests that it can reduce respiratory rate, dyspnea (shortness of breath), and the work of breathing.
- However, it's essential to note that individual responses to breathing techniques may vary, and it's always best to consult with a healthcare professional for personalized advice.

Purse lip breathing is a simple yet effective technique that can significantly improve respiratory function and enhance overall well-being for individuals with respiratory condition

Think Reassuring Thoughts While Breathing

The practice of thinking reassuring thoughts while breathing involves combining deep breathing techniques with positive affirmations or comforting thoughts. It can be a deep breath, abdominal breath, or diaphragmatic breath.

Why: Combining deep breathing with reassuring thoughts can help alleviate stress, anxiety, and negative emotions. By focusing on positive affirmations or comforting thoughts while breathing deeply, you can shift your mindset, promote relaxation, and cultivate a sense of inner calm and peace.

How: Here's how to practice thinking reassuring thoughts while breathing:

- Find a quiet and comfortable place to sit or lie down.
- Close your eyes and take a few deep breaths, focusing on the sensation of your breath entering and leaving your body.
- As you continue to breathe deeply, start introducing reassuring thoughts or positive affirmations. These can be statements such as "I am safe," "I am calm," "I trust myself," or any other phrases that resonate with you.
- With each inhale, visualize yourself breathing in feelings of peace, comfort, and security. With each exhale, release any tension, worries, or negative thoughts.
- Repeat this process for several minutes, allowing yourself to fully immerse in the experience of breathing deeply and thinking reassuring thoughts. **This can be done with a diaphragmatic breath as well.**

When: You can practice thinking reassuring thoughts while breathing whenever you feel stressed, anxious, or overwhelmed. It's especially helpful during moments of heightened tension or before facing challenging situations, such as exams, presentations, or difficult conversations.

How often: Aim to practice this technique regularly, incorporating it into your daily routine as needed. You can practice it multiple times a day or whenever you feel the need to recenter and calm your mind. Consistency is key to experiencing the full benefits of the practice.

Benefits: The practice of thinking reassuring thoughts while breathing offers several benefits, including:

- Reduction of stress, anxiety, and tension
- Promotion of relaxation and calmness
- Enhancement of self-confidence and self-esteem
- Improvement of overall emotional well-being
- Strengthening of the mind-body connection
- Increased resilience to challenging situations

Research: While specific research on this exact practice may be limited, studies have demonstrated the individual benefits of both deep breathing techniques and positive affirmations for stress reduction and emotional well-being. Combining these practices can leverage their synergistic effects, potentially amplifying their therapeutic benefits. Additionally, mindfulness-based interventions, which often incorporate elements of deep breathing and positive affirmations, have been extensively researched and shown to be effective in promoting mental health and resilience.

Overall, the practice of thinking reassuring thoughts while breathing is a simple yet powerful technique that can help you cultivate a positive mindset, manage stress, and enhance your overall quality of life.

Box Breathing: [Video: Box Breathing](#)

Deep box breathing, also known as square breathing or 4x4 breathing, is a mild relaxation technique that involves rhythmic breathing patterns. Great for stress reduction and focus enhancement. Here's a detailed look at your questions:

Why: Deep box breathing is used to reduce stress, anxiety, and promote relaxation. By regulating your breath, you can activate the body's relaxation response, leading to a sense of calmness and improved mental clarity.

How: The technique typically involves the following steps:

- Find a comfortable seated position.
- Inhale deeply through your nose for a count of four seconds, filling your lungs with air.
- Hold your breath for a count of four seconds.
- Exhale slowly and completely through your mouth for a count of four seconds, emptying your lungs.
- Hold your breath again for a count of four seconds.
- Repeat the cycle for several minutes, maintaining a steady and rhythmic pace.

When: Deep box breathing can be practiced whenever you feel stressed, anxious, or overwhelmed. It's particularly useful before stressful events, such as exams, presentations, or important meetings, to help calm nerves and improve focus.

How often: You can practice deep box breathing as often as needed throughout the day. It can be incorporated into your daily routine, such as during breaks at work, before bedtime to promote sleep, or whenever you need a moment of relaxation and recentering.

Benefits: Deep box breathing offers several benefits, including:

- Reduction of stress and anxiety
- Promotion of relaxation and calmness
- Improved focus and concentration
- Regulation of emotions
- Lowered blood pressure and heart rate
- Enhanced overall well-being and resilience

Research: While specific research on deep box breathing may be limited, studies have investigated the effects of deep breathing techniques, including square breathing, on stress reduction and mental health. Research suggests that rhythmic breathing patterns can modulate the autonomic nervous system, leading to physiological changes associated with relaxation and improved stress resilience. Additionally, mindfulness-based interventions, which often incorporate deep breathing practices, have been extensively studied and shown to be effective in reducing anxiety, depression, and stress-related symptoms.

Overall, deep box breathing is a simple yet effective technique that can be easily incorporated into daily life to promote relaxation, reduce stress, and enhance overall well-being.

Rhythmic Breathing

Rhythmic breathing, also known as paced breathing, involves breathing at a regular, controlled pace to promote relaxation and reduce stress. Here's an overview of your questions:

Why: Rhythmic breathing is used to regulate the autonomic nervous system, promoting a balance between the sympathetic (fight-or-flight) and parasympathetic (rest-and-digest) branches. By breathing rhythmically, you can induce a state of relaxation, reduce stress and anxiety, and improve overall well-being.

How: The technique typically involves inhaling and exhaling at a specific rhythm, often with equal durations for each phase. Common patterns include inhaling for a count of four seconds and exhaling for a count of four seconds, or other variations such as inhaling for three seconds and exhaling for six seconds. The key is to maintain a consistent and comfortable rhythm throughout the practice.

When: Rhythmic breathing can be practiced whenever you feel stressed, anxious, or in need of relaxation. It's particularly effective before bedtime to promote better sleep, as well as during moments of heightened tension or during meditation or mindfulness sessions.

How often: You can practice rhythmic breathing as often as needed throughout the day. It can be incorporated into your daily routine, such as during breaks at work, before stressful events, or as part of a regular relaxation practice. Consistency is key to experiencing the full benefits of the technique.

Benefits: Rhythmic breathing offers several benefits, including:

- Reduction of stress and anxiety
- Promotion of relaxation and calmness
- Lowered blood pressure and heart rate
- Improved focus and concentration
- Enhanced mood and emotional well-being
- Better sleep quality

Research: Research on rhythmic breathing has shown promising results in various areas of health and well-being. Studies have demonstrated its effectiveness in reducing stress, anxiety, and blood pressure, as well as improving heart rate variability and overall autonomic function. Additionally, rhythmic breathing techniques are commonly used in mindfulness-based interventions, which have been extensively researched and shown to be effective in promoting mental health and resilience.

Overall, rhythmic breathing is a simple yet powerful technique that can be easily integrated into daily life to promote relaxation, reduce stress, and enhance overall well-being.

Kalapathi Breathing: [See Video](#) [Video: Kalapathi Breathing](#)

Kalapathi breathing, also known as "breath of fire" or "bellows breath," is a pranayama (breath control) technique in yoga. It involves rapid, rhythmic breathing through the nostrils, emphasizing exhalation. Here's a breakdown of the aspects you're interested in:

Benefits:

- **Increases Energy:** It's believed to increase vitality and energy levels.
- **Improves Focus:** Practitioners often report increased mental clarity and concentration.
- **Cleansing:** It's thought to cleanse the respiratory system and expel toxins.
- **Stress Reduction:** Some practitioners find it helps reduce stress and anxiety.
- **Stimulates Digestion:** The rapid breathing can stimulate the digestive organs.
- **Warm-up:** It's commonly used as a warm-up in yoga practices.

How to do it:

- **Posture:** Sit comfortably with an erect spine, either cross-legged or in a chair.
- **Breathing:** Begin by inhaling deeply through the nostrils. Then, quickly exhale with a short, forceful breath by contracting the lower abdomen with breaths through the nostrils. The inhalation should be passive and automatic, with the emphasis on the forceful exhalation.
- **Rhythm:** It's typically done in a rhythmic manner, with equal emphasis on inhalation and exhalation.
- **Speed:** Start slowly and gradually increase the speed as you become more comfortable with the technique.
- **Duration:** Practice for 1-3 minutes initially and gradually increase the duration over time.

How often:

Kalapathi breathing can be done daily, but it's essential to listen to your body. Start with shorter sessions and gradually increase the duration and frequency based on your comfort level.

When to do it:

It can be done at any time of day, but many practitioners prefer to do it in the morning as part of their yoga or meditation routine to energize and prepare for the day ahead.

Risks:

1. **Hyperventilation:** Rapid breathing can lead to hyperventilation in some individuals, causing dizziness or lightheadedness. If you experience these symptoms, slow down or stop the practice.
2. **Hernia:** Individuals with hernias or high blood pressure should exercise caution or avoid this technique altogether.
3. **Pregnancy:** Pregnant women should consult a healthcare professional before practicing Kalapathi breathing.

Research:

While there is anecdotal evidence supporting the benefits of Kalapathi breathing, scientific research specifically on this technique is limited. However, studies on similar pranayama techniques suggest potential benefits for stress reduction, respiratory function, and mental well-being.

As with any yoga or breathing technique, it's essential to learn from a qualified instructor, especially if you're new to the practice or have any underlying health conditions. Listen to your body and practice mindfully.

Alternate Nostril Breathing

Alternate Nostril Breathing, also known as Nadi Shodhana or Anulom Vilom Pranayama, is a powerful breathing technique with numerous benefits for physical and mental well-being. Here's an overview:

Benefits:

- **Balances the nervous system:** Alternate Nostril Breathing helps balance the sympathetic (fight-or-flight) and parasympathetic (rest-and-digest) nervous systems, promoting relaxation and reducing stress.
- **Improves respiratory function:** This technique enhances lung capacity, increases oxygen supply to the body, and improves respiratory efficiency.
- **Enhances mental clarity:** Regular practice can improve focus, concentration, and cognitive function.
- **Calms the mind:** Alternate Nostril Breathing induces a sense of calmness, clarity, and emotional balance.
- **Supports overall well-being:** It can help alleviate symptoms of anxiety, depression, and insomnia, promoting holistic well-being.

How to do it:

- Sit comfortably in a cross-legged position or on a chair with your spine straight and shoulders relaxed.
- Place your left hand on your left knee, palm facing upward, or adopt Chin Mudra by touching the tip of your index finger to the tip of your thumb.
- Use your right hand's thumb to close your right nostril and your ring finger or pinky to close your left nostril.
- Close your right nostril with your thumb and inhale deeply through your left nostril.
- Close your left nostril with your ring finger or pinky, release your thumb from your right nostril, and exhale completely through your right nostril.
- Inhale deeply through your right nostril.
- Close your right nostril with your thumb, release your left nostril, and exhale completely through your left nostril.
- Repeat this cycle for several rounds, alternating nostrils with each breath.

How long:

Start with 5-10 minutes of practice and gradually increase the duration as you become more comfortable. You can aim for 10-20 minutes of continuous practice.

When to do it:

You can practice Alternate Nostril Breathing at any time of the day, but it's particularly beneficial in the morning to awaken and energize the body and mind, or in the evening to relax and prepare for sleep. It's also useful during stressful moments to calm the mind and regain focus.

What to look out for:

- **Breath Awareness:** Focus on the breath and maintain a smooth, steady rhythm throughout the practice.
- **Comfort:** If you experience any discomfort or strain, adjust your hand position or breathing pattern as needed.
- **Avoid straining:** Do not force the breath; allow it to flow naturally and effortlessly.
- **Contraindications:** If you have any respiratory conditions, such as asthma or sinusitis, or if you're pregnant, consult with a healthcare professional before practicing Alternate Nostril Breathing.

Remember to approach the practice with patience, mindfulness, and self-awareness. With consistent practice, you can experience the profound benefits of Alternate Nostril Breathing on your physical, mental, and emotional well-being.

Bellow Breathing

It seems like you're referring to "Bellows Breath," also known as "Bhastrika Pranayama" in yoga. Bellows Breath is a dynamic breathing technique that involves rapid and forceful inhalations and exhalations through the nose. Here's how to do it, its benefits, how long to practice, when to do it, and what to be mindful of:

How to do it:

- Sit comfortably with your spine erect and shoulders relaxed.
- Take a few deep breaths to center yourself and prepare.
- Inhale forcefully and rapidly through your nose, expanding your abdomen as if filling a bellows.
- Exhale forcefully and rapidly through your nose, contracting your abdomen as if squeezing out the air.
- Continue this rapid, rhythmic breathing, maintaining a steady pace.

Benefits:

- **Increases energy:** Bellows Breath oxygenates the blood and stimulates the nervous system, providing a quick energy boost.
- **Improves mental clarity:** The rapid breathing pattern can enhance focus, concentration, and alertness.
- **Cleanses the respiratory system:** It helps clear the nasal passages, expel stale air from the lungs, and improve respiratory efficiency.
- **Stimulates circulation:** The vigorous breathing increases blood flow and circulation throughout the body, promoting vitality.

How long:

Beginners may start with 1-2 minutes of practice and gradually increase the duration as they become more comfortable. Advanced practitioners can extend the practice to 5-10 minutes or longer.

When to do it:

Bellows Breath is best practiced in the morning to awaken the body and mind, increase alertness, and prepare for the day ahead. It can also be practiced during midday slumps or whenever an energy boost is needed. However, avoid practicing close to bedtime, as it may be too stimulating and interfere with sleep.

What to be mindful of:

- **Avoid strain:** While the breath should be vigorous, avoid excessive force or strain that could lead to dizziness or discomfort.
- **Stay present:** Maintain awareness of your breath and body throughout the practice, avoiding distractions or wandering thoughts.
- **Listen to your body:** If you experience any discomfort, dizziness, or shortness of breath, pause the practice and return to normal breathing.
- **Contraindications:** Individuals with high blood pressure, heart conditions, epilepsy, or other medical concerns should consult a healthcare professional before practicing Bellows Breath.

By incorporating Bellows Breath into your routine, you can tap into a natural source of vitality and rejuvenation, enhancing both your physical and mental well-being.

Energizing Breathing

"Energizing Breathing" typically refers to breathing techniques designed to invigorate the body and mind, providing a boost of energy and vitality. While there are various energizing breathing practices, one common technique is the "Bellows Breath" or "Bhastrika Pranayama" in yoga. Here's an overview of how to do it, its benefits, how long to practice, when to do it, and what to be mindful of:

How to do it:

1. Sit comfortably with your spine straight and shoulders relaxed.
2. Take a few deep breaths to center yourself and prepare for the practice.
3. Inhale deeply through your nose, expanding your abdomen.
4. Exhale forcefully and quickly through your nose, pulling your abdomen in sharply.
5. Continue this rapid, rhythmic breathing, emphasizing the exhalation over the inhalation.
6. Start slowly and gradually increase the speed and intensity of the breaths.

Benefits:

1. **Increases energy:** Bhastrika Pranayama oxygenates the blood, stimulates the nervous system, and boosts energy levels.
2. **Improves mental clarity:** The rapid breathing pattern can enhance focus, concentration, and cognitive function.
3. **Cleanses the respiratory system:** It helps clear the nasal passages, expel stale air from the lungs, and promote respiratory efficiency.
4. **Enhances circulation:** The vigorous breathing increases blood flow and circulation throughout the body, promoting vitality and well-being.

How long:

Beginners may start with 1-2 minutes of practice and gradually increase the duration as they become more comfortable. Advanced practitioners can extend the practice to 5-10 minutes or longer.

When to do it:

Bhastrika Pranayama is best practiced in the morning to awaken the body and mind, increase alertness, and prepare for the day ahead. It can also be practiced during midday slumps or whenever an energy boost is needed. However, it's not recommended close to bedtime, as it may be too stimulating and interfere with sleep.

What to be mindful of:

1. **Avoid straining:** While the breath should be vigorous, avoid excessive force or strain that could lead to dizziness or discomfort.
2. **Stay present:** Maintain awareness of your breath and body throughout the practice, avoiding distractions or wandering thoughts.
3. **Listen to your body:** If you experience any discomfort, dizziness, or shortness of breath, pause the practice and return to normal breathing.
4. **Contraindications:** Individuals with high blood pressure, heart conditions, epilepsy, or other medical concerns should consult a healthcare professional before practicing Bhastrika Pranayama.

By incorporating energizing breathing practices like Bhastrika Pranayama into your routine, you can tap into a natural source of vitality and rejuvenation, enhancing both your physical and mental well-being.

Cyclical Sighing and Cyclical Physiological Sighing

"Cyclical Sighing" isn't a widely recognized term in the context of a specific breathing exercise or technique. However, if you're referring to the act of sighing periodically, here's some information:

Benefits:

- **Stress Relief:** Sighing can help release tension and stress from the body, providing a sense of relief.
- **Emotional Regulation:** Sighing may assist in regulating emotions by helping to reset the breath and calm the nervous system.
- **Improved Oxygenation:** Deep sighs can help expand the lungs, improving oxygen exchange and promoting relaxation.

