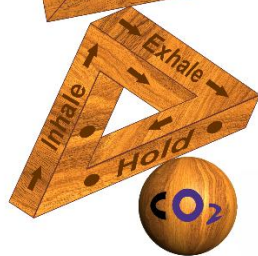


EXTRA ORDINARY BREATHING TOOLS



OFFER DAN

Are you tilting your head or the book when reading now? We all have our instinctive reactions; replacing these with calculated responses can bring substantial benefits. This book offers a vast collection of optional breathing responses to everyday situations and to rare ones as well. First aid solutions for life's surprises can help you turn adverse situations into manageable ones by manipulating your breathing. The techniques explained summarize my five decades of breath awareness, research, and personal experiences. Since your breathing profile is unique, I'll explain how you can personally adjust the techniques I use. The book's explanations are rooted in science and refined through real-world trials. You'll discover new and unconventional methods for using your breath as a tool in the moments that matter most. So come and join me on this journey. Let's breathe through it all.



Extra Ordinary Breathing Tools

Synchronizing Breath with Being

Offer Dan

NoZy Publishing



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PREFACE

During the short days and cold nights of the Danish winter, when the sun plays hide-and-seek, I make my yearly trip to India; it's always to the same village in the south, where pleasant weather is guaranteed. Every morning, close to sunrise, I go down to the beach and practice the yoga exercises I've been committed to for over fifty years. There on the fine white sand, people are often scattered, assuming tangled poses or sitting motionless, waiting for their aura to glow.

One morning, I approached my usual spot, in front of the white fishing boat with its red-painted Hindu swastika on the stern. Someone was already there, sitting cross-legged with closed eyes. An exotic-patterned blanket hung over his shoulders. With a mild glare at the motionless man who occupied my spot, I kept a fair distance, rolled out my mat, and began my routine.

When he opened his eyes and stood up, we exchanged polite smiles. I said to him with a stern face, "You're meditating on my spot," and quickly followed up with a smile.

"This isn't your spot, and I wasn't meditating," he replied. "I'm practicing breathing exercises."

I responded with a bit of self-importance, "That's what it looks like when I meditate."

With a calmer tone, he continued, "I gave up on meditation; it's too complicated. Most people who say they meditate are trying to meditate, and very few, if any, succeed." He paused to glance at the ocean. "Is it possible for you to truly detach from your thoughts and observe them when meditating?"

"No," I said with honesty.

"When I sit still with closed eyes and breathe in patterns, I let my thoughts wander freely. My goal is simply to relax, and I achieve it through breathing with awareness. Anyway, get back to whatever you were practicing."

He waved goodbye with loose fingers and walked away.

I tried to resume the yoga exercises, but my thoughts kept circling back to the man's decisive denial of the word "meditating." He knew a thing or two about meditation, but he insisted on calling the practice *breathing with awareness*.

After mulling for a while over his fixation on breath, I concluded with the obvious: it's much easier to control the breathing muscles than a slippery mind.





My exercising spot at the beach

Breath as a tool

Breathing seems simple; a mechanical movement of air in and out of the lungs. Maybe that's why it's easy to overlook how powerful it actually is.

Breath can be the key that controls how the mind responds to a situation; it can serve as the joystick that steers the body toward a desired state. Ancient fighters harnessed breathing to steel their resolve before battle, and modern athletes still rely on it to peak their performance. Science confirms the effectiveness of how these individuals have repurposed physiology for specific, significant, and immediate results. Changing how you breathe can be a practical solution, especially in the middle of chaos or overwhelming thoughts. Breathing can help shift from a victim mindset to the seat of an operator.

Sure, there are countless breathing practices out there promising future good health or peak physical performance. But this book focuses on strengthening your responses to *present* circumstances. For example, in the middle of an important presentation, where your mind goes blank, your heart's racing, and the clock's ticking. If you can't change the triggering environment, you can still change the way you breathe.

When I first started altering my breathing to deal with immediate challenges, it felt like a 'Band-Aid solution.' But what soon became clear was that Band-Aids do help millions of people carry on with their daily tasks, and so can breath management.

In the book, I'll refer to specific breathing techniques—and the ways to combine them—as *breathing tools*. These here-and-now solutions can work in countless scenarios, from tackling mental pressure at work to equalizing physical ear pressure at high altitudes. They can help you:

- Fall asleep more easily and regulate alertness during the day.
- Manage food cravings, sexual desires, or an urge to smoke cigarettes.
- Improve focus when memory or concentration fades.

- Relieve pain, whether it's momentary, chronic, sharp, or throbbing.

Breathing tools also provide ways to:

- Ease motion sickness.
- Stimulate digestion when constipated, or delay bowel movement when a restroom isn't available.
- Soothe a mouth chili burn, prevent tears when cutting onions, or speed up recovery from a hangover, and many more...

Some techniques are for extraordinary events, such as breathing when trapped in a confined space with a dwindling air supply or while bleeding. The tools are rooted in science, refined through real-world trials, and designed to help you *breathe through it all*.

Breathing differences between people

Just as every life event shapes who you are, it also influences how you breathe. No one has lived the same life you have; that's why no one breathes exactly like you do.

But even if no two persons are identical, significant similarities exist. There's the way most people behave, and there are exception groups. Most people are right-handed, but some have a dominant left hand. There are also exception groups when it comes to breathing. Here are a few examples:

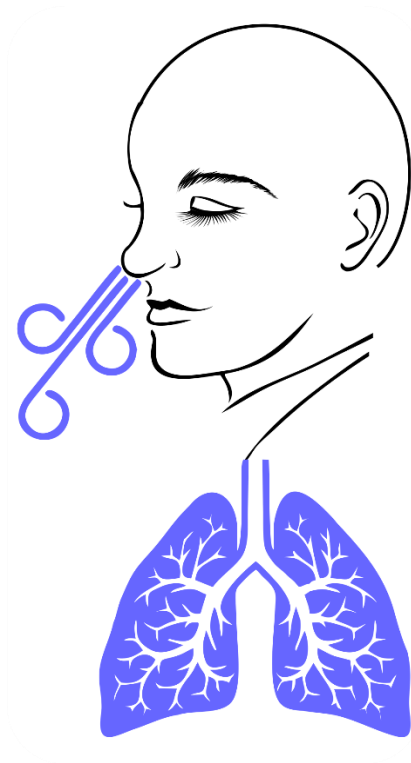
- Most people feel relaxed after a deep exhale, but some relax only after a full inhale.
- Most people's bellies move outward when inhaling, but for some, it moves inward.
- Most people hold their breath neutrally, but some hold it with an inward suction or an outward pressure.
- Most people memorize information better while inhaling, but some don't.

A one-size-fits-all breathing practice can mislead. What works well for one might have a different—or even the opposite—effect on someone else. Just as special scissors were made for left-handed people to make cutting easier, the breathing tools in this book can also be altered to fit your unique breathing profile. Once you get to know why a breathing tool works and how it affects your body, you can tweak it to fit who you are.

The chapters in the book are modular and categorized by the fundamental facets of human experience; you can read sequentially or dive into an immediate issue you're facing. Either way, I must emphasize: No amount of mere reading or listening about breathing can convey its true transformative power; practice will. You'll find several experiments in the book designed to turn your second-hand knowledge into first-hand experience. Try them! Once you realize the power of a single conscious breath, there's no going back.

CHAPTER ONE

Stress and Relaxation



Here's what happened after I boarded a commercial flight to an exhibition in Hong Kong many years ago.

Hong Kong's old Kai Tak airport was close to the middle of the city. As we approached its short landing strip that jutted out into the sea, the pilot announced, "Strong winds are blowing over the airport. We should expect turbulence."