How to do it Cyclical Sighing:

- **Take a Deep Breath:** Inhale deeply through your nose, expanding your lungs fully.
- **Exhale Audibly:** Release the breath with a gentle sighing sound through your mouth, allowing yourself to fully let go of tension.
- **Repeat as Needed:** You can sigh intermittently throughout the day whenever you feel the need to release stress or tension.

How to do it Cyclical Physiological Sighing:

- **Take a Deep Breath:** Inhale deeply through your nose, expanding your lungs fully, then top that off 10%.
- **Exhale Audibly:** Release the breath with a gentle sighing sound through your mouth, allowing yourself to fully let go of tension.
- **Repeat as Needed:** You can sigh intermittently throughout the day whenever you feel the need to release stress or tension.

How long:

The duration of each sigh can vary based on individual preference and comfort. There's no set time limit; sigh as deeply and for as long as feels beneficial.

When to do it:

You can practice cyclical sighing whenever you feel stressed, tense, or overwhelmed. It can be especially helpful during moments of heightened anxiety or emotional distress.

Research

"Cyclical Sighing" and "Cyclical Physiological Sighing" are not widely recognized terms in scientific literature. However, physiological sighing, which refers to deep inhalations followed by a prolonged exhalation, has been studied in the context of respiratory physiology and emotional regulation. Here's an overview of relevant research:

Respiratory Physiology: Studies have investigated the role of physiological sighs in regulating respiratory function.

Physiological sighs are believed to play a role in maintaining lung compliance, preventing alveolar collapse, and optimizing gas exchange in the lungs. Research has shown that sighing helps maintain respiratory homeostasis by promoting uniform lung ventilation and preventing respiratory abnormalities.

Emotional Regulation: Physiological sighs have also been linked to emotional regulation and stress relief. A study published in *Nature Neuroscience* found that sighing activates neurons in the brainstem that regulate breathing and emotional states. Sighing is thought to be a natural mechanism for resetting the respiratory system and promoting relaxation during periods of stress or emotional arousal. Practices, such as mindfulness, relaxation techniques, and seeking support from friends, family, or mental health professionals when needed.

Humming Breathing

Video: [Humming Breathing](#)

"Humming Breath" or "Brahmari Pranayama," a breathing technique in yoga. Here are the benefits, how to do it, when to do it, how long, and what to look out for:

Benefits:

- Calms the mind: The humming sound and extended exhalation help to relax the nervous system, reducing stress and anxiety.
- Improves concentration: Regular practice can enhance focus and mental clarity.
- Soothes the nerves: Can alleviate tension and promote a sense of tranquility.
- Enhances sleep quality: It can help in inducing better sleep patterns.
- Lowers blood pressure: The slow breathing pattern can have a positive effect on blood pressure.

How to do it:

- Find a comfortable seated position. You can sit cross-legged on the floor or on a chair with your feet flat on the ground.
- Close your eyes and take a few deep breaths to relax.
- Place your index fingers on your ears, gently pressing the cartilage to close off the ear canal.
- Inhale deeply through your nose.
- As you exhale, make a humming sound like a bee by gently closing your throat. Keep your mouth closed and let the sound reverberate in your head.
- Repeat this process for several breaths, focusing on the humming sound and the sensation it creates in your head.

How long:

Start with 5-10 rounds and gradually increase as you become more comfortable with the practice. You can aim for 5-10 minutes of continuous practice.

When to do it:

You can practice Brahmari Pranayama at any time of the day, but it's particularly beneficial in the morning to set a calm tone for the day or in the evening to unwind and relax before bed. It's also useful during stressful moments to quickly calm the mind.

Research

Research on Brahmari Pranayama, or Humming Breath, suggests promising benefits for mental and physical well-being. Studies indicate that this practice can effectively reduce stress levels by inducing a relaxation response in the body, as evidenced by decreased stress and anxiety symptoms. Additionally, Brahmari Pranayama has been associated with improvements in heart rate variability, suggesting enhanced autonomic nervous system function and stress resilience. It may also contribute to the regulation of blood pressure, potentially benefiting cardiovascular health, particularly in hypertensive individuals. While specific research on its cognitive effects is limited, other pranayama techniques have shown promise in improving cognitive function. However, further research is needed to fully understand Brahmari Pranayama's mechanisms of action and its potential applications in various health conditions.

Ocean Breath

Ujjayi Breathing, also known as Ocean Breath, is a foundational practice in yoga and pranayama (breath control) that offers various benefits for both physical and mental well-being. Here's an overview:

How to Practice Ujjayi Breathing:

- Find a comfortable seated or lying down position.
- Close your eyes and relax your body.
- Inhale deeply through your nose while slightly constricting the back of your throat, creating a gentle hissing or ocean-like sound.
- Exhale slowly and deeply through your nose with the same constriction in the throat.
- Continue this rhythmic breathing pattern, allowing the sound to guide your breath.

Benefits of Ujjayi Breathing:

- **Calming Effect:** The audible nature of Ujjayi Breathing helps focus the mind, promoting a sense of calm and relaxation.
- **Mindfulness:** The rhythmic sound and sensation of the breath can enhance mindfulness and present-moment awareness.
- **Improved Concentration:** By focusing on the sound and sensation of the breath, practitioners can enhance concentration and mental clarity.
- **Regulation of Prana (Life Force Energy):** Ujjayi Breathing is believed to regulate the flow of prana throughout the body, promoting overall well-being.
- **Stress Reduction:** The practice activates the parasympathetic nervous system, which helps counteract the body's stress response, leading to reduced stress and anxiety levels.

Why Practice Ujjayi Breathing:

- Ujjayi Breathing can serve as a powerful tool for managing stress, anxiety, and emotional turbulence.
- It can be integrated into various yoga practices to deepen the mind-body connection and enhance the overall experience.
- Regular practice can cultivate a sense of inner peace and resilience in the face of life's challenges.

How Often to Practice:

- Ujjayi Breathing can be practiced daily, either as a standalone meditation or as part of a yoga practice.
- Even a few minutes of Ujjayi Breathing can yield noticeable benefits, but longer sessions may deepen the effects.

Research on Ujjayi Breathing:

While there may not be extensive scientific research specifically on Ujjayi Breathing, studies on yoga and breathwork in general support its potential benefits for mental and physical health. Research has shown that similar practices involving deep, rhythmic breathing can reduce stress, improve mood, and enhance overall well-being. Additionally, there's growing interest in the therapeutic effects of mindfulness practices, of which Ujjayi Breathing is a component.

As with any mind-body practice, it's essential to listen to your body and adjust the intensity of the practice as needed. Beginners may find it helpful to start with shorter sessions and gradually increase the duration as they become more comfortable with the technique.

Deep Core Breathing - Develop the Core with Breath

Deep Core Breath: Engaging in deep diaphragmatic breathing while also engaging your core and pelvic girdle can be beneficial for improving overall stability and strength. Here's a step-by-step guide:

- 1. Find a comfortable position:** You can do this standing, sitting, or lying down. Choose a position where you can easily focus on your breath and engage your muscles without any strain.
- 2. Focus on your breath:** Inhale deeply through your nose, allowing your abdomen to expand as you fill your lungs with air. Should feel the abdomen rise from lower portion up to ribs. You should also feel your diaphragm move downward, creating space in your abdomen. Pause for 1 to 2 seconds.
- 3. Engage your core:** As you exhale slowly through your mouth, gently contract your abdominal muscles. Imagine pulling your belly button all the way in towards your spine. This engages your core muscles and helps to support your spine.
- 4. Engage your pelvic floor:** While maintaining the contraction in your abdominals, also engage your pelvic floor muscles. This is often described as the sensation of lifting or drawing in the muscles around your pelvic area, as if you were trying to stop the flow of urine.
- 5. Maintain posture:** Throughout the entire breathing cycle, focus on maintaining good posture. Keep your spine neutral and your shoulders relaxed. Avoid any excessive arching or rounding of your back.
- 6. Repeat:** Continue this deep diaphragmatic breathing while engaging your core and pelvic floor muscles for several breaths, gradually increasing the duration as you become more comfortable with the technique.
- 7. Practice regularly:** Like any skill, mastering deep diaphragmatic breathing with core and pelvic floor engagement takes practice. Aim to incorporate this into your daily routine, especially before engaging in activities that require stability and strength.

Remember to listen to your body and adjust the intensity of the muscle engagement as needed. It's also helpful to work with a qualified instructor or physical therapist who can provide personalized guidance and feedback.

Engaging in deep diaphragmatic breathing while simultaneously activating the core and pelvic floor muscles can offer several benefits for core stability. While research specifically focusing on this exact combination may be limited, there is extensive research on the individual components and their effects on core stability. Here are the benefits and some relevant research:

- **Improved Core Stability:** Deep diaphragmatic breathing combined with core and pelvic floor engagement can enhance overall core stability by strengthening the deep stabilizing muscles of the trunk.
- **Enhanced Postural Control:** By activating the core muscles along with diaphragmatic breathing, individuals can improve their ability to maintain proper posture during various movements and activities.
- **Reduced Risk of Injury:** A stable core provides a solid foundation for movement, reducing the risk of injury during physical activities and sports.
- **Improved Performance:** Better core stability can lead to improvements in athletic performance, as it allows for more efficient transfer of force between the upper and lower body.
- **Better Breathing Efficiency:** Deep diaphragmatic breathing facilitates optimal oxygen exchange and can help individuals manage stress and anxiety by activating the body's relaxation response.

While there may not be specific studies directly addressing the combination of deep diaphragmatic breathing with core and pelvic floor engagement, numerous studies support the benefits of each component individually:

- A study published in the Journal of Orthopaedic & Sports Physical Therapy found that core stability training improved dynamic balance and reduced the risk of lower extremity injuries in athletes (Hibbs et al., 2008).
- Research published in the Journal of Bodywork and Movement Therapies demonstrated that diaphragmatic breathing can enhance core stability by promoting activation of the deep stabilizing muscles of the trunk (Silfies et al., 2005).
- Studies have shown that pelvic floor muscle training can improve pelvic stability and reduce the symptoms of pelvic floor dysfunction, such as urinary incontinence (Dumoulin et al., 2018).

While these studies focus on individual components, combining deep diaphragmatic breathing with core and pelvic floor engagement is likely to offer synergistic benefits for overall core stability and function.

Breathing Techniques for Better Sleep: A Guide to Relaxation

In the quest for a restful night's sleep, we often overlook one of the simplest and most powerful tools available to us: our breath. Breathing techniques have long been utilized to induce relaxation, calm the mind, and promote better sleep. By harnessing the power of our breath, we can create an environment conducive to sleep and awaken feeling refreshed and rejuvenated. In this article, we'll explore several effective breathing techniques that can help you achieve a deeper and more restorative slumber.

The Importance of Breath in Sleep

Before delving into specific techniques, it's essential to understand why breathing plays such a crucial role in our sleep quality. Our breath is intimately connected to our nervous system, with certain patterns of breathing activating either the sympathetic (fight-or-flight) or parasympathetic (rest-and-digest) response. By consciously controlling our breath, we can shift our body into a state of relaxation, signaling to our brain that it's time to wind down and prepare for sleep.

• 4-7-8 Breathing Technique (Relaxing Breath)

The 4-7-8 breathing technique is a simple yet powerful exercise that can quickly calm the mind and promote sleep. To practice the 4-7-8 technique, sit or lie down comfortably and close your eyes. Inhale deeply through your nose for a count of four seconds, allowing your abdomen to expand. Hold your breath for a count of seven seconds. Then, exhale slowly and audibly through your mouth for a count of eight seconds, feeling the tension release from your body. Repeat this cycle for a total of four breaths, allowing yourself to sink deeper into relaxation with each repetition.

• Diaphragmatic Breathing (Belly Breathing)

Diaphragmatic breathing, also known as belly breathing, is a fundamental technique for inducing relaxation and reducing stress. To practice diaphragmatic breathing, lie down comfortably with one hand on your chest and the other on your abdomen. Inhale deeply through your nose, allowing your abdomen to rise as you fill your lungs with air. Exhale slowly through your mouth, feeling your abdomen fall. Continue this deep, rhythmic breathing pattern for several minutes, focusing on the sensation of relaxation with each exhale.

• Progressive Muscle Relaxation with Breathing

Progressive muscle relaxation (PMR) is a technique that involves systematically tensing and relaxing different muscle groups in the body to induce a state of deep relaxation. When combined with deep breathing, PMR can be particularly effective for promoting sleep. Begin by lying down comfortably and closing your eyes. Starting from your feet, tense each muscle group in your body for a few seconds, less than a 20% contraction, then release and relax while taking a deep breath. Move systematically through your body, tensing and relaxing each muscle group while focusing on slow, deep breathing. This combination of muscle relaxation and breathing helps release tension and prepare your body for sleep.

• Guided Visualization with Breathing

Guided visualization is a technique that involves mentally imagining calming scenes or scenarios to promote relaxation and reduce stress. When combined with deep breathing, guided visualization can be a potent tool for inducing sleep. Listen to a guided meditation or visualization recording that incorporates breathing techniques to guide you into a state of deep relaxation. As you breathe deeply and rhythmically, allow yourself to visualize calming scenes such as a peaceful beach or a tranquil forest. Focus on the sensations of relaxation and serenity, allowing yourself to drift effortlessly into sleep.

Conclusion

Incorporating breathing techniques into your bedtime routine can significantly improve your sleep quality and overall well-being. Whether you prefer diaphragmatic breathing, the 4-7-8 technique, progressive muscle relaxation, or guided visualization, experimenting with different techniques can help you find what works best for you. By harnessing the power of your breath, you can create a peaceful and tranquil environment conducive to restful sleep. So take a deep breath, relax, and let yourself drift off into a blissful slumber.

Summary of Techniques

Deep Diaphragmatic Breathing:

- **Effect:** Deep Relaxation
- **Description:** This technique involves deep inhalations that engage the diaphragm fully, leading to relaxation and stress reduction.

Sigh:

- **Effect:** Mild Relaxation, Attention Reset
- **Description:** A natural reflexive breath often associated with releasing tension. It can provide a brief pause for mental and physical relaxation.

Physiological Sigh:

- **Effect:** Stress Relief, Relaxation
- **Description:** A deeper breath than a normal breath, often used to reset breathing patterns and relieve stress.

Deep Breathing:

- **Effect:** Stress Reduction, Improved Oxygenation
- **Description:** Involves taking slow, deep breaths to increase oxygen intake and promote relaxation.

Box Breathing (Square Breathing):

- **Effect:** Stress Reduction, Focus Enhancement
- **Description:** A structured breathing technique involving equal counts of inhalation, hold, exhalation, and hold, often used to calm the mind and enhance focus.

Kapalabhati Breathing:

- **Effect:** Energy Boost, Mental Clarity
- **Description:** Involves forceful exhalations followed by passive inhalations, stimulating the nervous system and increasing alertness.

Alternate Nostril Breathing (Nadi Shodhana):

- **Effect:** Balancing, Stress Reduction
- **Description:** A yogic breathing technique that involves alternating breaths between the nostrils, believed to balance the body's energy and calm the mind.

Ujjayi Breathing (Ocean Breath):

- **Effect:** Calming, Mindfulness
- **Description:** Characterized by a slight constriction of the throat, creating an audible breath resembling ocean waves. It promotes mindfulness and relaxation.

Each of these breathing techniques offers unique benefits and can be used in different contexts depending on individual preferences and goals, ranging from stress reduction to energy enhancement and mindfulness promotion.

Assessments

to

**Recognize Signs of Disorder
Breathing and to Tests to determine
if Breathing Techniques Work**

**These assessments are not intended
to be diagnostic, but only to be used
as a guide.**

Check Your Breathing Pattern

Sit in the chair so your back is primarily straight up and down against the back of the chair. Place one hand on your abdomen with your palm covering your navel. Place your other hand on the upper part of your chest with the palm of that hand just above the heart. For a minute or two, become very aware of your breathing. While sitting straight up, notice your breath as it goes in and comes back out. Become aware of your hands as you breathe in and out. Which one seems to move more? Is it your abdominal hand or your chest hand? Or do they both move equally

Try this second technique to see if you get the same results. First, breathe out and empty your lungs. Count to three as you inhale deeply. Now, hold it. Did your shoulders go up? Did you feel like the air filled the upper part of your lungs? If so, you probably lean toward chest breathing. If you are a diaphragmatic breather, you would feel your abdominal area expand, your belt tighten, and fullness in the lower part of your lungs and chest. Were you primarily a chest breather or an abdominal breather? Many of us are primarily chest or thoracic, breathers. Chest breathers tend to take shallower breathes. Diaphragmatic or abdominal, breathing involves the abdominal muscles to facilitate deeper breathing. This allows you to take in more oxygen with each breath.



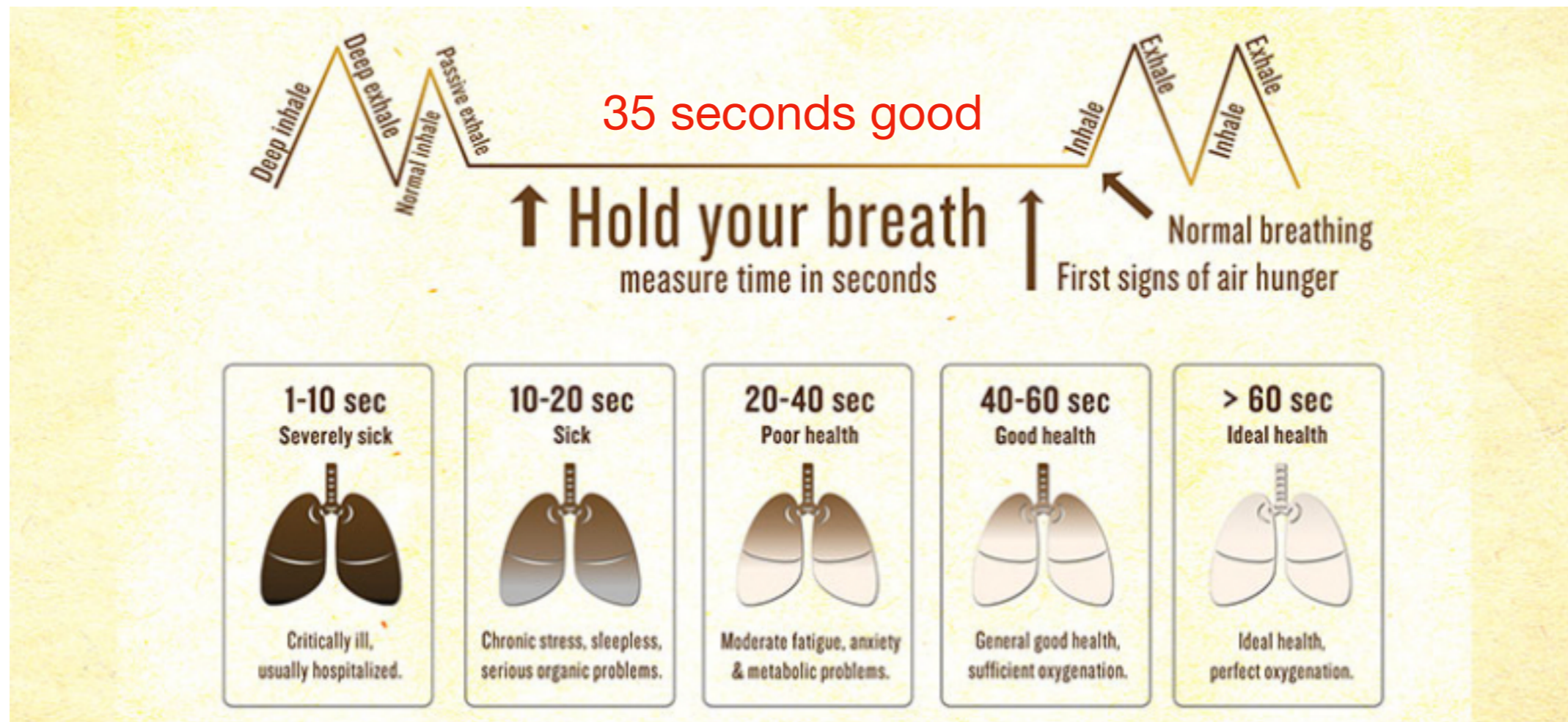
Check Your Breathing Rate

For about a minute, become aware of your breathing again. This time, just count how many natural, effortless breaths you take in a minute. Be sure to breathe as normally and naturally as possible. Each inhalation and exhalation cycle is considered one breath. The number of breathes in one minute is your *respiration rate*. Record the number of breaths you take.

The average respiration rate is around **12-16** breaths per minute. A faster heart beat or breathing rate might be an indicator of higher than desired stress levels. Athletes have a breathing rate of **8** breaths per minute.

Check Your Breath Hold

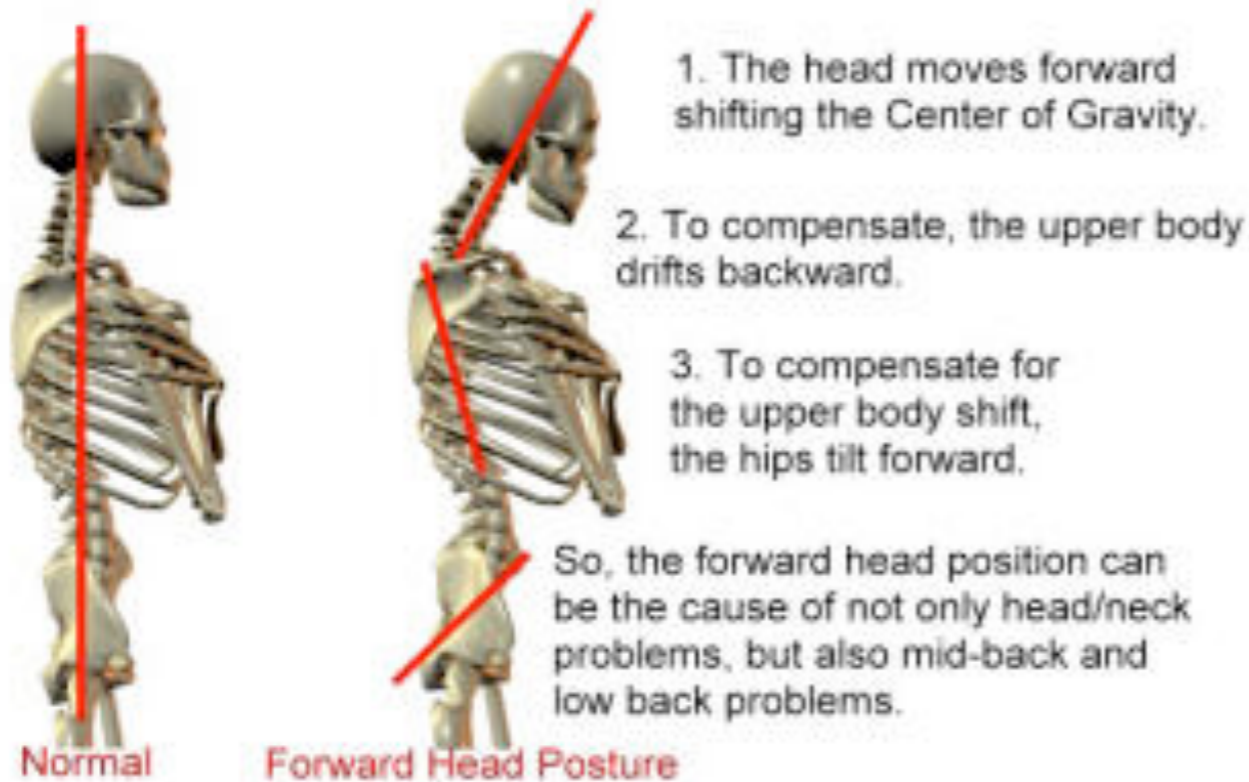
Breath-hold test – **Take a normal breath in and then out. Then hold the breath until you experience some sort of reaction (i.e. twitching, swallowing etc).** Anything under 20 seconds would be positive for some component of dysfunction. A good value is 35 seconds or more. A study found that the breath-holding test is a reliable and safe method for assessing the sensitivity of peripheral chemoreflex to carbon dioxide in patients with chronic heart failure (study).



EXTREMES

Dangers of Forward Head Posture

The Domino Effect



Fix Forward Head Posture



Check Your Posture Harder to Breathe with forward head posture

Stand with back against wall. If the head touches the wall while naturally standing up straight, there is no forward head posture. If it is with an inch or even not much concern. ([Spine Health](#))

People who have forward head posture typically are chest breathers. Forward head posture is related to several health issues.

Check Your Posture

Harder to Breathe with rounded shoulders



Stand in a relaxed position. Look down at your hands. Are they by your side or more along the front of your pockets. If they are more in the front you have what I consider round shoulders.

People who have forward rounded shoulders typically are chest breathers.

POSTURE MATTERS

Poor Posture can lead to Disordered Breathing and Disordered Breathing can lead to Poor Posture.

These postures can eventually lead to chronic pain and myofascial pain symptoms.



prolonged poor posture



myofascial pain
symptoms



Do you
have these
postures?
Come see
us to be
tested.

Working on Proper Posture

One Easy Solution

Stand with back against wall

Retract and squeeze shoulder blades together and hold for a count of 5.

Perform a chin tuck. Repeat 10 times. Perform a couple times a day.

Did you Know: Many people with Myofascial Pain are stressed and lack quality sleep.

Subjects with Myofascial Pain Syndrome

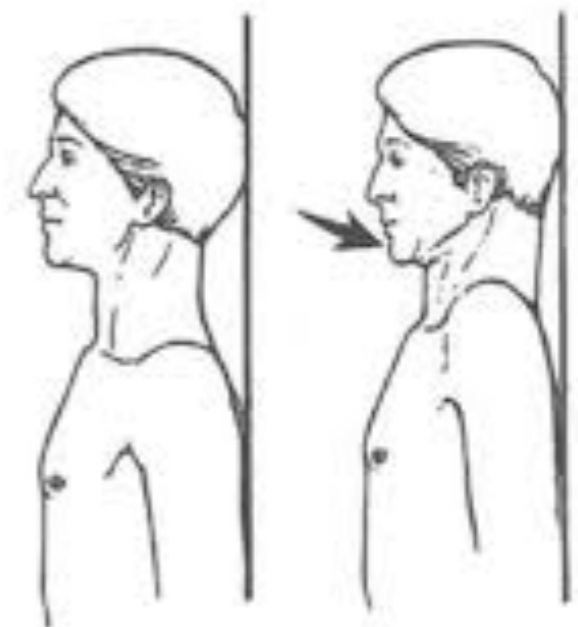
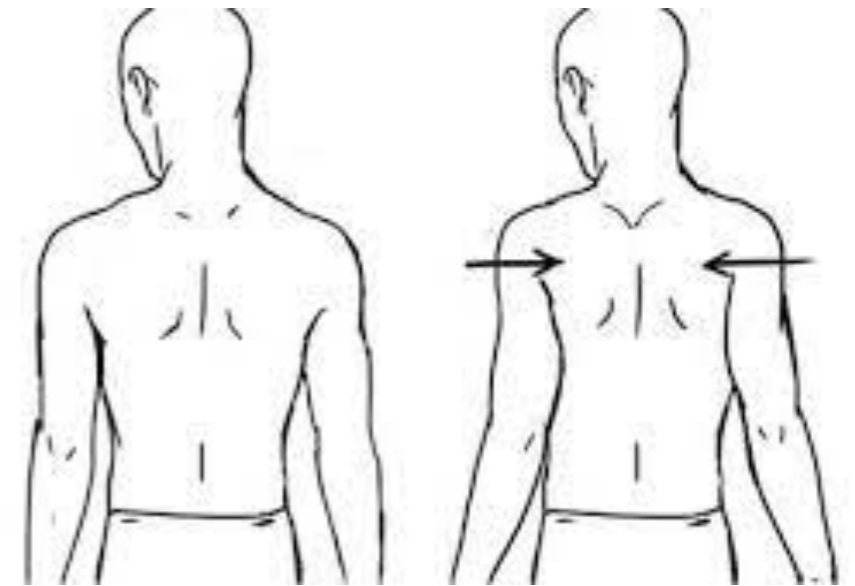
96 % had poor sitting and standing posture

84.7% had forward head tilt

82.3 % had rounded shoulders

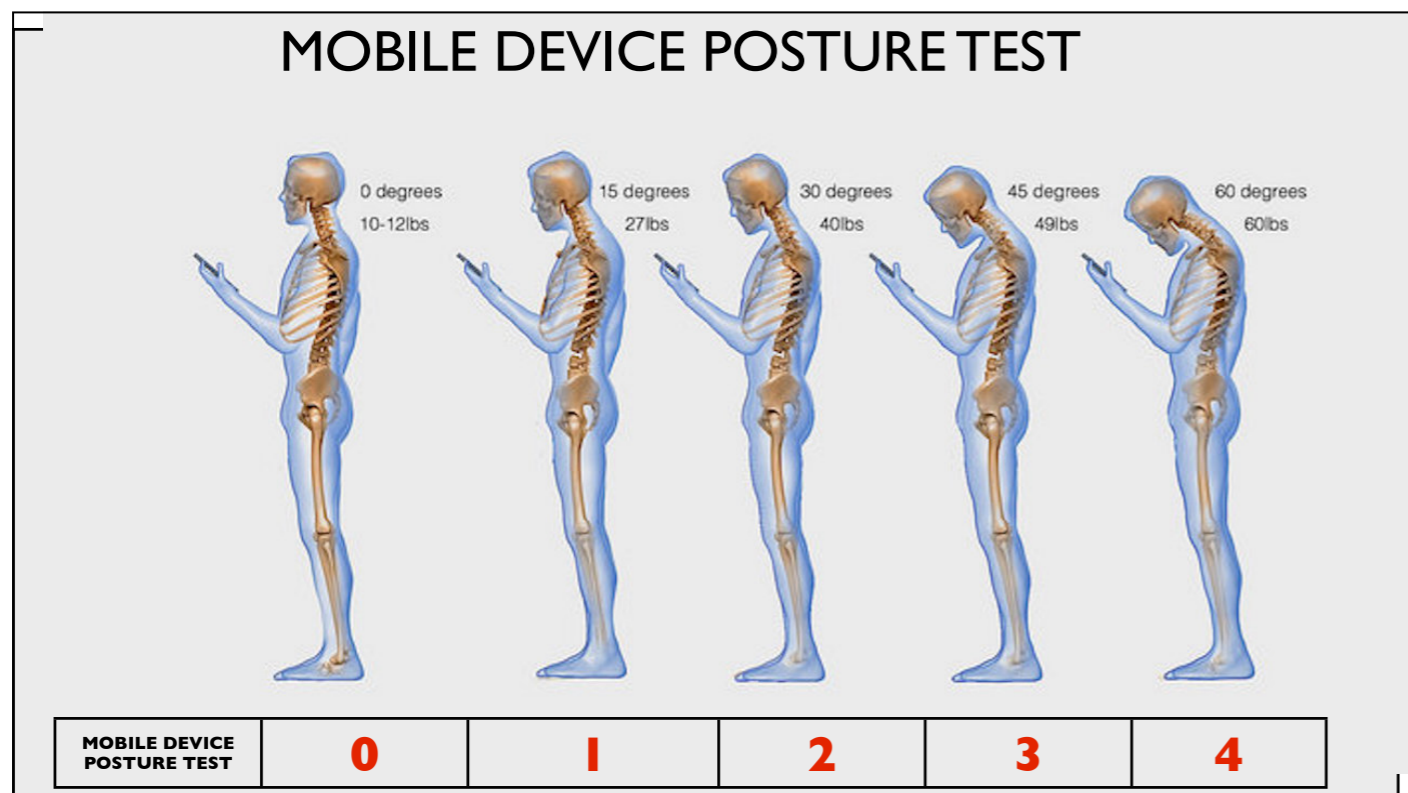
Working on Proper Posture

Scapula Squeeze with Chin Tucks



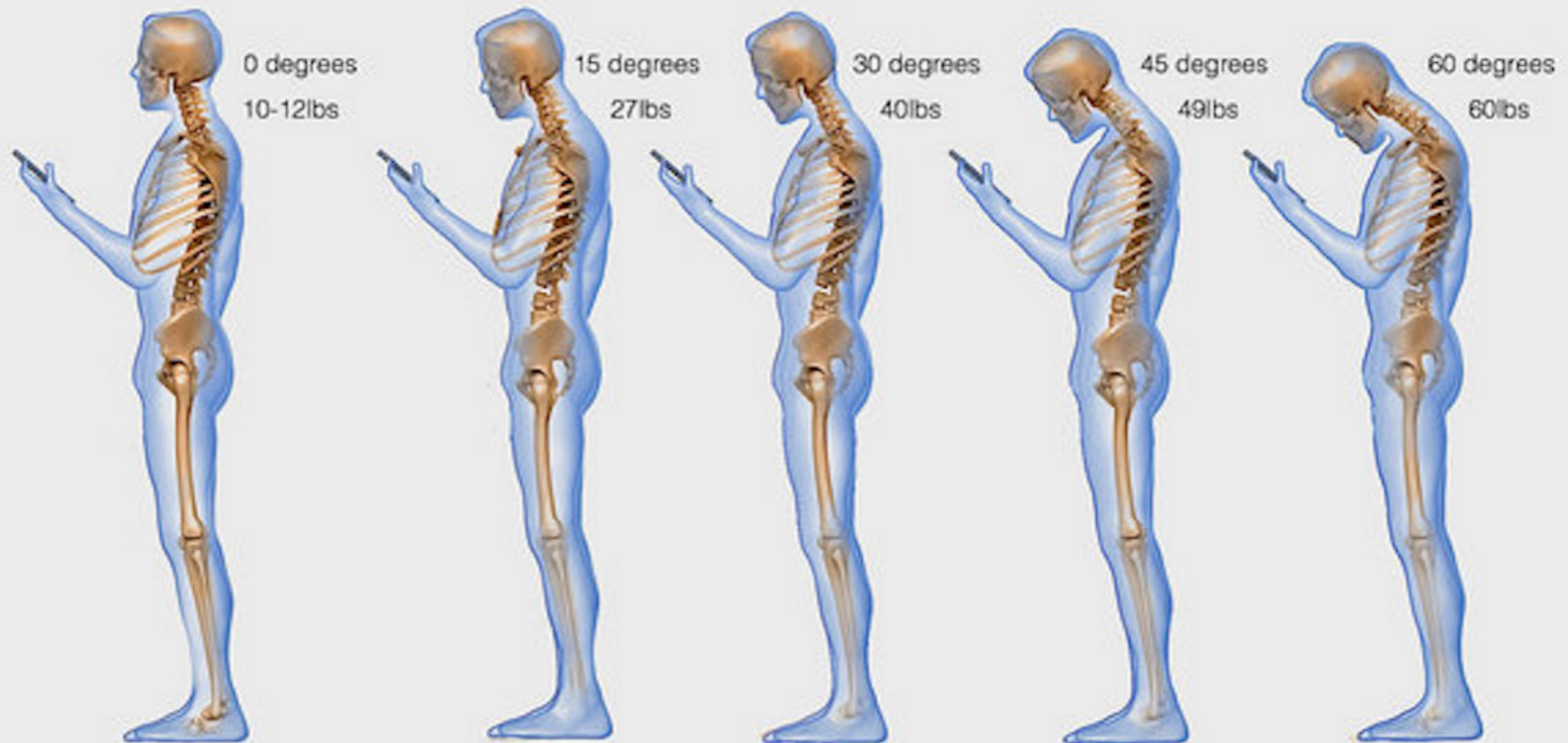
Check Your Phone Posture Use

Smartphones have become essential mobile devices in our daily lives, and people often demonstrate poor posture when using smartphones. Several studies have reported that frequent smartphone use can lead to adoption of a non-neutral neck posture or development of musculoskeletal disorders. Additionally, many people use smartphones with their head shifted forward and the smartphone placed near their waist or lap while in a sitting position. Changes in cervical mobility, head posture, and dysfunction of local and global muscle systems are believed to lead to changes in force-length curves, muscle imbalances, and segmental instability, all of which can potentially affect thoracic cage function and rib cage biomechanics. All of which can effect breathing.