There were more than gusts of wind; it was a typhoon. As the plane started to descend in zigzags, a wave of panic spread across the cabin. When the wheels touched down, the unrelenting crosswinds pushed the aircraft out of control. The pilot quickly aborted the landing and took off again in a jittery ascent. Some passengers started screaming, and the woman seated next to me vomited into a paper bag.

When the plane reached a higher altitude with calmer winds, the pilot made a short announcement: "We are going to fly above the airport until weather conditions allow landing."

It wasn't difficult to figure out that there wasn't much fuel left after a direct flight from Europe to Hong Kong. We flew around in circles, and the stewardesses gave instructions on how to brace on landing. The pilot then announced, "Please prepare for landing. I will inform you when to brace."

Like every other passenger, I was frightened. With my arms gripping the armrests, hopelessly trying to "stabilize" the aircraft, I kept muttering under my breath, "Peace and quiet... Peace and quiet..."

On touchdown, the plane veered to the side again and seemed to slide on the tarmac. We came to a screeching halt very, very close to the end of the runway. The same day, another aircraft didn't make it, overshot the end of the landing strip, and dropped into the sea. Fortunately, no one was hurt. Hong Kong now has a new, top-class airport.

My 'Peace and quiet' breathing was a gift from my mother, a yoga enthusiast who taught yogic breathing methods. I was nine years old when she first taught me a simple breathing tool to calm down. "Inhale slowly and inflate your belly so it looks like a watermelon.

Now, exhale and draw your belly back. When you inhale, slowly say ‘Peace and quiet’ to yourself once. On the exhale, slowly repeat it twice,” she said. Since then, this basic tool has stayed with me whenever I found myself in tight situations—when playing board games with friends and losing, when I feared failing exams in school, when visiting the dentist, and during my demanding military service as a paratrooper. It also stayed with me that day on the shaking airplane that a typhoon could have engulfed.

Had I not used the ‘Peace and quiet’ breathing, I probably would have gotten sucked into the chaos like many of my co-passengers, to the point of losing self-control. Pilots are often taught breathing techniques to remain calm under stress. I don’t know if the pilot on my flight used a breathing technique while handling the edgy situation, but his ability to stay calm amid chaos saved over 300 lives that day.

Life may not always feel like a typhoon landing, but the smaller storms of day-to-day existence can be just as unpredictable. Breathing tools may not have the power to erase chaos, but they can anchor amidst uncertainty rather than letting the circumstances overwhelm.

Instinctive and Intentional breathing

To understand what controls your breathing, let’s start with the brainstem. It’s the oldest and most primitive part of the brain, and it sits at the base of your skull. This *instinctive brain* governs critical automatic functions, including digestion, heartbeat, and breathing. It’s also responsible for your split-second reactions to immediate threats—for instance, quickly drawing your hand away from a hot pan.

Toward the front of the brain, behind your forehead, sits the *thinking brain*, which is responsible for learning, planning, and setting intentions. All regions of the brain require a constant flow of O_{xy}gen to function, and the lungs supply this life-enabling gas.

Your lungs are the only vital organ with dual modes of control. They're indirectly steered by both your instinctive and thinking parts of the brain.

Breathing is instinctive by default, and you're unaware of the process (unconscious breathing). But when you shift awareness to your breath, the 'thinking brain' takes over, and you get to decide when and how to use your breathing muscles (conscious breathing). Because of security reasons, the 'instinctive brain' supervises your conscious breathing. For instance, if you've held your breath for too long, it triggers discomfort or pain to keep you from inflicting damage to the body.

The instinctive and thinking parts of the brain are connected to different sets of nerves, and the lungs connect to both. This unique crosspoint allows a conscious change in the working of the lungs (breathing) to impact the body's unconscious operations. Even when such conscious breaths account for only a fraction of the total breaths taken in a day, they can trigger powerful reactions in the body.

Stress and stressors

Humans have an insatiable desire to achieve, succeed, go further, and reach higher in their personal and professional lives. The term *deadline*—used during the American Civil War to mean a literal “dead line” that prisoners should not cross—is now often used in the workplace to make tasks feel of paramount importance. You've probably been there: facing a deadline at work. I have no idea how you handle deadlines, but many employees feel their existence is compromised if they fail to deliver on time. A late delivery can affect company profits, but it's far from an existential threat.

To cope with modern deadlines and constant task overload, people involuntarily assign high threat levels to situations that aren't inherently dangerous. By that, they manage to push themselves beyond their limits. This trick of falsely elevating difficulties to life-threatening crises comes with a cost. When the mind constantly

screams “Wolf! Wolf!” the body becomes exhausted from hyper-vigilance and is left with diminished resources to handle a real threat.

The thing about stress is that it comes in all sizes. It can range from mild to extreme, and can be episodic or chronic. Being mildly stressed once in a while isn’t necessarily bad; it can build resilience. But staying under even mild stress for a long time can be damaging.

When feeling safe, you typically relax; this is the default state your body constantly aims to achieve. That’s the time essential life processes such as restoring, healing, growing, and rejuvenating occur. What characterizes this state is a relatively slow heartbeat, slow breathing tempo, and a feeling of calm. It’s termed the *rest-and-repair* state (*parasympathetic dominance*).

Once surrounding conditions change and cause stress, your body prepares to fight back or escape. Energy is mobilized from the inner parts of the body to the outer ones. Stimulating hormones are released, the immune system is suppressed, and the heart beats faster to improve the chances of overcoming the danger. It’s termed the *fight-or-flight* state (*sympathetic dominance*).

This physiological reaction to stress was beneficial to our ancestors, who had to face predatory circumstances, such as real tigers. But today, many of our tigers are deadlines and sensory overload present in the mind’s jungle. These ‘mind tigers’ feel as terrifying as real tigers. Consequently, non-life-threatening stressors such as social pressures and missed deadlines begin to spark primal survival reactions.

Counteracting stress manifestations

Stress in different forms is part of existence, and the body reacts in distinct patterns when experiencing stress. Typically, breathing becomes fast, moves higher in the lungs, and mouth breathing blends in. Evolution designed these reactions to give a survival advantage when a real tiger threatens, not for the ‘mind tigers.’

In the following segments, I’ll explain four basic and two advanced techniques for stress reduction. Each technique **counteracts a manifestation of stress** and can signal your

‘instinctive brain’ that there’s no imminent danger. Combining a few techniques and performing them simultaneously in a single breathing cycle can turn the routine into an effective tool for stress reduction.

Not all techniques work for everyone. That’s why, later in this chapter, I’ll suggest methods to test if a technique has a positive impact on you. The goal is to combine as many personally effective techniques as possible.

Basic Stress Reduction Techniques

Yogis claim that it's difficult to steal your peace when you own your breath. Let's look at some interesting techniques to gain breath ownership.

1 Reducing the speed of breathing

When facing an immediate physical threat, most people instinctively breathe faster, which gives a survival advantage. Under non-life-threatening stress, people tend to have a similar reaction.

The first technique for reducing stress is to breathe slowly or add brief breath-holds during each breathing cycle. It counteracts the instinct to breathe faster than normal when experiencing stress and signals your 'instinctive brain' that you're not in danger.

Breathing slowdown and air-hunger

Intentional slow breathing can signal your body to relax (we'll look at why this happens later). The question is, how slow should you breathe for optimum relaxation?

During a breathing slowdown, tranquility begins the moment you reduce tempo. The slower you breathe, the more you relax—until reaching a flipping point where slowing ceases to relax and becomes stressful. This turning point is marked by an unpleasant urge to breathe faster so more air gets into the lungs. Some people call this sensation *air-hunger*.

The onset of air-hunger is a landmark in your breathing profile. When attempting to relax, consciously reduce your breathing speed only until the onset of air-hunger. Once air-hunger sets in, retreat by

breathing slightly faster. This retreat is a gentle action that helps you avoid discomfort.