How DO you use a mobile device. Do you hold your device at your waist with a bent neck? Rate based on the diagram below how you use your device (0 to 4). You should keep your device at chest level with neck at neutral (figure 0 - 1)-**TRY TO ADOPT BETTER MOBILE DEVICE POSTURE.**

MOBILE DEVICE POSTURE TEST



MOBILE DEVICE POSTURE TEST	0	1	2	3	4
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Mobile Device Posture was highly correlated to Poor Resting Posture, Pain, and Anxiety Levels.

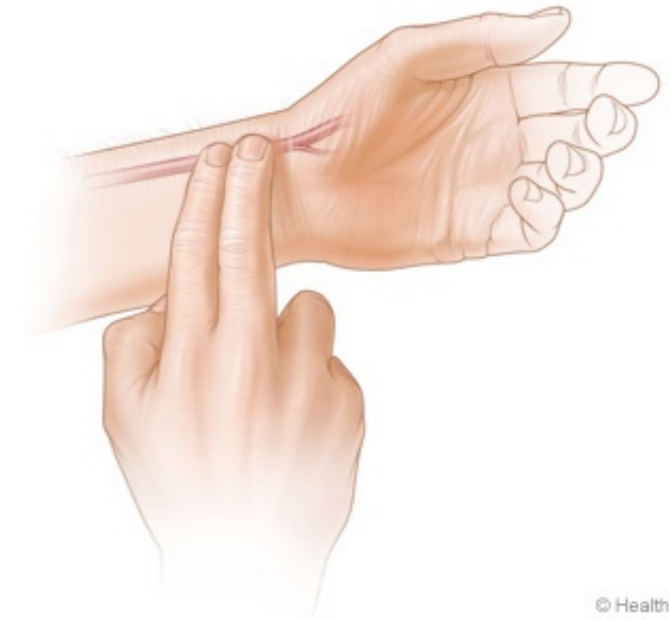
Check Your Heart Rate

Breathing can effect Heart Rate

Learn to measure heart rate to see if breathing techniques will effect heart rate!

How To Measure Heart Rate

Measuring heart rate manually takes some practice. When measuring manually, I prefer finger placement at the radial artery (thumb-side of wrist) versus the carotid artery (neck) due to a possible receptor response, which some studies suggest may slow heart rate. I like to count the number of beats over 15 seconds then multiply by 4 to get beats per minute. If I feel a beat at the start of the 15 second count, I start counting from zero. A sign of an efficient healthy heart in most cases is a slow heart rate.



© Healthwise, Incorporated

The average pulse rate for an adult is approximately 70-80 beats per minute. A faster heart beat may be an indicator of higher than desired stress levels.

Check Your Muscle Tension

Poor posture and Improper Breathing if prolonged causes muscles to become hyperactive

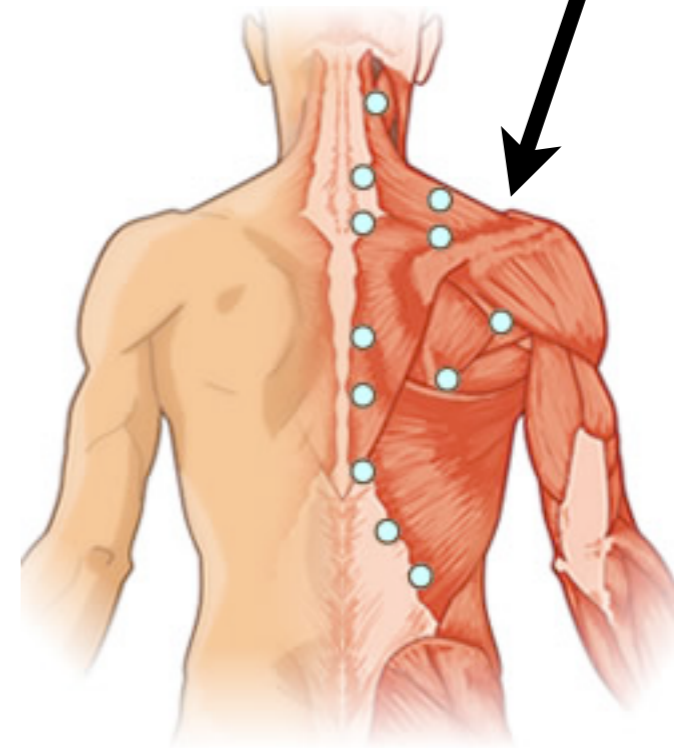
How Does Stress Affect Our Muscle?

Muscle Tension from poor posture and improper breathing may become sustained or may increase. Could develop adhesion, trigger point, or scar tissue.

Tension may not only prolong a condition it may be the cause of a new dysfunction.

Most physical therapists agree patients who are stressed or tense will take a lot longer to treat and take more time to recover.

Are you tense
in these spots?
Rate Pain from
1-10



Assessment Checklist

Breathing Pattern

Breathing Rate

Breath Hold

Head and Shoulder Posture

Phone Posture Use

Heart Rate

Muscle Tension (1 low -10 high)

Anxiety Levels

Please send me your results:email link

Reevaluate after doing sessions of breathing techniques to see if you improved.



Appendix Archived Older Articles

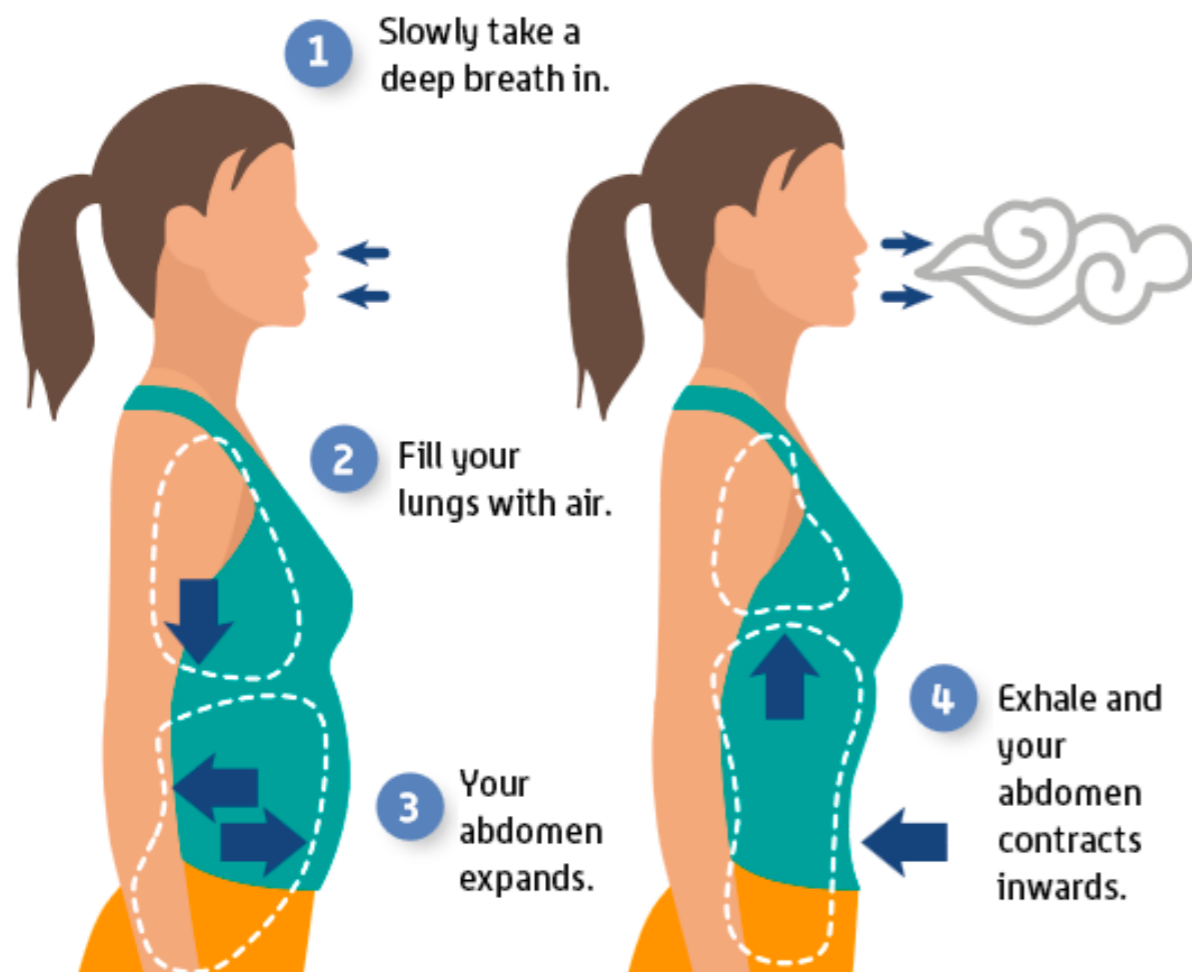
What is Disordered Breathing?

Those who suffer from dysfunctional breathing may have the following symptoms:

- o Dyspnea (shortness of breath)
- o Chest tightness
- o Frequent sighing/yawning “air hunger”
- o Persistent Musculoskeletal pain (like due to tissue hypoxia)
- o Hyperarousal (constant sympathetic state)
- o Depression/anxiety
- o Sleep disturbance

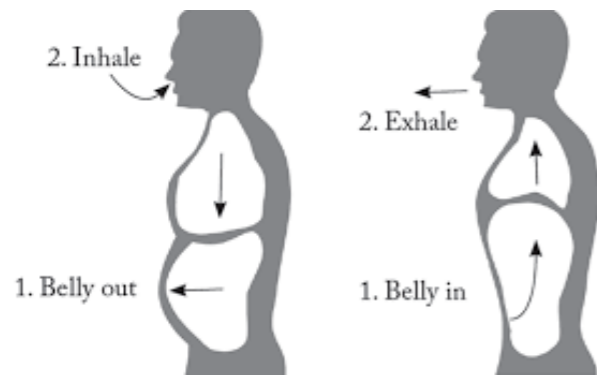
Summary: Individuals who experience altered or dysfunctional biomechanical breathing patterns may find it challenging to fully utilize their diaphragm, leading them to rely more on auxiliary respiratory muscles for breathing. This may result in increased movement of the rib cage and shoulders, reduced abdominal movement, and restricted lateral expansion of the rib cage. **Research suggests that dysfunctional breathing affects approximately 5-11% of the general population and up to 83% of individuals with anxiety, emphasizing its significance for both athletes and those with active lifestyles, as it can greatly impact overall well-being.** Addressing dysfunctional breathing is crucial due to its link with the onset of musculoskeletal conditions such as lower back pain, neck pain, chronic ankle instability, and temporomandibular joint disorders. Additionally, it's essential to acknowledge its influence on emotional well-being. By understanding and managing dysfunctional breathing patterns, individuals may reduce the risk of these health issues and enhance their overall quality of life.

Do you breathe with your belly or chest?



Summary: The process of breathing occurs mostly at the abdomen or chest. **Chest breathing is considered improper, inefficient, and disordered breathing**, while **abdomen breathing is considered proper and efficient**. The process of breathing involves both the abdomen and chest, with the primary muscle responsible being the diaphragm, located at the base of the lungs. While diaphragmatic breathing is generally considered proper and efficient, it's important to note that chest breathing can be appropriate in certain situations, such as during intense physical exertion or when quick, shallow breaths are needed. Proper breathing typically involves starting the breath in the nose and then engaging the diaphragm, which moves downward, allowing the lungs to expand and fill with air. This coordinated movement creates negative pressure in the chest, drawing air into the lungs. While diaphragmatic breathing is often emphasized in relaxation techniques and is indeed beneficial, it's essential to recognize that breathing patterns can vary, and both chest and abdominal breathing can have their advantages depending on the context

Do you breathe with your belly or chest?



Simple Relaxation Breathing

Sit or lie flat in a comfortable position.

Put one hand on your belly just below your ribs and the other hand on your chest.

Take a deep breath in through your nose, and let your belly push your hand out. ...

Breathe out through pursed lips as if you were whistling. ...

Do this breathing 3 to 10 times.

The process of breathing occurs mostly at the abdomen or chest. Chest breathing is considered improper, disorders breathing, while abdomen breathing is considered proper and efficient. Proper breathing starts in the nose and then moves to the stomach as your diaphragm contracts. From there the belly expands and your lungs fill with air. This is called diaphragmatic breathing (also called "abdominal breathing" or "belly breathing"). According to the ALA (American Lung Association) this is the most efficient way to breathe, as it pulls down on the lungs, creating negative pressure in the chest, resulting in air flowing into your lungs. This type of breathing is part of most relaxation techniques.

Pursed-lip breathing, when you press your lips together and inhale through the nose with the mouth closed, then out through pursed lips is also a good technique for patients with breathing issues.

In order to breath better avoid large meals and foods that cause bloating to prevent the abdomen from pushing up and limiting the diaphragm's movement.

The ALA suggests not to overthink breathing. Your respiratory systems know exactly when to tell you to change your depth of breathing, depending on your activity.

Bottomline: Breathe with belly breaths.

Self-checks: Solving problems before they happen.

Diaphragmatic breathing as mentioned is part of most relaxation techniques and it is used with management of chronic lung disease and with the anxiety it causes. Other forms of breathing can be used in helping those with anxiety.

8 Breathing Exercises to Try When You Feel Anxious ([see link](#))

1. Lengthen your exhale
2. Breath focus
3. Equal breathing
4. Resonant breathing
5. Yogic breathing (pranayama)
6. Lion's breath
7. Alternate nostril breathing
8. Diaphragmatic breathing (as mentioned)

A Breath Meditation not on the list is a SKY. It s a practice with breathing techniques used for relaxation, stress management, and control of brain states.

Do You Anxiety Breathe?