Air-hunger is influenced not just by your breathing speed but also by your breathing volume. Even when breathing at your usual speed, drastically reducing the volume of inhaled air can also trigger air-hunger.



Try it yourself!

Inhale gently and slowly through your nose, and exhale just as slowly. Gradually reduce the breathing speed in every consecutive breathing cycle. Breathe as slowly as you can without holding your breath. After a few cycles, do you feel the onset of a mild discomfort (air-hunger) urging you to breathe in more air?

Now, imagine you are only filling your nose with air. Inhale and exhale as little air as possible, but maintain more or less your normal breathing speed. After a few consecutive ‘micro-breaths,’ do you feel the discomfort of air-hunger and an urge to breathe more deeply?

A common error people make when trying to relax by slowing their breathing is simultaneously increasing their breathing volume. Breathing too deeply, even when slow, delays the onset of air-hunger, which can prevent relaxation. So, when trying to relax using this technique, I keep the breathing volume steady as the pace slows.

Breath-holding

Another way to relax is through breath-holding. A breathing stop creates a relaxation interval that begins the moment you hold your breath and lasts until the onset of air-hunger. During this interval, relaxation increases steadily, but only until the flip. When you’ve held

your breath for too long, the ‘instinctive brain’ detects that a limit has been crossed. This triggers the flip; air-hunger sets in, and breath-holding beyond this point induces stress!

The sensation of air-hunger doesn’t set in abruptly; it’s a gradual, crawling change. Measuring *air-hunger start time*, or the “appetite for air,” can give a rough estimate of how long to hold your breath for optimum relaxation.

When I first started to measure my air-hunger start time, the results were inconsistent. The measurement varied over time, just like my blood pressure, so assessing it periodically helped find my personal baseline.

The steps below will help you measure your personal air-hunger start time. Remember, the goal isn’t to extend the breath-hold as long as you can but to sense the slightest urge to breathe.



Measure your air-hunger start time

- Use a timer app on your smartphone.
 - Sit comfortably with a straight back and loosen your tongue and jaw.
 - Reset by breathing as you usually do for a couple of cycles.
1. Inhale normally through your nose.
 2. Exhale normally through your nose. Avoid forcefully deflating the lungs.
 3. Hold the breath and start the timer. Ensure no air moves in or out by sealing the lips and disabling the breathing muscles or using your fingers to seal the nostrils.
 4. Once you feel the slightest urge to breathe, note the number of seconds elapsed. This measurement denotes your air-hunger start time.

As a resetting action before starting to measure, I default to my unconscious breathing by reading a boring text or watching

something on a screen that doesn't excite me. If looking at the timer distracts me from identifying the urge to breathe, I set a metronome app to one beat per second and count the tickings in my head with my eyes closed. When I don't have a timer or don't want to use one, I mentally count "1-Elephant, 2-Elephants, 3-Elephants..." and so on instead of 1, 2, 3... to get close to a count of one per second.

There's a simple indicator to know whether your measurement is accurate. After measuring, if you can resume breathing effortlessly without gasping, then you haven't crossed the air-hunger start point. If you need to take a deeper-than-usual breath at the end of the measurement, you've probably held your breath for too long.

Typical versus exceptional breath-holding reactions

A breath-hold can be done with the lungs full, empty, or somewhere in the middle. Most people experience stimulation when holding their breath with full lungs. In exceptional cases, some feel stimulated when holding their breath with empty lungs.

Past personal experiences can influence the body's reaction to breath-holding. For instance, someone who had a near-drowning incident as a child may find that the 'instinctive brain' interprets low air volume as an immediate threat. Consequently, a full-lung breath-hold feels like safety, while an empty-lung hold feels like danger.

You can subjectively feel which type of breath-holding relaxes you, but here's another way to determine this characteristic reaction.



Try it yourself!

Inhale and fill your lungs, then hold your breath. Once you experience air-hunger, exhale abruptly and empty your lungs. Do you feel relieved when exhaling? Or do you want to draw air immediately?

If exhaling brings relief and air-hunger momentarily subsides, you can be classified as a ‘relaxed exhale.’ If air-hunger doesn’t momentarily subside after exhaling, you can be classified as a ‘relaxed inhale.’

I’m a ‘relaxed exhale,’ and throughout this book, I’ll assume you are, too. But if you aren’t, then replace the instruction to hold the breath after you exhale with holding your breath following an inhale.

The mode you hold your breath is also relevant to stress reduction, and there are three primary ways to do it:

1. With an outward pressure, as if about to exhale.
2. With an inward suction, as if about to inhale.
3. Neutrally, with no pressure or suction.

Most people hold their breath neutrally. If you tend to hold your breath with pressure or suction, monitor and loosen your breathing muscles during the breath-hold; this may help reduce stress.



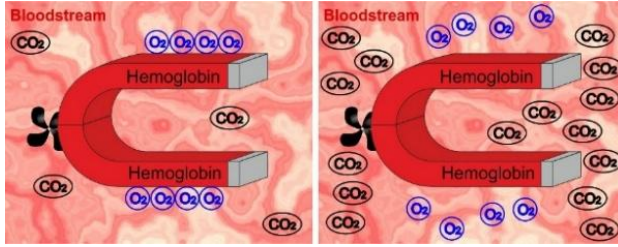
Why does slow breathing relax?

(If you wish to skip the science, jump to the Highlights at the end of this section)

When muscles work harder, they need more O_{xygen}. A question that puzzled scientists for several decades was: How does the body regulate O_{xygen} delivery to cells that are more active?

In the early 1900s, a Danish physiologist named Christian Bohr worked hard to solve this mystery. Bohr discovered that hemoglobin—the O_{xygen} carrier in blood—is sensitive to the surrounding concentration of Carbon Dioxide. The more Carbon Dioxide is present around the hemoglobin carrier, the easier it is to release its load of O_{xygen}. This means that:

- Only in the presence of sufficient Carbon Dioxide will hemoglobin release its O_{xygen} cargo to the cells.
- The more Carbon Dioxide around the cells, the easier it is for those cells to absorb O_{xygen} from hemoglobin.



In the presence of high levels of Carbon Dioxide (CO₂), the bonds between Oxygen (O₂) and hemoglobin become weaker

This mechanism, named the Bohr Effect, explains how the body regulates Oxygen delivery and how slow or no breathing (to a certain extent) provides even more Oxygen to the cells.

When the body burns the foods we eat, it releases energy and Carbon Dioxide into the bloodstream. During a breathing slowdown or breath-hold, this Carbon Dioxide is not expelled, and so its concentration rises in the bloodstream. An increased availability of Carbon Dioxide causes hemoglobin to release its load of Oxygen more easily to the cells. If the concentration rises beyond admissible limits, the brainstem activates the breathing muscles to ensure a steady supply of Oxygen.

High levels of Carbon Dioxide dilate (open) the blood vessels, and low levels constrict (close) them. Naturally, when the concentration of Carbon Dioxide in the bloodstream rises, blood vessels dilate, blood pressure drops, and stress is reduced.



Highlights of stress-reduction technique #1

You can relax by slowing your breathing or adding brief breath-holds. Use the first signs of air hunger as the limit, and avoid pushing beyond that point.

You relax because these actions increase bloodstream Carbon Dioxide. This opens blood vessels, causing a lowering of blood pressure.

#2 Extending exhales

When facing an immediate physical threat, most people instinctively lengthen their inhales and shorten their exhales. This is the body's way of keeping a heightened state of alert to increase chances of survival. Under everyday stress, people tend to react similarly.