Anxiety Breathing
(hyperventilation)

uncomfortable symptoms:

- dizziness
- shortness of breath
- a lump in the throat
- tingling or numbness in the hands or feet
- nausea

Many conditions and situations can bring on hyperventilation, including:

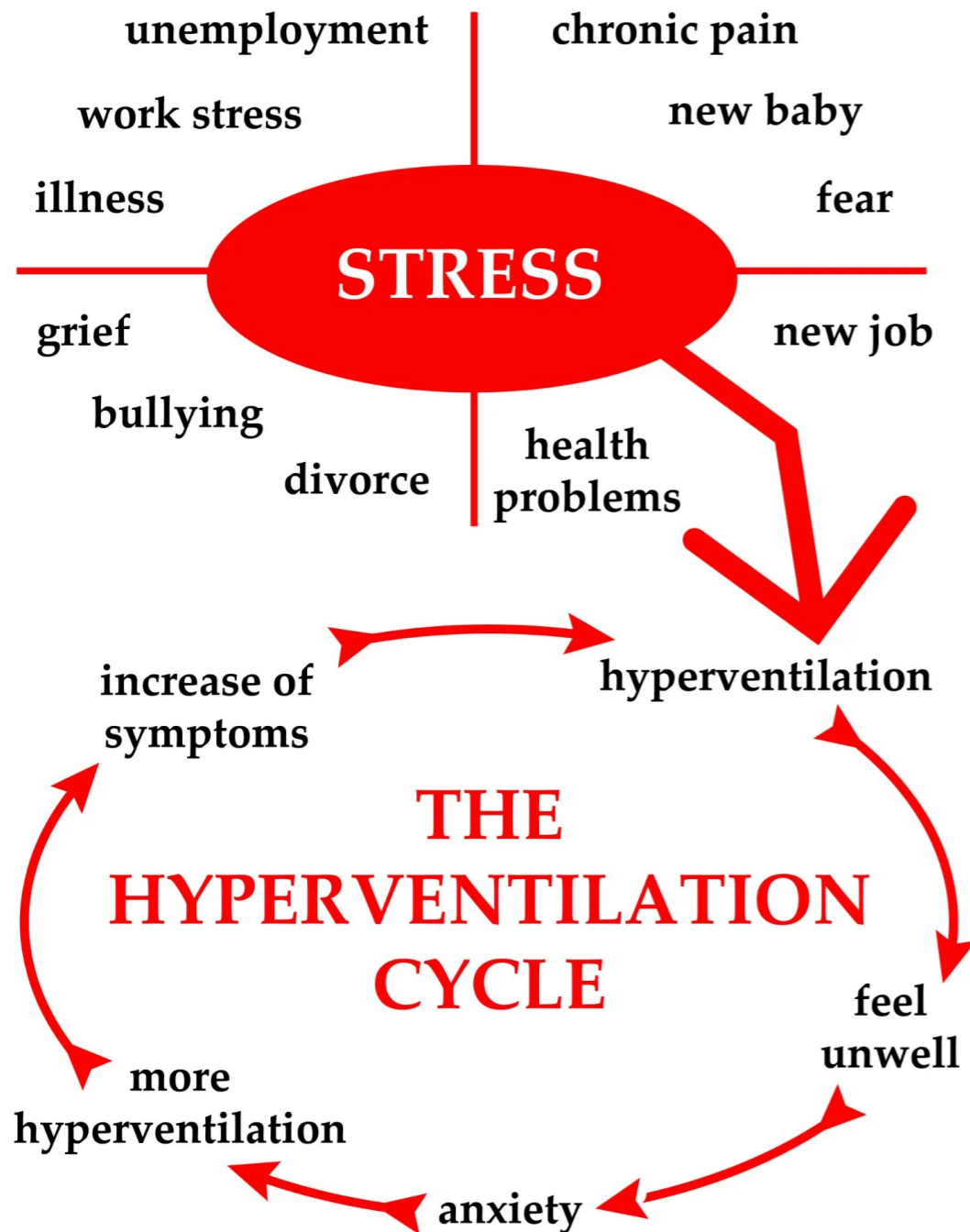
- Anxiety disorder
- Panic attack
- Asthma
- Stress
- Worry or anxiety
- Hard exercise

Summary: Hyperventilation is rapid, usually caused by anxiety or panic. During a time when you feel nervous, anxious, or stressed (example: emergency) our breathing rate and pattern may change. We may begin to breathe rapidly. If during this time we are not physically exerting ourselves, then it can produce a phenomenon called “hyperventilation ” or over breathing. It causes the amount of carbon dioxide (CO₂) in the blood to drop. This means your blood pH out of balance. Low carbon dioxide levels lead to narrowing of the blood vessels that supply blood to the brain. This may make you feel light-headed. You may also have a fast heartbeat and feel short of breath. The good news is that by changing your breathing you can reverse these symptoms.

DO YOU/CAN YOU
DO THIS?

SHORT WELLNESS SELF-
CHECKS

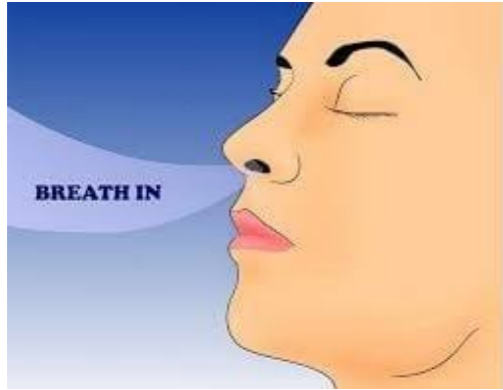
Do You Anxiety Breathe?



Do not get into a Vicious cycle: More stress,
More Anxiety, More Hyperventilation

Anxiety breathing is also known as hyperventilation. It is a heightened state of disordered breathing. Hyperventilation is rapid breathing, usually caused by anxiety or panic. During a time when you feel nervous, anxious, or stressed (example: emergency) our breathing rate and pattern may change. Instead of breathing slowly from our lower lungs, we begin to breathe rapidly and shallowly from our upper lungs. If you are not physically exerting ourselves it can produce hyperventilation or what some people call overbreathing. It causes the amount of carbon dioxide (CO₂) in the blood to drop. Your body uses carbon dioxide to keep a healthy balance of acid-base (pH) and electrolytes. Low carbon dioxide levels lead to narrowing of the blood vessels that supply blood to the brain. This may make you feel light-headed. You may also have a fast heartbeat and feel short of breath. The good news is that by changing your breathing you can reverse these symptoms. To get an idea of how breathing can calm you down try changing the ratio of your inhale to exhale. This approach is one of several common practices that use breathing to reduce stress. Do not get into a Vicious cycle: More stress, More Anxiety, More Hyperventilation. [See treatment here.](#)

Do you breathe through your nose or your mouth?



Nose breathing is benefits

- humidify and warm inhaled air
- increase air flow to arteries, veins, and nerves
- increase oxygen uptake and circulation
- slow down breathing
- improve lung volume
- help your diaphragm work properly
- lower your risk of allergies and hay fever
- reduce your risk of coughing
- aid your immune system
- lower your risk of snoring and sleep apnoea
- support the correct formation of teeth and mouth

DO YOU/CAN YOU
DO THIS?
SHORT WELLNESS SELF-
CHECKS

SUMMARY:

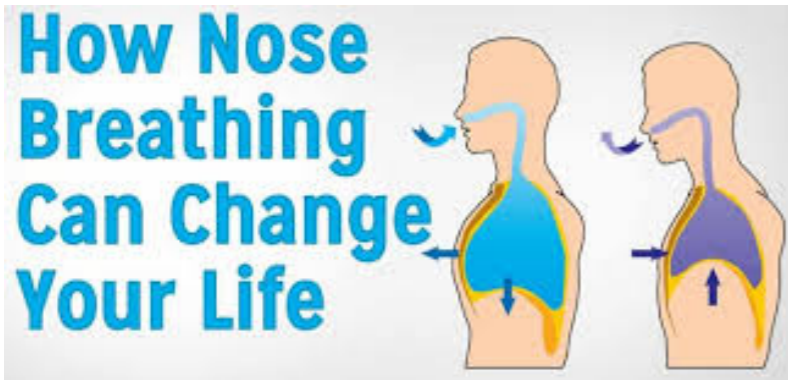
Chronic mouth breathing can cause cavities, gum disease, bad breath, low energy levels, along with many other systemic diseases.

Nasal breathing warms, filters and humidifies the air, which is important to the health of the delicate tissues of the nose, lower airways and lungs. Nasal breathing filters the air as it passes into the body and creates the optimal oxygen-carbon dioxide exchange resulting in a **balanced PH**. Another large benefit is that nose breathing allows **production of Nitric Oxide** which is a vasodilator, which means that it increases blood flow and lowers blood pressure. Also, the sticky surface of the membrane in the nose is quite efficient at capturing airborne particles and preventing them from getting into the lungs (**Filters Air**). On top of that the mucous membrane contains specialized **immune cells and enzymes to neutralize potential pathogens. Researchers suggest nasal breathing during sleep could help with preventing colds and Covid 19.**

Bottomline: Breathe through your nose when you can even doing moderate exercise.

Do you breathe through your nose or your mouth?

Mouth is designed for vocalization and mastication.



MOUTH BREATHING IS BAD :(In children mouth breathing can cause poor growth and development, facial deformities, crooked teeth, cavities and lead to obstructive sleep apnea as adults. In adults, chronic mouth breathing can cause cavities, gum disease, bad breath, low energy levels, along with many other systemic diseases. Mouth breathing is often worse. Signs and symptoms of nighttime mouth breathing are snoring, dry mouth and even sleep apnea.

The way you breathe matters. Even though the same amount of oxygen reaches your lungs nose compared to mouth nasal breathing warms, filters and humidifies the air, which is important to the health of the delicate tissues of the nose, lower airways and lungs according to JReview. Nasal breathing filters the air as it passes into the body and creates the optimal oxygen-carbon dioxide exchange resulting in a balanced PH. Another large benefit is that nose breathing allows Nitric Oxide produced in the **paranasal sinuses** to flow into the lungs, which does not happen with mouth breathing. This is important because nitric oxide plays an important role in increasing blood oxygen and improving oxygen absorption by the lungs. Nitric oxide is also a vasodilator, which means that it increases blood flow and lowers blood pressure. Also, the sticky surface of the membrane in the nose is quite efficient at capturing airborne particles and preventing them from getting into the lungs. On top of that the mucous membrane contains specialized immune cells and enzymes to neutralize potential pathogens. Researchers suggest nasal breathing during sleep could help with preventing colds and Covid 19.

Bottomline: Breathe through your nose when you can even doing moderate exercise.

Self-checks: Solving problems before they happen.

DO YOU/CAN YOU
DO THIS?

SHORT WELLNESS SELF-
CHECKS

Do you hold your breath when exerting? If you do, DON'T



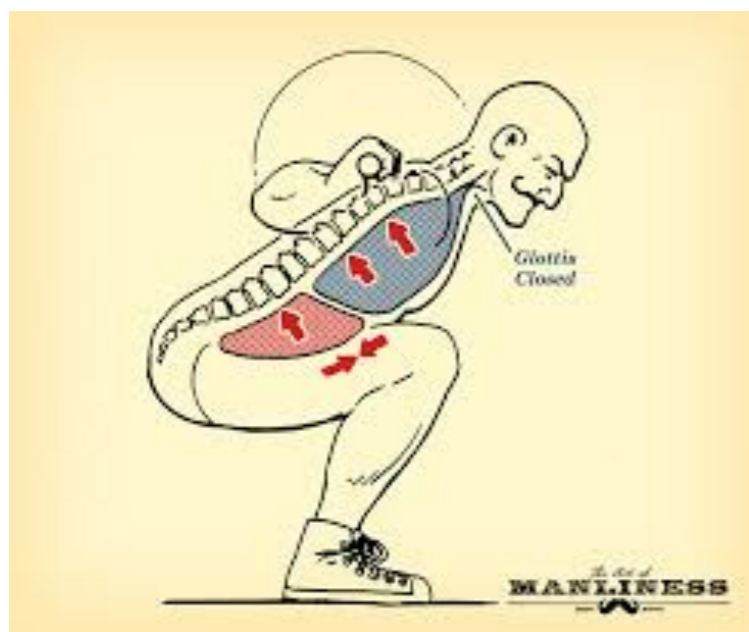
Summary: Exerting: Some people hold their breathe to increase performance when exerting (Valsalva Maneuver). Even though this may feel right, it is not the right thing to do for most people, especially if you're older. It places considerable stress on your cardiovascular system. **Try to always breathe when exercising and exerting. Do not hold your breathe.**

Lifting Maximal Weights: The Valsalva maneuver is commonly used breathing pattern for producing maximal force and is frequently used in **powerlifting, Olympic weightlifting** and **competitive strongmen**. Using the Valsalva Maneuver may not be needed by lifters and strongmen. Research suggests that is better to force exhale rather than doing the VM when performing maximum exertion.

Bottomline: If you are not a powerlifter/strongman try to always exhale during maximum exertion. If you need to do a VM when lifting maybe choose a lighter weight.



Do you hold your breathe when exerting or exercising?



**Self-checks:
Solving
problems
before they
happen.**

Exerting: Some people hold their breathe to increase performance when exerting (Valsalva Maneuver). The Valsalva maneuver is performed by forceful attempted exhalation against a closed airway, usually done by closing one's mouth. Even though this may feel right, it is not the right thing to do for most people, especially if you're older. It places considerable stress on your cardiovascular system. It may be used to test and treat certain medical condition, but that is something to talk to your doctor about. Also, by cutting off the oxygen, you risk hernias, muscle cramping and dizziness, which can lead to a fall.
Bottomline: Try to always breathe when exercising and exerting. Do not hold your breathe.

Lifting Weights: The Valsalva maneuver is commonly used breathing pattern for producing maximal force and is frequently used in **powerlifting** to stabilize the trunk during exercises such as the **squat**, **deadlift**, and **bench press**, and in both lifts of **Olympic weightlifting**. Additionally, **competitive strongmen** often use the Valsalva maneuver in things such as log press, yoke walks, and stone loading, as well as any other strongman movements. Using the Valsalva Maneuver may not be needed by lifters and strongmen. Research suggests that is better to force exhale rather than doing the VM when performing maximum exertion.
Bottomline: If you are not a powerlifter/strongman try to always exhale during maximum exertion. If you need to do a VM when lifting maybe choose a lighter weight.

How do you breathe when doing aerobic exercise?

Breathing During Running

Some running coaches suggests breathing in twice through the nose and exhaling once through the mouth (in-in-out) while running 2:1 and even 3:1. There have been studies which have found certain ways of breathing that are less energetically costly and more comfortable for runners. You have the potential to run more smoothly and for a longer period of time before fatiguing by maximizing oxygen uptake. (See Study)

Examples of Breathing Patterns

2:1

left foot strike – inhale
right foot strike – inhale
left foot strike – exhale

3:2

left foot strike - inhale
right foot strike - inhale
left foot strike – inhale
right foot strike – exhale
left foot strike – exhale

Summary: Bottomline: Try to breath mindfully, deeply, steadily, and through your nose and out your mouth when you are doing aerobic exercise. Emerging research suggest that breathing through the nose while aerobic exercising may be more effective. Subjects bodies **didn't have to work as hard to get the same amount of oxygen when breathing through the nose researchers found (see article). **Speed of breathing is important, the more quickly you breathe, the less time your body has to fully absorb the O2 you're bringing in through respiration.** When your body doesn't have enough oxygen to energize itself, anaerobic metabolism kicks in, which causes lactate to accumulate and decreases the body's ability to perform endurance tasks. However, when you breathe slowly, more oxygen is drawn into the body, and the body has enough time to absorb the oxygen in your lungs to create energy and keep you energized when running.**



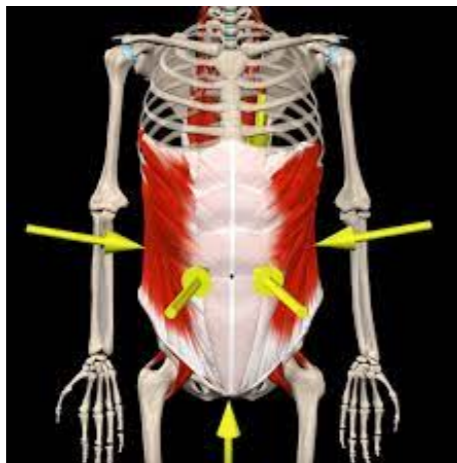
How do you breathe when lifting weights?

Nope: Holding Breath

Sometimes: Exhale when doing the harder motion and inhaling when doing the easier motion

Most often: Breathe mindfully with abdomen braced moderate to heavy weight

Most often: Exhale on heavy exertion



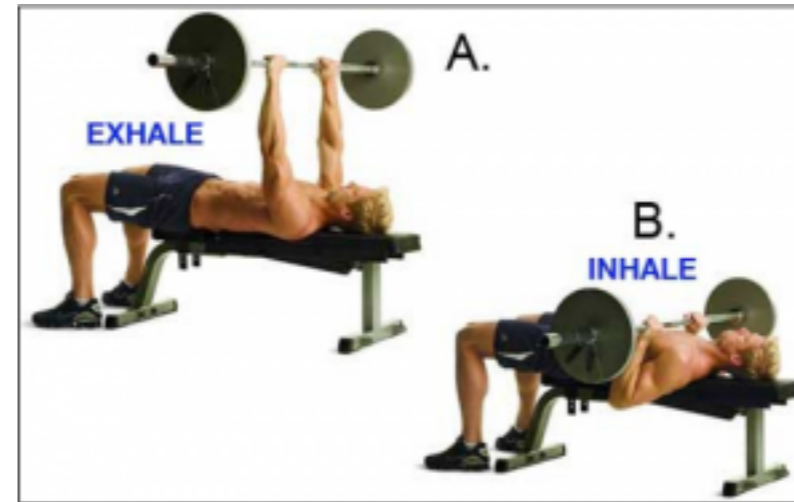
Summary: Bottomline: Try to breathe mindfully, deeply, steadily, and through your nose and out your mouth when you're lifting weights with your abdomen braced. When doing strength and muscle building exercises the general rule is to exhale when doing the harder motion (working against gravity, lifting a weight up, pulling up) and inhaling when doing the easier motion (working with gravity, lowering a weight or your body). I agree if the exercise is difficult, but if you are doing something moderate to somewhat difficult try to breathe normally with your abdomen tightened about 20% (braced). If you find yourself grunting or pausing in breath, it might be an indication that you've jumped too high in weight. Lower the weight to where you can breathe. If you are going to lift maximum weights ask why? If you have a good reason, like being an athlete, then you might want to try breathing out forcefully on exertion versus performing a Valsalva Maneuver (See previous Self-Check) or try Okinawa Breathing (see article).

Breathing and Weight Lifting

Many trainers say that while performing weight lifting tasks, one should exhale on exertion and inhale during recovery. But, is this the best way to breathe when lifting weights?

If the weight is very heavy yes that may be the case based on research. In one study by [Hagins, et al.](#) subjects were asked to perform three different breathing patterns while lifting objects:

1. Inhaling before lift, holding during lift
2. Exhaling before lift and holding during lift
3. Inhaling before lift and exhaling during lift



While subjects were doing this, measurements were being taken of change in abdominal pressure and maximum force exerted. These measurements showed that abdominal pressure was lowest during breathing patterns 2 and 3, both of which involved exhalation.

Another study by [Lamberg and Hagins](#) looked at breathing patterns when lifting different loads. Subjects were asked to lift milk crates multiple times while a pneumotachograph recorded airflow. This study found that the most consistent natural breathing pattern among individuals was to inhale right before lifting an object, which is consistent with the results of the previous study.

Based on these two studies, it is clear that exhalation is an important part of breathing during weight lifting. By reducing the amount of pressure in the abdomen, exhaling during lifting decreases the chances of sustaining internal injuries such as hernias and vessel strains which can be caused by excessive internal pressure. Exhaling relieves that pressure by releasing some of the accumulated air from the abdomen, ensuring that the abdominal pressure does not reach an unsafe level. So, next time you go to the gym to bench press, remember to **exhale when pressing** and **inhale before letting the weight down** onto your chest to **regulate pressure build-up** in your chest and abdomen.

If you are lifting for repetitions it may be best to exhale when working against gravity and inhale when working with in general.

How do you breathe when exercising?

Breathing During Running

There have been studies which have found certain ways of breathing that are less energetically costly and more comfortable for runners. The results showed that runners have a tendency to breathe in a 2:1 or 3:2 pattern most often, meaning inhaling for 2 steps and exhaling for 1 (2:1) or inhaling for 3 steps and exhaling for 2 (3:2). Therefore, by slowly breathing in a 3:2 or 2:1 pattern in sync to your footfalls when you run, you have the potential to run more smoothly and for a longer period of time before fatiguing by maximizing oxygen uptake. (See Study)

Examples of Breathing Patterns

2:1	3:2
left foot strike – inhale	left foot strike - inhale
right foot strike – inhale	right foot strike - inhale
left foot strike – exhale	left foot strike – inhale
	right foot strike – exhale
	left foot strike – exhale

Bottomline: Try to breath mindfully, deeply, steadily, and through your nose when you are exercising. On heavy exertion try to expire versus breath holding unless you are an athlete doing a maximal effort. Different forms of exercise have different oxygen and breathing requirements. To that point I would suggest to find what works best for you, but to breathe. I would further that to be mindful of your breathing to make sure that you are not breathing shallow and that it is steady. It is also a good idea to breath through your nose and out the mouth when exercising when you can. **Speed of breathing is important, the more quickly you breathe, the less time your body has to fully absorb the O2 you're bringing in through respiration.** Some running coaches suggests breathing in twice through the nose and exhaling once through the mouth (in-in-out) while running 2:1 and even 3:1. I agree when you can to breathe through the nose. There are many additional benefits from breathing through the nose at all times. See previous Self-Check and see sidebar for running breathing techniques. When doing strength and muscle building exercises the general rule is to exhale when doing the harder motion (working against gravity, lifting a weight up, pulling up) and inhaling when doing the easier motion (working with gravity, lowering a weight or your body). I agree if the exercise is difficult, but if you are doing something moderate to somewhat difficult try to breathe normally. If you find yourself grunting or pausing in breath, it might be an indication that you've jumped too high in weight. Lower the weight to where you can breathe. If you are going to lift maximum weights ask why? If you have a good reason, like being an athlete, then you might want to try breathing out forcefully on exertion versus performing a Valsalva Maneuver (See previous Self-Check) or try Okinawa Breathing (see article).

Self-checks: Solving problems before they happen.

MORE FACTS ABOUT EXERCISE AND BREATHING: When you exercise and your muscles work harder, your body uses more oxygen and produces more carbon dioxide. To cope with this extra demand, your breathing has to increase from about 15 times a minute (12 liters of air) when you are resting, up to about 40–60 times a minute (100 liters of air) during exercise. Your circulation also speeds up to take the oxygen to the muscles so that they can keep moving.

When you exercise, the levels of carbon dioxide and hydrogen ions in your bloodstream increase. This leads to a drop in blood pH, which triggers an increase in breathing rate.

In fact, the primary driving force behind almost all respiration (especially at sea level) is a need to remove carbon dioxide, not to take in oxygen.

At altitude, respiration increases because the blood is less saturated with oxygen.

It is normal to get breathless during exercise. However, regular exercise can increase the strength and function of your muscles, making them more efficient. Your muscles will require less oxygen to move and they will produce less carbon dioxide. This will immediately reduce the amount of air you will need to breathe in and out for a given exercise. Training also improves your circulation and strengthens your heart.

Exercise increases respiratory system efficiency, but it doesn't significantly increase lung capacity.

OTHER BREATHING TIPS DURING EXERCISE

The gold standard during strength training is to inhale on relaxation and exhale during exertion. For cardio, you generally breathe in and out through the nose or, when intensity ramps up TO A HIGH LEVEL, through the A COMBINATION of nose and mouth.

- ✓ If you tend to hold their breath, encourage try count each rep out loud.
- ✓ If you experience side-stitches while running, suggest exhaling during the left footfall (not the right). I am not sure about this.
- ✓ If you can't catch your breath, stand tall with your hands behind your head to open the lungs and allow for deeper inhalations—don't bend over with hands on knees.
- ✓ To gauge exercise intensity, use the talk test: If the you can't talk much, you're in the high-intensity range. If you can carry on a conversation, the intensity is low to moderate.
- ✓ When cooling down or stretching, deep, slow breathing helps calm the body and aid in recovery.

Do You Get Side Stitches? What are they?



Side stitch is an acute, localized, sharp, transient pain that occurs during exercise, most often in runners or swimmers, but also in those participating in team sports, and less often in cyclists. The pain is vexing and performance-limiting, but fleeting and benign. Seems to be related to twisting of torso. It decreases as you age.

Not sure what causes it. Three theories compete to explain classic side stitch: diaphragmatic ischemia, stress on peritoneal ligaments, and irritation of the parietal peritoneum (review).

Although the exact cause of side stitch is still debated, practical solutions offer lasting help.



Side Stitch Treatment and Prevention?



Side Stitch Treatments (from WebMed)

When you get a stitch mid-workout, there are a few side stitch treatments you can test out, like:

- Slowing down, no matter what you're doing
- Taking deep breaths
- Pressing on or massaging the painful area
- Stretching the diaphragm by bending forward
- Flexing your stomach muscles
- Grunting loudly as you breathe in and out

Preventing Side Stitches

There are a number of tips and tricks you can try for side stitch prevention, including:

- Not eating for 2–3 hours before you take part in physical activity
- Avoiding foods and drinks that are high in concentrated sugars, like fruit juice, before you work out
- Stretching your sides before you exercise by leaning to either side while raising your arms
- Regulating your breathing
- Warming up before you start exercising
- Trying longer, lower-intensity workouts
- Doing strength exercises to bolster your abdominal muscles and diaphragm
- Paying attention to your posture
- Increasing your endurance and aerobic fitness

Stay well hydrated. If you notice that you're constantly getting side stitches during the same activity, try switching your routine up. If you get a lot of side cramps while you're running, try adding biking or swimming into your exercise regimen.

Why do I get out of Breath Climbing Stairs?



Summary: Stair climbing is indeed a form of high-intensity exercise that often leads individuals to feel out of breath due to the significant effort it requires. When climbing stairs at a normal pace, it can be likened to running at a 10 to 12-minute mile pace. This activity involves both horizontal and vertical movement, necessitating considerable exertion to propel oneself forward while simultaneously lifting the body weight upward. The muscle fibers engaged in stair climbing prioritize power over aerobic endurance, primarily relying on anaerobic pathways, which produce CO₂.

Endurance athletes, due to their specialized training, often exhibit heightened sensitivity to carbon dioxide and hydrogen, byproducts of anaerobic metabolism. For them, the challenge during stair climbing may not be breathlessness but rather muscle fatigue and the inability to ascend more steps efficiently.

When muscles aren't adequately warmed up, stair climbing can become even more challenging, leading to increased breathlessness. In such cases, incorporating strength training into their regimen can help improve muscle strength and power, aiding in the stair climbing process.

Research consistently supports the effectiveness of stair climbing as a calorie-burning exercise, often ranking it higher than running, swimming, cycling, and walking. However, the specific ranking may vary depending on factors such as intensity, duration, and individual characteristics.

In summary, while stair climbing is indeed demanding and can result in breathlessness, the reasons for this sensation can vary depending on factors such as muscle physiology, training background, and overall fitness level.

PERFORMANCE 101: Why is Step Climbing so Hard and why do I get out of breath?



It's completely normal to feel breathless during exercise, and regular physical activity can actually enhance the strength and efficiency of your muscles over time. Stair climbing is indeed considered high-intensity exercise, comparable to running at a pace of around a 10 to 12-minute mile. Interestingly, research suggests that being able to vigorously climb four flights of stairs without stopping can indicate sufficient aerobic capacity.

When you climb stairs, you're exerting a significant amount of effort as you propel yourself both horizontally and vertically. This requires endurance and strength, particularly as you're lifting your body weight against gravity. Stair climbing engages more muscle mass compared to walking on an incline, demanding both endurance and strength. Moreover, individuals with more body weight may experience even greater exertion during stair climbing.

The muscles activated during stair climbing primarily consist of fast-twitch fibers, which excel in power and rely on anaerobic pathways, leading to the production of CO₂. Even individuals in good physical shape may experience breathlessness due to the elevated CO₂ levels produced during anaerobic metabolism. Endurance athletes, in particular, may exhibit increased sensitivity to carbon dioxide and hydrogen, further contributing to breathlessness during stair climbing.

Additionally, some endurance athletes may lack sufficient strength due to a lack of strength training in their regimen, potentially leading to earlier onset of breathlessness. Furthermore, since stair climbing is often a part of daily life, individuals typically don't warm up before tackling stairs, making the activity more challenging and increasing the likelihood of breathlessness.

Research from the University of Pennsylvania School of Medicine indicates that stair climbing is among the most effective calorie-burning exercises, surpassing running, swimming, cycling, and walking. In fact, stair climbing burns significantly more calories compared to these activities, making it a highly efficient workout option.

Do You Sigh? Is Sighing Bad



Summary: Scientifically, a sigh is defined as a deep breath – or more specifically, a deep inhalation. It begins with a normal breath, then you take a second breath before you exhale. We often associate sighs with feelings such as relief, sadness, or exhaustion. A study found sighing acts as a physical—and mental—reset. When breathing in one state for too long your lungs become stiffer and less efficient in gas exchange. Intermittently adding a sigh to the normal pattern, then, stretches the lung's air sacs (alveoli). This feeling may give one a sense of relief. But too much sighing can add too much noise to the system and can also throw the system out of whack. A sigh once in awhile is healthy and perfectly fine. I do it all the time.

Is sighing a bad sign?

A few studies that suggest it's not only a sign of communication, but it's also a breathing method that makes us feel better.

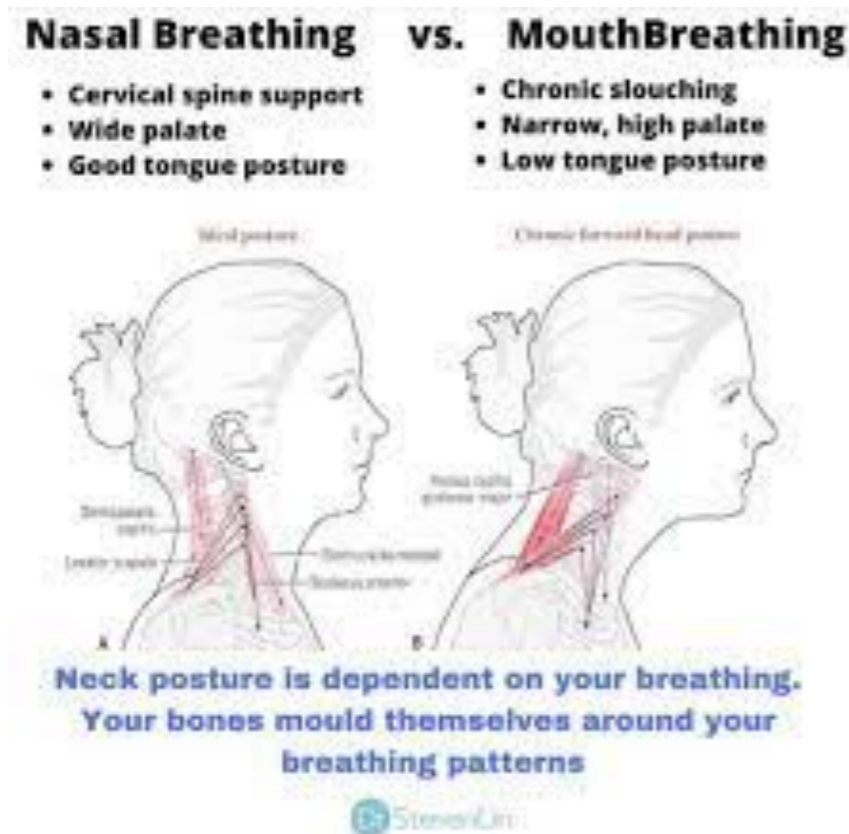
A sigh is a reset. This 'resetting' regulates our breathing and keeps us healthy – but it also has a knock-on benefit for our emotional state. When we're stressed, muscle tension gradually increases and our breathing becomes irregular. These changes can be counteracted by a sigh: sighs stretch the respiratory muscles, reduce muscle tension in the body, reduce breathing irregularity, and restore oxygen and carbon dioxide levels when they become too low or high. In this way, sighs reset us physiologically, which leads to a feeling of relief.

We sigh when we're emotional because it acts as a 'reset button' for our bodies. Scientifically, a sigh is defined as a deep breath – or more specifically, a deep inhalation. It begins with a normal breath, then you take a second breath before you exhale. We often associate sighs with feelings such as relief, sadness, or exhaustion. So in times of stress, when breathing is less variable, a sigh can reset the respiratory system and loosen the lung's air sacs, or alveoli, which may be accompanied by a sensation of relief, said Frank Wilhelm a clinical psychologist at the Universität Basel in Switzerland. But too much sighing can add too much noise to the system and can also throw the system out of whack. This appears to be what happens to people experiencing panic attacks, said Wilhelm. A sigh once in awhile is fine. I do it all the time. People experiencing panic attacks have been long observed to involve a great deal of sighing, and show all the symptoms of hyperventilation: dizziness, numbness in the extremities, etc., he said.

A study by Vlemincx and colleagues at University of Leuven suggests that, indeed, sighing acts as a physical—and mental—reset. *discovery.com*. By studying breathing patterns of participants for 20 minutes while sitting quietly, the authors found that during the time preceding a sigh, breathing begins to vary, changing in speed or shallowness. **When breathing in one state for too long, Vlemincx says, the lungs become stiffer and less efficient in gas exchange. Intermittently adding a sigh to the normal pattern, then, stretches the lung's air sacs (alveoli). This feeling may give one a sense of relief.**

Does Posture Matter when it comes to Breathing?