The second technique for reducing stress is to repeatedly extend the exhale so that it's longer than the inhale. This counteracts the instinct to lengthen the inhales and signals your 'instinctive brain' that you're not in danger.

Breathing ratio

Breathing ratio is the amount of time spent inhaling versus the amount of time spent exhaling. When relaxed, you instinctively (unconsciously) extend the exhales compared to your inhales. Under stress, your breathing ratio flips, and the inhales instinctively become longer.

You can intervene (consciously) and force your exhale to be longer than the inhale to promote relaxation. A breathing ratio of 1:2 (exhale lasts twice as long as the inhale) induces relaxation for most people, but for some, ratios such as 1:1.5 or 1:3 work better.

Mantra pacing

The word *mantra* is now a part of many languages, used to describe a rhythmic repetition of words. Repeating a syllable, word, or short phrase can serve as a timer to help structure your breathing pace or change the breathing ratio in your favor. When synchronizing inhales and exhales with mantra recitation, erratic breathing becomes more rhythmic, which is essential to promote relaxation.

Repetitions of a mantra can be slow or fast; you can adjust it to suit personal preferences. There are no strict timing constraints as in

counting seconds, which allows adopting an independent pace. Besides that, you can add a soothing meaning to the mantra and recite the words verbally or mentally. Sacred words work for some; simple, everyday words work for others. When first choosing a mantra, try finding one in your mother tongue because that's the language your mind usually thinks in.



Why does changing the breathing ratio relax?

(If you wish to skip the science, jump to the Highlights at the end of this section.)

A change in breathing ratio affects the heart rate, which in turn affects stress levels.

Stretch sensors (receptors) in the lungs send information to the brainstem if the lungs are expanding or contracting. The brainstem slightly increases the heart rate when sensors stretch, so as to compensate for the increased muscular efforts needed for inhaling. The effort required for each inhale may seem insignificant, but with about 20,000 breaths taken daily, the energy expended adds up. Conversely, the brainstem slightly decreases heart rate during lung contraction. So, the heart beats slightly faster during inhalation and slightly slower during exhalation. These cyclical changes create heart rate variability (HRV).

Prolonging an exhale decreases the heart rate (on average) and relaxes the nervous system. The opposite is also true; prolonging an inhale increases the heart rate (on average) and excites the body, moving it toward fight-or-flight.



Try it yourself!

Press your finger against the wrist or behind the earlobe to find your pulse. Breathe fully and deeply for a few cycles. Can you feel your heart beating faster when inhaling than when exhaling?

I couldn't sense the subtle pulse changes, but some people can. Digital measuring equipment makes it much easier to detect heart rate fluctuations between inhaled and exhaled.



Highlights of stress-reduction technique #2

You can relax by extending your exhaling duration to be longer than your inhaling duration. Recite a calming mantra more times on the exhale than on the inhale.

You relax because an extended exhale slows the heart's beating.

#3 Bringing air to the bottom of the lungs

When facing an immediate physical threat, most people's breathing instinctively migrates to the top of their lungs. This is the body's way of rapidly powering the muscles to fight or flee. Under everyday stress, people tend to react similarly.

The third technique for reducing stress is bringing air to the lung's bottom using the diaphragm. It counteracts the instinct to breathe with the upper parts of the lungs and signals your 'instinctive brain' that you're not in danger.

Breathing muscle activation

Your lungs function as an air pump, and the breathing muscles are like small motors driving them. Activating the right muscles at the right moment can relax; failing to do so may induce stress.

Ideally, the diaphragm is the engine that drives your breathing. This robust muscle, shaped like a jellyfish or a dome, connects to the bottom of the lungs. On every inhale, it contracts and moves downward like a slow piston, making room for the lungs to expand. At the end of the descent, the diaphragm flattens like pizza dough.

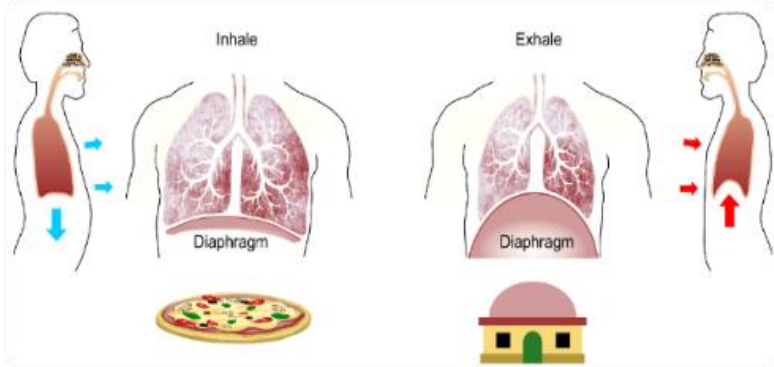



Illustration of the diaphragm descending and ascending

Inhaling is the active phase of breathing, where the belly expands and moves outward. Exhaling is passive—the diaphragm recoils upward into its dome shape, and the belly goes back in. The diaphragm is supported by the rib cage and chest muscles, which are fast but limited in their ability to expand. All three, the diaphragm, rib cage, and chest muscles, put together form your primary breathing muscles.


The accessory breathing muscles—neck, shoulders, and abdomen—kick in when the body makes a concentrated physical effort, for instance, when you sprint. If they are in use while you're not physically active, the brain interprets the usage as a sign of a possible threat.


I once laid out a sweeping proposal in a work meeting to switch from a costly supplier to one offering a lower price. With it came a

warning that the samples we got were fine, but there's no guarantee on the quality of a bulk order. On hearing the suggestion, the colleague seated in front of me noticeably began moving his shoulders up and down with every breath. My risky proposal had clearly stressed him. This kind of activation of the accessory breathing muscles is easy to spot in a person sitting in front of you, but sensing your own subtle shoulder movements when breathing can be challenging. Here's a simple method to amplify the sensations for self-assessment.



Monitoring breathing muscle activation



Click to view [Video demo](#) or scan 

1. Cross your hands and grip the opposite shoulder with each hand.
2. Rest one elbow on your breastbone (sternum), and point both elbows toward your navel.
3. Breathe normally for a few rounds and observe the range of motion of your hands and elbows. If your shoulders or arms move noticeably with each breath, your accessory muscles are overworking.

I use this monitoring method to train myself in using my primary breathing muscles. The focus is on keeping my shoulders still and allowing only a mild expansion of my rib cage. If the shoulders lift noticeably, I direct my breath downward till my primary breathing muscles take the lead.

Maximum and minimum diaphragm amplitude

When breathing fully, you can either inhale using all three primary breathing muscles or inflate your lungs only using the diaphragm to maximum extent. Being aware of your diaphragm's range of motion and using this muscle to its maximum and minimum ensures that your breathing volumes remain consistent across cycles.

The point of maximum expansion (excursion) to which you can engage your diaphragm is what we'll call *maximum diaphragm amplitude*. Repeatedly inhaling to maximum amplitude trains the diaphragm and also increases its range of motion. A simple prop that can help in training is a scarf. I tie the piece of cloth snugly around my midriff to restrict the lower part of my rib cage from expanding, and inhale using my diaphragm against the scarf's resistance. It's an excellent workout.

To inhale fully, it's important to first exhale deeply. Did you ever consider how deep your exhale goes? When disengaging the diaphragm and allowing it to recoil completely, there comes a point where you'll need to use your abdominal muscles to continue exhaling. That's your *minimum diaphragm amplitude*.



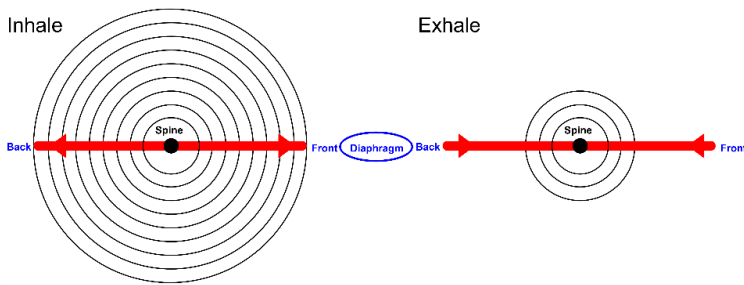
Try it yourself!

Take a full inhale to maximum diaphragm amplitude. Then start exhaling to deeply deflate your lungs, and focus on your diaphragm's movement. Can you identify where you need to engage the abdominal muscles to empty the lungs further?

Maximum and minimum diaphragm amplitudes are two definite landmarks in your breathing, which we'll refer to throughout the book.

Diaphragm activation in 360°

When asked to breathe using the diaphragm, people associate it with the belly going in and out. If the diaphragm descends (flattens) and the belly moves forward without a complementary backward movement, the result is a 180° excursion. This *flap diaphragmatic activation* sends relatively weak signals of relaxation to the ‘instinctive brain.’ To send stronger relaxation signals, your diaphragm should move in 360°.



Visualizing 360° diaphragmatic breathing

Perceiving the diaphragm as an all-around muscle can help with activating it more effectively. Here’s a method for sensing the diaphragm with your fingers.



Tracing the diaphragm in 360°



Click to view

[Video demo](#)

or scan



1. Place the fingertips of both your hands where your lowest ribs meet, at the base of the breastbone (sternum). Trace down the lowest rib on each side of your body with your fingertips.

2. Continue until you reach the lowest points of the bottom ribs. That's about half of your diaphragm's circumference.
3. Trace the second half by following the ribs around until your fingers reach the backbone (spine). This is the rest of your diaphragm's circumference.

Using the fingers, I can easily trace the front half of my diaphragm from the breastbone down to the lowest ribs, but the back half is tucked too deep to feel clearly.

Diaphragmatic breathing

Stress sometimes causes that classic “butterflies in the stomach” feeling, which you probably know from experience. Gut-churning is a common manifestation of stress, and when that happens, I consciously activate my diaphragm for relief.

Diaphragm activation also helps other essential body processes, including digestion and elimination. The diaphragm is in direct contact with the heart, liver, spleen, and gut. Its movement is a form of ‘organ massaging’ that also indirectly affects the pancreas, kidneys, and bladder. The lymphatic system, which disposes toxins from the body but lacks an active pump, relies on diaphragmatic movements to drain and circulate lymph fluids.

Yogic diaphragmatic breathing is a simple and effective way to engage the diaphragm and monitor its activation. Here's how it's done.



Diaphragmatic breathing



Click to view

Video demo

or scan



- Sit comfortably with a straight back and close your eyes.
 - Loosen your tongue and jaw.
 - Reset by breathing as you usually do for a couple of cycles.
1. To better sense the inflation and deflation at the bottom of your lungs, place one palm on the stomach and the rear part of the other hand on your back so that both palms are parallel.
 2. Inhale so that the diaphragm expands in 360° to maximum diaphragm amplitude; the parallel palms would move away from each other.
 3. Exhale by relaxing the diaphragm, allowing it to return to its neutral dome shape; the parallel palms would move toward each other.

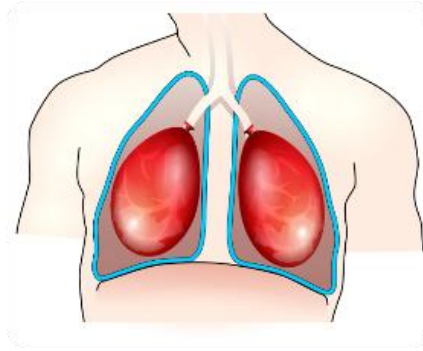
When engaging my diaphragm in 360° , expanding the rib cage is inevitable. I sometimes use my abdominal muscles to squeeze out more air and exhale deeply; immediately after, I loosen them. Monitoring the activation in this way improves the efficiency of diaphragmatic breathing.



Why does air at the bottom of the lungs relax?

(If you wish to skip the science, jump to the Highlights at the end of this section.)

Human lungs are like two balloons contained in lubricated, inflatable bags. The breathing muscles are attached to these bags, not the lungs. When the muscles pull the bags out, a vacuum is created, and air flows into the lungs.



Balloon-like lungs in lubricated bags

Inside the lungs are hundreds of millions of tiny bubbles (alveoli), each surrounded by an unimaginably thin membrane. The collective surface area of these membranes is as vast as a tennis court, and their structure enables bidirectional, seamless gas exchange between the inhaled air and the bloodstream. Remarkably, when Oxygen and Carbon Dioxide come into contact with the opposite sides of these bubbles, they spontaneously swap sides. This natural gas exchange allows Oxygen absorption during inhalation and Carbon Dioxide expulsion during exhalation.

The bottom of the lung has a higher concentration of exchange bubbles compared to the upper part. Because the bubbles at the bottom are more closely packed, air moves through this region more slowly. Slow airflow allows more time for Oxygen to diffuse into the bloodstream and for Carbon Dioxide to be expelled. Being a relatively sluggish muscle, the diaphragm matches well the dense gas-exchange region at the bottom of the lungs and allows an effective, slow exchange. In contrast, the top of the lung contains fewer exchange bubbles; it's not as densely packed. The airflow up there is rapid, matching the quicker chest (and shoulder) muscles, allowing for faster gas exchange.

Normal unconscious breathing at rest typically moves 0.5 L of air per breath. This is called tidal volume. When inhaling to maximum diaphragm amplitude, the volume of air entering the lungs is approximately 3 times the tidal volume for women and 4 times for men (1.5–2 L). So, prolonged breathing to maximum diaphragm

amplitude at a normal breathing rate can disrupt blood gas balance by flushing out too much Carbon Dioxide, which can consequently induce stress. To avoid this overbreathing, a proportional slowdown is necessary.



Highlights of stress-reduction technique #3

You can relax by engaging your diaphragm in maximum amplitude, expanding it in 360°.

You relax because diaphragmatic breathing gets air to the bottom of the lungs, where Oxygen and Carbon Dioxide exchange effectively.

Before moving on to the last basic relaxation technique, here's something I once read: "The destination of relaxation gets closer when your diaphragm drives your breathing."

#4 Exclusive nose breathing

When facing an immediate physical threat, most people instinctively gasp through the mouth. Mouth breathing allows a quicker, larger intake of air when the body prepares for a swift response. Under everyday stress, people tend to react similarly.

The fourth technique for reducing stress is breathing only through the nose. It counteracts the instinct to breathe through the mouth and signals your 'instinctive brain' that you're not in danger.

Nose versus mouth inhaling

Before vision became the primary source of sensory information for survival, humans relied heavily on their sense of smell. Every inhale provided crucial information for finding food, assessing if it's

edible, finding a mate, and detecting danger. All this vital information is still sent from smell sensors to your ‘instinctive brain’ for evaluation. If the air inhaled smells pleasant or neutral, it’s allowed further toward the lungs. Unpleasant or foul air is instinctively rejected by exhaling.

Research has shown that with every nose inhale, the ‘instinctive brain’ receives a ‘smell indication pulse’ from the nasal sensors. Absence of this pulse triggers an increase in vigilance, as occurs during mouth breathing. When there’s no clear odor information (or not enough), the ‘instinctive brain’ leans toward fight-or-flight, making it more difficult to relax.

During a nose inhale, the fine hairs in your nostrils trap rough pollutants, and the nose’s mucus lining functions as a wet, sticky filter that catches the smaller particles. Beyond the nostrils, inhaled air travels through your nasal cavity, which is about the size of your fist and resembles a maze with narrow passages (turbinates).