Summary: Poor posture contributes to breathing pattern dysfunction. This is commonly seen in people who spend long hours sitting each day. Rounded shoulders and a forward head posture cause the muscles around the chest to tighten. If your posture is slouched and hunched over, your chest and rib cage will be in a position which is less favorable to your lungs filling with air. **Several studies have reported that a slumped, poor posture significantly reduces lung capacity, expiratory flow, and lumbar lordosis compared with a normal upright posture ([Study](#)).** **Pain can effect breathing rate and improper breathing can effect pain.**



Why Posture and Pain Matters when it comes to Breathing

Poor posture also contributes to breathing pattern dysfunction. This is commonly seen in people who spend long hours sitting each day. Rounded shoulders and a forward head posture cause the muscles around the chest to tighten. That tightening limits the ability of the rib cage to expand and causes people to take more rapid, shallow breaths. **Several studies have reported that a slumped, poor posture significantly reduces lung capacity, expiratory flow, and lumbar lordosis compared with a normal upright posture ([Study](#))**. When this breathing pattern is accompanied by poor posture many muscles in your upper body aren't able to function properly. The longer you sit during the day, the less your body is able to fight the forces of gravity and maintain a strong, stable core. Tight accessory muscles around the chest take over and may cause a rounded shoulder and forward head posture. This weakens the back by inhibiting muscles that help maintain an upright posture. Tight accessory muscles and a weakened back can also cause instability and pain. **Research has shown that people with ongoing mild-to-moderate neck pain or sore, stiff neck muscles have problems using the lungs and respiratory system to their full capacity.**

Pain can effect breathing rate and improper breathing can effect pain. Sudden or chronic pain can activate a section of the nervous system that governs many bodily systems, including your breathing rate, heart rate, and body temperature. Chronic stress and strong emotions such as rage or fear intensify your fight-or-flight response, which can impair your breathing rate. Research suggests a strong association between altered biomechanical breathing patterns and the development of musculoskeletal conditions, such as lower back pain, neck pain, chronic ankle instability, and temporomandibular joint disorders.

Does Inspiratory Muscle Training Work?



Summary: Research shows that a daily dose of muscle training for the diaphragm and other breathing muscles helps promote heart health and reduces high blood pressure. The daily five-minute technique or 30 breaths at 2 sessions per day used a resistance-breathing training device. Those who followed the program for six weeks saw a **9 point decrease in blood pressure (same as medication)** and a **45% improvement in vascular endothelial function** and a significant **increase in levels of nitric oxide**, a molecule key for dilating arteries and preventing plaque buildup. **Markers of inflammation and oxidative stress, which can also boost heart attack risk were significantly lower** after people did IMST for six weeks. Please consult with your doctor before using a resistance breathing device.

How to Use

1. Place the mouthpiece in your mouth.
2. Set preferred resistance level.
3. Inhale fast and with force, then exhale normally. Perform 30 breaths, twice a day.

*For medical conditions please consult your physician for medical advice



OTHER DEVICES

OTHER DEVICES



FittArticle

5-minute breathing workout lowers blood pressure as much as exercise, drugs

INSPIRATORY RESPIRATORY MUSCLE TRAINING

A study published in the [Journal of the American Heart Association](#), provides the strongest evidence yet that the ultra-time-efficient maneuver known as High-Resistance Inspiratory Muscle Strength Training (IMST) could play a key role in helping aging adults fend off cardiovascular disease—the nation's leading killer. Research shows that a daily dose of muscle training for the diaphragm and other breathing muscles helps promote heart health and reduces high blood pressure. The daily five-minute technique or 30 breaths at 2 sessions per day used a resistance-breathing training device called [PowerBreathe](#). There are other hand-held machine on the market that does the same thing. When people inhale when using this device it provides resistance, but not on exhalation.

Benefits of exercise on the cardiovascular system is immense. Most people do not exercise enough or at all. IMST takes only a few minutes and it is easy to implement. This might be a solution for them. IMST involves inhaling vigorously through a hand-held device which provides resistance. Imagine sucking hard through a tube that sucks back.

Thirty years ago doctors recommended a 30-minute-per-day regimen at low resistance, but recently a more time-efficient protocol—of 30 inhalations per day at high resistance, six days per week could reap the same or more cardiovascular, cognitive and sports performance improvements.

Those who followed the program for six weeks saw a 9 point decrease in blood pressure (same as medication) and a 45% improvement in vascular endothelial function, or the ability for arteries to expand upon stimulation, and a significant increase in levels of nitric oxide, a molecule key for dilating arteries and preventing plaque buildup. Nitric oxide levels naturally decline with age. Markers of inflammation and oxidative stress, which can also boost heart attack risk were significantly lower after people did IMST for six weeks. Remarkably, those in the IMST group completed 95% of the sessions say researchers.

Women Difference: Interestingly, women who are not taking supplemental estrogen don't reap as much benefit from aerobic exercise programs as men do when it comes to vascular endothelial function. IMST, the new study showed, improved it just as much in these women as in men.

Does not replace exercise: The researchers say the practice is not necessarily meant to replace exercise but can be a useful option for those who lack access to walking trails or recreation centers, have trouble doing aerobic activities due to health reasons or just want to add another tool to their blood-pressure-lowering toolbox. cautions, or to replace medication for people whose blood pressure is so elevated that they're at high risk of having a heart attack or stroke. Instead, Craighead says, "it would be a good additive intervention for people who are doing other healthy lifestyle approaches already."

Does Respiratory Muscle Training work in Athletes?



Summary: Respiratory muscle training RMT can, in fact, improve sport performance, exercise endurance time, and repetitions on Yo-Yo tests (aerobic endurance test) in athletes. **Six weeks of IMST increased aerobic exercise tolerance by 12% in middle-aged and older adults (see study).**

The American Council on Exercise (ACE) found these masks do not simulate training at an elevation.

For the general fitness person respiratory muscle training is not something I recommend since ventilation typically does not limit people. But if you have a respiratory disease or can not exercise it may be warranted under a care of a trained medical professional. It may be something an elite athlete might consider under the guidance of their coach.

RESPIRATORY MUSCLE TRAINING FOR ATHLETES

Some athletes perform breathing exercises often using special devices, in the hopes of building up the muscles associated with respiration. As mentioned Inspiratory Muscle Strength Training (IMST) has been shown to benefit non exercisers of all ages at decreasing blood pressure. It was also beneficial in aerobic training. Six weeks of IMST increased aerobic exercise tolerance by 12% in middle-aged and older adults (see study). These were older athletes but how does it effect younger athletes.

In recent years, numerous studies have been done on respiratory muscle training RMT and in 2013, University of British Columbia researchers performed a systematic review of thousands of them, narrowing those eligible for inclusion to just 21 (research). Their conclusion: respiratory muscle training RMT can, in fact, improve sport performance, exercise endurance time, and repetitions on Yo-Yo tests (aerobic endurance test) in athletes. Inspiratory muscle strength and endurance improved in most studies, which in part, was dependent on the type of RMT employed though researchers aren't certain why, as RMT wasn't shown to increase VO2 max (aerobic ability). Some theorize that it may delay the onset of breathlessness, enabling athletes to push harder for longer. Another meta-analysis results confirms that respiratory muscle training RMT improves respiratory muscle endurance (RME) in athletes and non-athletes in addition it showed that maximal sustainable ventilatory capacity (MSVC) tests, that examine endurance over several minutes, are more sensitive to improvement after RMT. The American Council on Exercise (ACE) has found that these types of masks may not be fully delivering on their expected capabilities. While the mask is able to provide overall respiratory compensation and power output at respiratory compensation thresholds, the mask simply does not simulate training at an elevation.

How does it work: When say running a hard for a length of time your respiratory muscles get tired and begin to steal blood from your skeletal muscles. If you build up endurance of those respiratory muscles, that won't happen and your legs won't get as fatigued says researchers.

How to implement: Researchers suggest a more personalized approach to an individual's training prescription based upon goals, needs, and desired outcomes of the patient or athlete when it comes to respiratory muscle training (review). What do I say: For the general fitness person respiratory muscle training is not something I recommend since ventilation typically does not limit people. But if you have a respiratory disease or can not exercise it may be warranted under a care of a trained medical professional. It may be something an elite athlete might consider under the guidance of their coach.

Do Mindful Breathing when Attention is Compromised.

Do Controlled Breathing when need to control Arousal (exam, panic attack, drowsiness).

Mindful breathing is a very basic yet powerful mindfulness meditation practice. The idea is simply to focus your attention on your breathing—to its natural rhythm and flow and the way it feels on each inhale and exhale. It is not belly breathing.

Compromised Attention Practice Mindful Breathing

In cases when a person's attention is compromised, practices which emphasize concentration and focus, such as mindfulness, where the individual focuses on feeling the sensations of respiration but make no effort to control them, could possibly be most beneficial.

Heightened or Lowered Arousal Practice Controlled Breathing

In cases where a person's level of arousal is the cause of poor attention, for example drowsiness while driving, a pounding heart during an exam, or during a panic attack, it should be possible to alter the level of arousal in the body by controlling breathing.

Both of these techniques have been shown to be effective in both the short and the long term. It is possible that by focusing on and regulating your breathing you can optimize your attention level and likewise, by focusing on your attention level, your breathing becomes more synchronized.

Brains typically lose mass as they age, but less so in the brains of long term meditators. More 'youthful' brains have a reduced risk of dementia and mindfulness meditation techniques actually strengthen brain networks.

The Yogi masters were right -- meditation and breathing exercises can sharpen your mind. New research explains link between breath-focused meditation and attention and brain health

May 10, 2018 FROM Trinity College Dublin

It has long been claimed by Yogis and Buddhists that meditation and ancient breath-focused practices, such as pranayama, strengthen our ability to focus on tasks. The way we breathe, in other words, directly affects the chemistry of our brains in a way that can enhance our attention and improve our brain health. Researchers found that participants who focused well while undertaking a task that demanded a lot of attention had greater synchronization between their breathing patterns and their attention, than those who had poor focus. The authors believe that it may be possible to use breath-control practices to stabilize attention and boost brain health.

In cases when a person's attention is compromised, practices which emphasize concentration and focus, such as mindfulness, where the individual focuses on feeling the sensations of respiration but make no effort to control them, could possibly be most beneficial. In cases where a person's level of arousal is the cause of poor attention, for example drowsiness while driving, a pounding heart during an exam, or during a panic attack, it should be possible to alter the level of arousal in the body by controlling breathing. Both of these techniques have been shown to be effective in both the short and the long term.

In our study we looked for a neurophysiological link that could help explain these claims by measuring breathing, reaction time, and brain activity in a small area in the brainstem called the locus coeruleus, where noradrenaline is made. Noradrenaline is an all-purpose action system in the brain. When we are stressed we produce too much noradrenaline and we can't focus. When we feel sluggish, we produce too little and again, we can't focus. There is a sweet spot of noradrenaline in which our emotions, thinking and memory are much clearer."

"This study has shown that as you breathe in locus coeruleus activity is increasing slightly, and as you breathe out it decreases. Put simply this means that our attention is influenced by our breath and that it rises and falls with the cycle of respiration. It is possible that by focusing on and regulating your breathing you can optimize your attention level and likewise, by focusing on your attention level, your breathing becomes more synchronized."

"Our findings could have particular implications for research into brain aging. Brains typically lose mass as they age, but less so in the brains of long term meditators. More 'youthful' brains have a reduced risk of dementia and mindfulness meditation techniques actually strengthen brain networks. Our research offers one possible reason for this -- using our breath to control one of the brain's natural chemical messengers, noradrenaline, which in the right 'dose' helps the brain grow new connections between cells. This study provides one more reason for everyone to boost the health of their brain using a whole range of activities ranging from aerobic exercise to mindfulness meditation."

Do You Do Humming Bird Breathing (opens the sinuses)? It has been shown to be very healthy.

Like other forms of breathing techniques go slow when introducing them and do not do too much to where you get light headed.

Why is Nitric Oxide Important:

Nitric Oxide (NO) is produced in the paranasal sinuses and carried into the lungs during nasal breathing.

NO is known to be broadly antifungal, antiviral and antibacterial.

NO is a broncho dilator helping open nasal passages bronchi and bronchioles in the lungs.

NO is also a vasodilator playing an important role in the dilation of blood vessels so that oxygen can be properly distributed throughout the body.

Impaired breathing leads to poor air circulation and lower levels on beneficial nitric oxide in the nose and sinuses, thus creating an environment beneficial for bacterial growth and inflammation. Studies show that humming increases airflow in the sinuses ([Study](#)). **Further, the levels of NO increase 15 to 20-fold by humming compared with quiet exhalation.** By breathing through the nose, we harness the various properties of NO including its germicidal powers.

According to The Humming Effect by Jonathan and Andi Goldman, humming also reduces stress, induces calmness, enhances sleep, lowers heart rate and blood pressure, produces neurochemicals such as oxytocin, increases lymphatic circulation and melatonin production, releases endorphins and creates new neural pathways in the brain. All of these help reduce stress and promote health and well-being.

Humming Exercise

You can do it any time as a preventative measure to help boost immunity. Many associate humming with cheerfulness and you'll notice that it's difficult to hum and feel down at the same time ([source](#)).

1. Breathe through your nose with mouth closed and the tip of your tongue resting behind your top front teeth. (Note: if you can't breathe through your nose do the [Nose Unblocking exercise](#) first).
2. As you exhale slowly through your nose make a sustained "hmmmmmm....." sound.
3. Avoid pushing the air out with force. As with everything to do with breathing this should be done gently.
4. Now, breathe in gently through your nose and repeat.
5. The sinuses are air filled cavities located around your nose, temples and above your eye sockets. To increase the effect of the exercise you can gently massage those areas while doing the exercise.
6. If you have a stubborn blocked nose or sinusitis repeat this exercise for 5 to 10 minutes, two to four times a day for a few days or until symptoms improve.

When doing this exercise the vibrations you might feel are helping increase air circulation and production of NO in your nasal and sinus cavities.

Do you do Kapalabhati breathing (cleanses the lungs)? It has been shown to be very healthy.

Like other forms of breathing techniques go slow when introducing them and do not do too much to where you get light headed or have pain.

How to: Kapalabhati Pranayama Start by inhaling fully, taking your time and filling up your lungs. Then, begin by exhaling shortly and sharply through the nose for anywhere from 20 to 50 strokes (exhales). Your focus should mostly be on the exhales, letting your inhales happen naturally. Passively inhale, actively exhale.

Benefits: There is a great deal of research that supports this type of breathing. [Please see source](#). Kapalabhati is derived from two words: *kapala*, which means *skull*, and *bhati*, which means *to illuminate*. Kapalabhati is designed to accelerate breath from the lower abdominals into the skull, supporting healthy drainage of toxins from brain lymphatics, also known as glymphatics. Kapalabhati is a rapid nose breathing or pranayama exercise where a normal inhalation is followed by a forceful exhalation. During normal respiration, the exhalation is more passive, driven primarily by the relaxation of the diaphragm, and the inhalation is more active, as a result of contraction of the diaphragm. During kapalabhati, the abdominal muscles, the secondary muscles of breathing, are engaged to elicit a forceful exhalation. Contracting the abdominal muscles during kapalabhati creates pressure to the abdominal organs in the form of a **health-promoting visceral massage**, while boosting the rest-digest-repair parasympathetic nervous system. Studies find that kapalabhati produces **emotional stability and improved stress-handling ability**. Elevated parasympathetic activity has been linked to better oxygenation of the brain and heart, while maintaining a low heart rate—thus the name *kapalabhati* or *skull illuminating*. **During kapalabhati pranayama, all five lobes of the lungs are oxygenated, whereas during normal respiration, the lower lobes of the lungs are unused and considered dead space**. Oxygenating the dead space not only boosts oxygenation potential of breathing, but enhances detoxification and fat burning supposedly weight loss potential found mostly in the highly vascularized lower lobes of the lungs. The forceful nature of kapalabhati increases blood supply and circulation to the abdominal organs and glandular system, supporting their healthy and normal function. [Kapalabhati pranayama: An answer to modern day polycystic ovarian syndrome and coexisting metabolic syndrome?](#)

If You Want to Up Your Energy try these breathing techniques...I don not know if they work but they sound like they can.

Double Breathing

This rapid breathing technique activates the breath in short bursts. It's these active movements that excite the sympathetic nervous system and make you more alert. To practice double breathing:

- Inhale through the nose with a short, sharp inhalation followed directly by a long, strong inhale.
- Then without pausing, exhale through the nose and mouth with a short, then long exhale.
- Repeat 5 times then pause for a short break before beginning your next round.

Get ready to feel super amped!

Bellows Breath

Bhastrika, or bellows breath, is perfect first thing in the morning, during your afternoon slump, or to get you psyched for a workout. Settle into a comfortable seated position, then do the following:

- Breathe in and out through your nose.
- Engage your stomach, pulling it in on an inhale and pushing it out on an exhale.
- Keeping this up, start forcefully exhaling through your nose, followed by forced, deep inhales
- Continue this at the rate of 1 second per cycle.

Start with reps of 10 followed by short 15-30 second breaks of normal breathing.