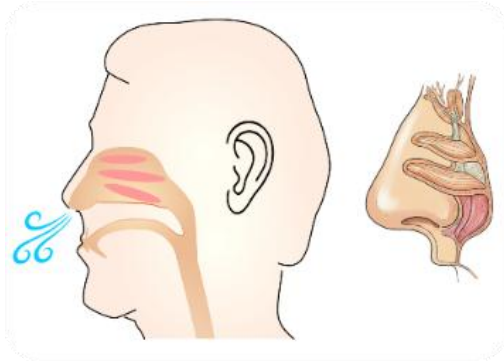


Illustration of the nasal cavity maze

In the nasal cavity, air is disinfected before it moves towards your lungs. Airflow encounters resistance when traveling through the narrow nasal cavity maze, and this naturally slows your breathing rate. The passing air also picks up moisture and heat from the maze’s structure. This temperature-adjusted, moist air (unlike cold, dry air) allows efficient gas exchange in the lungs, which promotes relaxation.

Mouth inhales bypass these systems entirely. The relatively wider airways and broad mouth cavity create lower resistance, leading to

shallow, uneven breathing. Without mucus filtering and nasal resistance, inhaled air remains unfiltered, as it rushes toward the lungs. The body then expends extra energy on warming and moisturizing this air, and your immune system works harder to combat the invaders that your nose could've neutralized upfront.

Nose versus mouth exhales

When nose-exhaling, air takes a reverse route from your lungs to the nostrils. As air passes through the nasal cavity, two amazing processes occur: heat and moisture reuse.

An exhale, leaving your lungs, is close to your body temperature, and the air deposits its heat and moisture onto the surface of the nasal cavity maze on the way out. Subsequent nose inhales pick up this heat and moisture from the structure, preserving your body's energy and delaying dehydration.

Since these fantastic heat and moisture recycling processes are absent during mouth breathing, your mouth exhales are warmer and more humid than your nose exhales. Try the experiment below to see this effect in action.

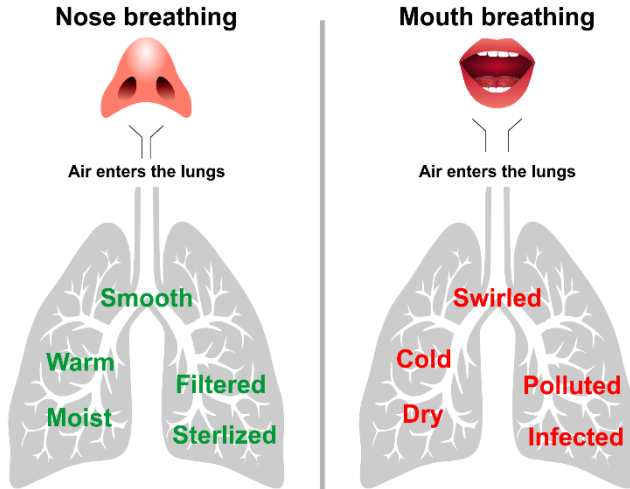


Try it yourself!

Place your palm in front of your nostrils. Exhale through the nose at low and steady pressure. Now, move the palm in front of your mouth, and exhale through the mouth at the same low and stable pressure. Do you sense a temperature difference?

Hold the top of a smartphone screen close to your nostrils. Push air through your nose with low and steady pressure, making the screen glass foggy. Next, exhale through the mouth onto the bottom of the screen at the same low, steady pressure. Is there a difference in the amount of fog deposited?

Getting the air jet from my nose to match the flow from my mouth took me a bit of practice. When demonstrating fogging difference, I use a transparent glass instead of a smartphone screen because it's more visual.



Nose versus mouth breathing

Air is critical to existence, and having two air channels improves the chances of survival; it's an insurance policy. When facing life-threatening circumstances, muscle power may be crucial to avoid a catastrophe, and that's when mouth breathing has a clear advantage. In the face of imminent threat, forget microbes, pollutants, and recycling; those you can address once you're safe. But when going through everyday stress, mouth breathing can amplify fears and cloud judgment. So, it's better to opt for quality nose breathing over quantity mouth breathing.

Yogis described the above differently, saying the nose allows 'life energy' to flow smoothly in and out of your body while the mouth restricts it.



Why does nose breathing relax?

(If you wish to skip the science, jump to the Highlights at the end of this section.)

In addition to naturally regulating airflow and air quality, nose breathing harnesses an incredible gas called Nitric Oxide. This toxic gas, in minimal quantities, opens airways and plays a central role in many of the body's processes.

The inhaled air passing through the nasal cavity blends with the Nitric Oxide generated in the sinuses and continues toward the lungs. Nitric Oxide not only disinfects invaders but also promotes mucus generation in the nasal cavity, further boosting sterilization.

Nitric Oxide has another significant function: it dilates the airways and lung blood vessels, improving airflow and blood flow. Better blood flow means more Oxygen reaches the brain and muscles, which eases tension. Another notable quality of Nitric Oxide is that it improves lung elasticity and prevents membrane stiffness.

Unlike rushed mouth breaths, which trigger the release of stress hormones, nose breathing calms the nervous system and, in turn, induces relaxation.



Highlights of stress-reduction technique #4

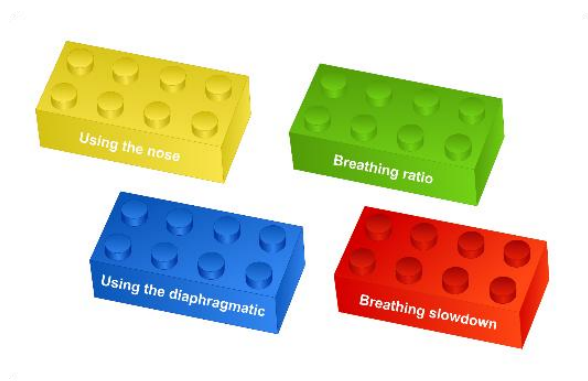
You can relax by exclusively breathing through your nose.

You relax because air passing through the nose is filtered, heated, moisturized, pressurized, and treated with Nitric Oxide. When this air reaches your lungs, Oxygen and Carbon Dioxide exchange efficiently.

Creating breathing tools

At one time or another, you probably played with plastic toy bricks that connect with a gentle press; it could have been when you were a kid or while playing with a child. A Danish furniture maker came up with the idea for these brilliant interlocking bricks nearly 100 years ago and called it Lego. Since then, generations of children worldwide have developed creative and technical skills by constructing anything and everything from these toy bricks. I live not far from where it all started.

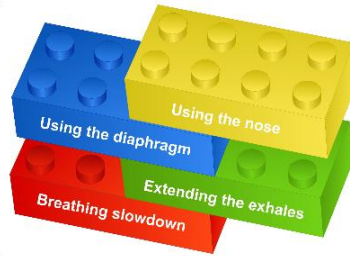
When bought from a shop, toy bricks typically come in a cardboard box with detailed assembly instructions and a vivid picture of the expected result. This teaches children to build by following directives, which is an important skill. In many homes, including mine, these toy bricks inevitably end up jumbled in a big container. What used to be a pirate ship, a castle, or a UFO is now a pile of bricks in many different colors and sizes, without assembly instructions. That's when kids develop another important ability: using their imagination to build by combining whatever bricks they can find. It often involves experimenting and a process of trial and error. That's precisely what I suggest you do with the many techniques you'll learn in this book.



Each technique is a 'breathing brick' you can build with

The four basic stress-reduction techniques you have learned so far are fundamental, and combining two or more of these 'breathing bricks' into a breathing tool gives an accumulating effect.

Like loose toy bricks, you don't need to use every available breathing brick when assembling a breathing tool. Choose the techniques that work for you, and combine them in a single breathing cycle! What does that mean? It means that the techniques are performed simultaneously rather than consecutively. Methods for testing if a technique is personally useful will follow.



Building a breathing tool with the 'breathing bricks'

Executing multiple breathing techniques within a single breathing cycle may initially seem daunting, especially when under stress. A good way to get acquainted with a breathing tool without overwhelming yourself is to add the techniques gradually and evaluate the impact. For example, try combining a breathing slowdown with diaphragmatic breathing and feel how it affects you.

Mastering a combination in advance is the key to success when trying to benefit from a breathing tool in real life. The best time to practice is under calm circumstances. That way, when thrown into a stressful situation, you're more likely to pick and use the particular tool intuitively.

Basic relaxation tools

Let's assemble a simple stress-reduction breathing tool that combines four techniques:

- a) Breathing slowdown
- b) Extending exhales
- c) Diaphragmatic breathing
- d) Exclusive nose breathing

If you don't have a relaxation mantra, you can use mine: "Peace and Quiet."



General Relaxation Tool

- Sit comfortably with a straight back and close your eyes.
 - Loosen your tongue and jaw.
 - Breathe silently.
1. Inhale through your nose to maximum diaphragm amplitude. Simultaneously, mentally recite your relaxation mantra twice.
 2. Exhale through the nose to minimum diaphragm amplitude. Simultaneously, mentally recite your relaxation mantra four times.
 3. Repeat for a few breathing cycles.

When breathing to maximum and minimum diaphragm amplitudes, I ensure that air volumes across the breathing cycles remain approximately the same. My mantra recitation tempo dictates my breathing speed, and the number of repetitions defines my breathing ratio.

An effective variation of the General Relaxation Tool is adding breath-holds. I use a dedicated breath-holding mantra; it's the word "relax."



General Relaxation Tool + Breath-Holds

- Sit comfortably with a straight back and close your eyes.
 - Loosen your tongue and jaw.
 - Breathe silently.
1. Inhale through your nose to maximum diaphragm amplitude. Simultaneously, slowly recite your relaxation mantra once.
 2. Exhale through the nose to minimum diaphragm amplitude. Simultaneously, slowly recite your relaxation mantra twice.
 3. Hold the breath until you gently reach air-hunger. Simultaneously recite your breath-holding mantra.
 4. Repeat for a few breathing cycles.

While holding my breath, I extend the ‘a’ in my relaxation mantra; on reaching air-hunger, I recite the final letter ‘X’ and inhale. The result sounds like: “RelaaaaaaaaX.”

The stress-reduction techniques described so far regulate your breathing’s speed (and volume), ratio, muscle activation, and breathing channel to signal your ‘instinctive brain’ to relax. You can also use other muscles in your body—those that are seemingly unrelated to breathing—for amplifying these signals. That’s what the next category of relaxation techniques is all about.

Advanced Stress Reduction Techniques

Each advanced technique below is a small, deliberate action that can move your body toward relaxation; you can stack these on top of the four basic stress-reduction techniques to augment their effects. It's like getting additional toy bricks to build with.

#1 Smile-breathing (The Game Changer)



Under stress, your face mirrors the tension—eyes widen with worry, jaw muscles tighten, teeth clench, lips stiffen, and the tongue tenses. When facing non-life-threatening stressors, forcing (faking) a smile can be the perfect antidote.

The first advanced technique for stress reduction is adding smiles to the inhales and releasing them on the exhales. It counteracts the instinct to stiffen facial muscles and signals the ‘instinctive brain’ that you’re not in danger.

A perfect smile

Humans spontaneously smile when they feel happy, but it also works the other way: forcing a smile makes people feel happier. Smiling is bidirectional; it results from happiness, and it initiates happiness. So, what happens in the body when you smile?

Smiling floods the bloodstream with a cocktail of mood-enhancing hormones, which have an effect similar to that of a

tranquilizer or a painkiller. Forced smiles can bring many of the benefits that genuine smiles do. Even when watching someone else smile, a lower dosage of tranquilizing agents is released into the bloodstream. That's why the company of smiling people is sought after. Smiling people leave the impression of being confident, competent, trustworthy, successful, sincere, attractive, and relaxed.

Positive smiles, such as grins, courteous smiles, and hearty smiles, are usually relaxing by nature, but there are also negative smiles, such as sarcastic, sadistic, and dominating ones. I was out to find which positive smile would help me gain the most relaxation. Thinking "reverse engineering," I tried to fake my spontaneous smile—the one that lights up my face when I'm genuinely happy. By watching a video recording of myself smiling spontaneously, I tried to pinpoint which facial muscles were being activated during smiling, but it was challenging, and my replicated (faked) smiles didn't feel right. Further investigation was needed.

In the 1860s, a French neurologist named Duchenne researched the characteristics of authentic, positive smiles to determine what differentiated them from fake smiles. He concluded that when people express genuine happiness, they activate their facial muscles so that two things happen:

1. The corners of their lips curl up toward their ears.
2. Their eyes become slightly narrower and squinted, so the natural wrinkles at the outer corners of the eyes (called crow's feet) become accentuated.

A smile with these characteristics was named a Duchenne smile. Duchenne further noted that smiling with only one of these characteristic elements can turn a smile negative.

The following story demonstrates why both elements of a Duchenne smile are essential to produce a positive effect. The airline Pan American World Airways, shortened to Pan Am, went bankrupt, but the term "Pan Am smile" still exists. Pan Am flight attendants were instructed to smile when interacting with customers, no matter what. Unfortunately, the company rules came with no guidelines on how to smile. Because of the frequent, prolonged smiling, many

flight attendants stopped engaging their eye muscles and used only the muscles around their mouths to smile. Their forced, courtesy smile became obviously “plastic.” The result was precisely the opposite of what Pan Am authorities had hoped for.

Smiling enhances balance and focus

As years tick by, my ability to maintain balance standing on one foot declines. Gravity teases me. To slow the gradual loss of stability, I practice yoga postures such as the dancer, eagle, and tree, trying to keep balance while standing on either the left or right foot.

Balancing on one foot



Click to view

Video demo

or scan



The last exercise I do on one foot gives me the most feedback on my ability to balance. It’s simply standing on one foot with my eyes closed and trying not to lose balance for a few breathing cycles.

It’s the brain that constantly sends correction signals to different muscles, preventing the body from falling, and the diaphragm plays a significant role in the stabilizing effort. Before sending muscle activation signals, the brain evaluates information from three primary input sources:

1. Vision
2. Ear fluids (gyroscope)
3. Touch sensations from the feet

When I stand on one foot with my eyes closed, there’s no visual input. My brain is left with information from the ear fluids and sensations from the single foot I’m standing on. Eliminating visual input makes it far more challenging to keep balance.

Over the years, I noticed that breathing significantly affects my ability to stay stable. While standing on one foot with closed eyes, more often than not, the inhale triggers an instability that ripples into the following exhale. When exhaling, I feel more solid and try to regain control over the instability. That's not surprising because inhaling engages breathing muscles; exhaling is an effortless recoil.

An interesting self-observation was that I maintained better balance on one foot when smiling; smiles calmed me. So, I forced an ear-to-ear Duchenne smile when training and froze it, hoping to get an overdose of the relaxing hormones. To my disappointment, the tranquility faded after a short while, leaving me feeling strained rather than relaxed.

You probably have a favorite fruit; eating it makes you feel good. If you eat a lot of it and don't stop, the liking quickly turns unpleasant. Forcing a smile beyond a few seconds gave me the same feeling—an overdose aversion.