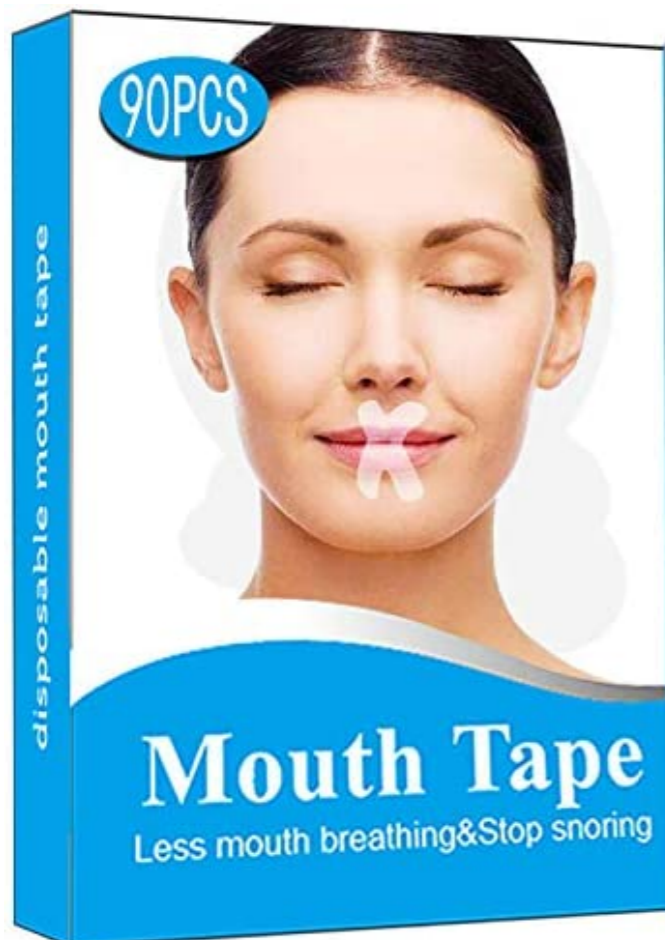
A daily 5-minute breathing practice can get you more familiar with these techniques for energy while also giving you major health benefits like better sleep and lower blood pressure.

In your lifetime, you'll take about half a billion breaths. Use them to your advantage.

**Other Useful
Breathing
Information.**

DO YOU/CAN YOU
DO THIS?
SHORT WELLNESS SELF-
CHECKS

Mouth Taping at Night



Summary: Taping your mouth at night has become a recent, but unheard of health trend. But does it really work. I say YES. This is one of my newest wellness rituals, which I have been doing for a couple years. I feel more refreshed in the morning and I sleep through the night when I tape my mouth. In the past I would be awakened with a dry mouth. Not anymore. This is strikingly simple and cost-effective solution to better sleep and overall health some say and I agree. There is no direct research that backs this, but there is a lot of research that shows the benefits of nasal breathing. **This is something that you should discuss with your doctor, but there is science to back it up.**

Taping your mouth at night has become a recent, but unheard of health trend. But unlike many trends it really works. I say YES. This is one of my newest wellness rituals, which I have been doing for a couple years. I feel more refreshed in the morning and I sleep through the night when I tape my mouth. In the past I would be awoken with a dry mouth. Not anymore. **This is something that you should discuss with your doctor, but there is science to back it up.** Researchers suggest that nasal breathing increases nitric oxide production in the sinuses, which has been linked to reduced inflammation, improved sleep, improved memory, and an overall increase in immune system function (research). A study found that mouth breathing is just plain bad, it can lead to high blood pressure, heart problems, and sleep apnea (Study). Some dentists suggest that mouth breathing disrupts the balance of your oral microbiome and makes you more prone to tooth decay. So it makes sense that if you could find a way to stop mouth breathing safely and easily then it is worth a try. This is strikingly simple and cost-effective solution to better sleep and overall health some say and I agree. It goes in line with my WEBPAGE on breathing through the nose at rest and when exercising. There are some companies that make tape just for this. There are others that make a sling to keep your mouth closed. I use surgical tape, band aids, and in a pinch regular Scotch Tape. When starting out try it during the day to get use to it. It might feel weird at first, but eventually you will not be able to “Sleep Well” without it. I even use it when exercising at times. I do recommend not to put more than one light strip that you could easily open your mouth through. A simple strip is enough to keep your mouth closed without interfering with opening if need arises. I must say there have not been any scientific studies to confirm that mouth taping is an effective technique for improving sleep. I am hoping someday that research will back it up, but research does back up breathing through the nose for better health. The Cleveland Clinic suggests seeking alternative treatments for snoring, bad breath, sleep apnea or any other breathing or sleep-related conditions.

PLEASE DO NOT TAPE YOUR MOUTH THAT YOU CAN NOT OPEN IT EASILY IF YOU TRY THIS. Do at own Risk!

**DO YOU/CAN YOU
DO THIS?
SHORT WELLNESS SELF-
CHECKS**

**Do you Tape
Your Mouth?
It might
change your
life**



**Do
Athletes
breathe
right? No
Does it
matter?
Yes**

Surprisingly, in answering the first question, NO and Yes to the second according to research. From my **own data gathering I also see high proportion of athletic/fit people with disordered breathing.**

Evidence from previous studies suggests that athletes with diaphragmatic breathing patterns display improved physical and psychological performance. **In other words athletes who breathe right perform better.** [See Study](#) Since more efficient ventilatory muscular recruit at both lower and higher intensities during exercise may benefit endurance performance by reducing oxygen demand of the ventilator musculature and thus increasing oxygen availability for mechanical work. Since athletes with altered breathing patterns might be at an enhanced risk of developing musculoskeletal injuries, identifying the prevalence of altered breathing patterns is of utmost importance to prevent them from developing injuries. Findings indicate that an **alarmingly high proportion (91%) of the athletes displayed dysfunctional breathing patterns, while only 9.4% of them displayed diaphragmatic breathing patterns.** The authors of this research suggest that clinicians need to consider screening breathing patterns and implementing corrective approaches targeted at specific components of dysfunctional breathing patterns. **They should also consider evaluating sport-specific adaptations of breathing and implementing sport-specific breathing training protocols.** ([Study](#)) The authors go on to say that incorporating diaphragm breathing exercises and techniques may have beneficial effects on restoring optimal recruitments and motor control patterns of respiratory muscles, improving the efficiency of the biomechanics of breathing and decreasing psychological stress in athletes with dysfunctional breathing patterns.

How does Proper Breathing Protects the Low Back and How Disordered Breathing Hurts It.

The diaphragm is considered part of the intrinsic core. The core's main job is to hold and protect your spine. I work the diaphragm through breathing exercises when I teach core classes. The low back's close relation to the diaphragm makes it important in protecting our low back and improving athletic performance. What is the diaphragm: The diaphragm is a dome-shaped muscle beneath the lungs. When you inhale, it flattens and moves downward, pressing against the abdominal organs so the lungs can expand. However, many adults don't properly engage the diaphragm—poor posture, stress, and other factors lead people to breathe shallowly, moving the upper rib cage more than it should. It can also cause discomfort in the chest and back muscles, weaken the muscles in the pelvic floor and lower back, and disrupt proper movement of the shoulders and spine. Over time, this weakens the strength of our respiratory muscles. It also creates tension in the upper body that can alter our posture and impact both low back posture and stability. Breathing properly leads to relaxation of the body and the muscles in the mid and the lower back. So, breathing exercises have been found to be a way to target the treatment of chronic low back pains.

Among the trunk muscles, the respiratory muscles, internal oblique, abdominal muscles, back fibers, and spinal multifidus stabilize the spine. The pelvic floor muscles (diaphragm) also influence spinal stability by cooperating with the trunk muscles to generate abdominal pressure. The transversus abdominis, an important core muscle, moves up and down while breathing and is the most important muscle required for blocking inspiration among the various muscles that contribute to spinal stabilization. Moreover, as the transversus abdominis is an expiratory muscle, it also increases abdominal pressure. Both muscles work by cooperating with the pelvic floor muscles. Thus, regarding the function of the trunk muscles, the simultaneous contraction and coordinated movement of the diaphragm, transversus abdominis, and pelvic floor muscle are the most important and basic elements of spinal stabilization and can be directly affected by breathing exercises including forced breathing ([study](#)).

What is the Best Sleeping Posture for Breathing? It Depends! Definitely not Stomach

Here are some of the pros and cons of four go-to nightly postures, according to the [National Sleep Foundation](#).

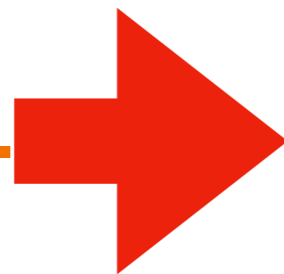
- 1. Back:** Lying on your back and assuming a neutral body position typically results in the least amount of strain on your head, neck and spine. But studies show [links between back sleepers and snoring](#), so if this is something you are prone to, try turning to your side. Also, sleeping on your back is not a good choice if you have [sleep apnea](#), because your [tongue can fall back](#), narrowing the airway. To help avoid aches in this face-up position, place a pillow or rolled-up towel under your knees. It supports the natural curve of your spine.
- 2. Side:** Side-sleeping is the [most common position for adults](#). If you snore or have sleep apnea, this may be the best choice for you. However, because your face pushes against the pillow, side-sleeping may cause wrinkles. It may also cause shoulder pain. Switching from side-to-side throughout the night may help prevent putting too much pressure on one side of the body.
- 3. Fetal position:** The fetal position helps improve circulation and is a good bet for people who tend to snore or are pregnant. However, be sure not to curl too tightly as you drift off because it may cause difficulty breathing or soreness in the morning if you have [arthritis](#).
- 4. Stomach:** **Sleeping on your stomach could be challenging because it may require the body to exert more energy on breathing compared with other positions.** Some may experience neck pain or tingling in joints and muscles, due to poor circulation. To help avoid putting pressure on the spine, tuck a pillow under your pelvis to keep a neutral lumbar position.

The anaerobic threshold (AT) is the exertion level between aerobic and anaerobic training (lactic acid, burning sensation). The AT is the point during exercise when your body must switch from aerobic to anaerobic metabolism. The AT is a useful measure for deciding exercise intensity for training and racing in endurance sports. Anaerobic Threshold = The point where your anaerobic energy system starts to contribute a bit more to your total energy production. Aerobic energy production is still very dominant. Anaerobic threshold = The point at which your lactate (lactic acid) clearance can no longer keep up with accumulation. Athletes want to increase the AT to improve performance. They train below, at, and above that point during different points of high intensity interval training (HIIT). Increasing your anaerobic threshold will increase your aerobic fitness and performance. There is a marked change in breathing when you reach anaerobic threshold (short of breath, you can speak, but only one sentence at a time). Increasing intensity above this point will be hard and painful because of lactic acid production in muscles.

Breathing Difficulty and HIIT

Key to high intensity interval training (HIIT) is working around Anaerobic Threshold (AT). Working below it is **Low to Moderate Interval**. Working at or above is **High Interval**.

AT is a 7-8 on Scale.

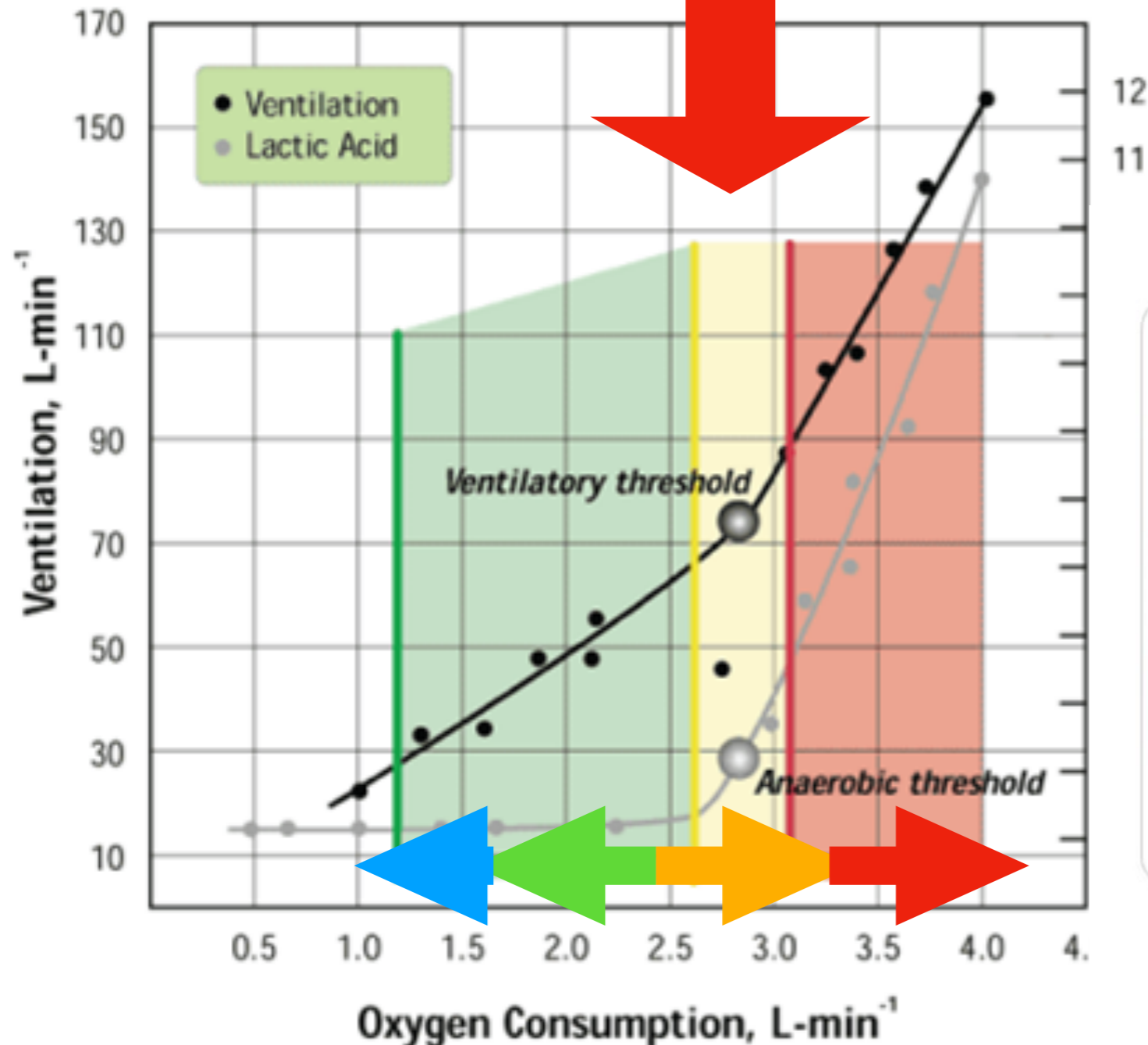


Breathing is Short, You can speak but no more than one sentence at AT.

RPE Scale (Rate of Perceived Exertion)	
1	Very light activity It doesn't even feel like you're exercising.
2-3	Light activity You could keep going for hours! It's easy to breathe and have a conversation.
4-6	Moderate activity You're breathing heavily, but you can have a conversation.
7-8	Somewhat difficult activity You're short of breath. You can speak, but only about one sentence at a time.
9	Very difficult activity You can barely breathe, and can only say a few words at a time.
10	Maximum effort activity You're completely out of breath, and can't talk.

Ventilation, AT, and HIIT

- Zone 4 (see chart to right) Training Raises Aerobic Capacity when training in this zone. Training below offers some benefits, but no great changes in aerobic fitness.
- Linear rate of ventilation vs workload changes at this point.
- Breathing is Short. You can speak but no more than one sentence at AT.



Know Your Aerobic Training Zones

EFFORT		EFFECT
Zone 5 (VO2 Max)		Benefits: Increases aerobic power
Zone 4 (Threshold)		Benefits: Raises your aerobic performance capacity
Zone 3 (Tempo)		Benefits: Improves aerobic strength
Zone 2 (Steady)		Benefits: Improves base endurance capacity
Zone 1 (Easy/Recovery)		Benefits: Assists with recovery

**FRONT
RUNNER**

High intensity interval training (HIIT) is working around Anaerobic Threshold (AT). Working below it is **Low to Moderate Interval**. Working at or above is **High Interval**.

Summary

Breathing patterns are an important indicator of an individual's health. A healthy individual breathes naturally using primary respiratory muscles (e.g., diaphragm muscle) that produce a rhythmic observable movement of the upper rib cage, lower rib cage, and abdomen. This breathing pattern, also known as diaphragmatic breathing pattern has been associated with improvements in posture, core stability, and functional performance, as well as reductions in musculoskeletal injury, pain, and stress.

Nasal breathing is a preferred method of breathing in comparison to mouth breathing. Lastly, normal breathing involves a shorter inhalation followed by longer exhalation that is two to four times longer.

Try to breathe mindfully, deeply, steadily, and through your nose and out your mouth when you are doing aerobic exercise. Emerging research suggests that breathing through the nose while aerobic exercising may be more effective.

Try to breathe mindfully, deeply, steadily, and through your nose and out your mouth when you're lifting weights with your abdomen braced,

Try to always breathe when exercising and exerting. Do not hold your breathe. If you are not a powerlifter/strongman try to always exhale during maximum exertion.

A study found sighing acts as a physical—and mental—reset. Ok and even healthy to do from time to time.

Several studies have reported that a slumped, poor posture significantly reduces lung capacity, expiratory flow, and lumbar lordosis compared with a normal upright posture (Study).

Pain can affect breathing rate and improper breathing can affect pain. If you improve breathing you can help with your pain.

Research shows that a daily dose of muscle training for the diaphragm and other breathing muscles helps promote heart health and reduces high blood pressure.

Evaluate yourself and then start various breathing techniques especially diaphragmatic breathing.