Transitioning in and out of smiling produced better results than freezing the smile for the same period; further trials confirmed that repeating smiles relaxed me better than holding a smile. Knowing that I'm less stable while inhaling on one foot, that seemed a perfect moment for getting a shot of relaxing hormones to offset the cyclical instability caused by breathing. So, I smiled during the inhale and maintained a neutral facial expression during the exhale, allowing me to smile again on the next inhale. The results were significantly positive.

Smile-breathing

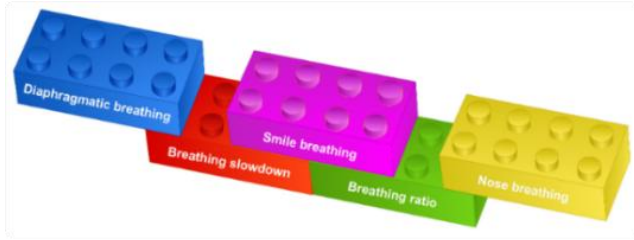
Healthy children smile a few hundred times daily; cheerful adults decorate their faces with a few dozen smiles a day. If you don't use your 'smiling muscles' frequently, they lose functionality; it's the classic use-or-lose.

Smiling in cadence with breathing cycles is an effective workout, and I call it *Smile-breathing*. If you're like me and transitioning into a smile relaxes you, synchronizing smiling with your breathing can do wonders for you. As your breathing muscles engage during an inhale

and your heart beats slightly faster, adopt a Duchenne smile to ease the stimulation. On the exhale, release the smile and shift to a neutral facial expression. That's how you smile-breathe.

Authentic smiles may involve open or closed mouths. Broad smiles that fully expose the teeth to the gums (gummy smiles) are natural for some; others expose only a small portion of their teeth while smiling. For some, grinning with closed mouths feels natural. I don't know how you smile spontaneously, so find out your 'teeth exposure tendency' and adopt it when you fake a smile for relaxation.

Now, let's place the smile-breathing brick on top of the other breathing bricks.



Smile-Breathing

General Relaxation Tool + Smiling



Click to view

[Video demo](#)



or scan



- Sit comfortably with a straight back and close your eyes
 - Loosen your tongue and jaw.
 - Breathe silently.
1. Inhale through your nose to maximum diaphragm amplitude. Simultaneously, slowly recite your relaxation mantra twice and smile.

2. Exhale through the nose to minimum diaphragm amplitude. Simultaneously, slowly recite your relaxation mantra four times and assume a neutral facial expression.
3. Repeat for a few breathing cycles.

My teeth tend to show when smiling spontaneously, so that's what I do during smile-breathing. It may look like I'm mouth breathing because my teeth are visible, particularly when beginning to exhale, but that's not the case; I breathe exclusively through my nose.

| | Inhale | Exhale |
|--------------------------|---|---|
| Facial expression |  |  |
| Diaphragm | Maximum amplitude | Minimum amplitude |
| Mantra | "Peace and quiet" X2 | "Peace and quiet" X4 |

Another important conclusion from my smiling investigation is that transitions are vital when smile-breathing, but they don't necessarily have to be from a smile to a neutral expression. For some people, and I'm one of them, transitioning from an intense smile (with exposed teeth) to a grin (with closed lips) is more relaxing than transitioning from a smile to a neutral expression. So, experiment with transitioning between different smile intensities to find what works best for you.



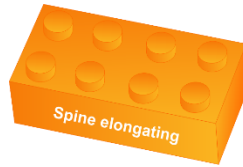
Highlights of advanced technique #1

You can relax by adding smiles to your inhales and assuming a neutral facial expression or reducing smile intensity when exhaling.

You relax because transitions into smiling release a cocktail of relaxing hormones into the bloodstream.

They say a smile is the shortest distance between two people; so I've put together a selection of breath-related humor in [Appendix A](#). Have a look, there's a good chance it'll charm a spontaneous smile out of you 😊

#2 Spine elongation



When facing danger or feeling vulnerable, most people hunch forward and assume a closed posture. This reaction reduces abdominal exposure and protects sensitive organs from a physical threat.

The second advanced technique for stress reduction is intentionally elongating the spine while inhaling (or breath-holding). It counteracts the instinct to hunch forward when experiencing stress and signals your 'instinctive brain' that you're not threatened.

Stretching merits

Many animal species rapidly shake their bodies after escaping a life-threatening situation to discharge excess energy and calm their nervous systems. Shaking the body can reduce agitation in humans, but synchronizing it with breathing is challenging because of the rapid movements. An alternative to body shaking is body stretching, which is easier to sync.

Chemical, physical, and neurological changes occur when you stretch your body correctly. Stretching promotes the release of relaxing hormones, improves blood flow, and reduces muscle tension. Nearly all vertebrate animals instinctively stretch their body when feeling safe.

Forward slouching restricts diaphragmatic motion and prevents air from reaching the lungs' depths. A straight spine allows a deeper descent and higher ascent for the diaphragm. Elongating the spine minimizes 'lung crimping,' improves spinal fluid flow, and can bring a feeling of safety. Synchronizing stretching with a breathing stage, for example, during inhalation, can enhance its effects.

I have noticed that elongating my spine during a breath-hold and stretching it slightly out of its natural curvature extends the time it takes me to reach air-hunger by a couple of seconds. Use the experiment below to check how spinal elongation affects your personal air-hunger limit.



Try it yourself!

Mildly slouch forward. Inhale fully and then exhale deeply while retaining the posture. Now, hold your breath. As you feel the slightest urge to breathe (air-hunger start), abruptly elongate your spine. Does your feeling of air-hunger momentarily subside?

Similar to smile-breathing, it's the repeated spine elongation that feels more relaxing than holding a straight spine for the same duration.



Adding spine elongation to the General Relaxation Tool



Spine Elongation

General Relaxation Tool + Stretching



Click to view

[Video demo](#)

or scan



- Sit comfortably and close your eyes.
 - Loosen your tongue and jaw.
 - Breathe silently.
1. Inhale through your nose to maximum diaphragm amplitude. Simultaneously, slowly recite your relaxation mantra twice.
 2. Exhale through the nose to minimum diaphragm amplitude. Simultaneously, slowly recite your relaxation mantra four times.
 3. Hold the breath and simultaneously elongate the spine; drop your shoulders, draw the shoulder blades closer, and increase the arching of your lower back. Retain this posture until you gently reach air-hunger.
 4. Repeat for a few breathing cycles.

In the words of the yogis, inviting an upright spine opens the door to relaxation.



Highlights of advanced technique #2

You can relax by repeatedly elongating your spine in sync with your breathing.

You relax because straightening the spine reduces muscle tension, calms the nerves, minimizes ‘lung crimping,’ and allows efficient gas exchange in the lungs. It also slightly extends your air-hunger start time.

Years ago, I met a woman who told me that gentle belly rubbing relaxes her when she’s stressed. She said, “I do it for some time, but after a while, the relaxation fades.” If I saw her today, my advice would be to sync the rubbing with a breathing stage. For instance, rubbing only when inhaling (or exhaling). This simple breath-led separation may extend the relaxing effect. If you’re aware of a specific action that relaxes you, try synchronizing it with a breathing stage and test if it enhances the effect.



Visualization is another action that can be synchronized with a breathing stage and used as a stress-reduction technique. We’ll get to that in Chapter Eleven, which discusses thought regulation. Now that you’re equipped with some relaxation techniques, let’s look at ways to assess if they work for you.

Evaluating Breathing Techniques

You can subjectively feel whether a specific breathing technique helps in reducing your stress. For sharper indications, you can rely on certain bodily sensations that you might not have noticed till now.

Idle visions



When closing your eyes in the presence of light, particularly a bright source, even with shut eyelids, it's possible to sense changes in the surrounding light intensity. That's because light penetrates the closed eyelids.

An interesting case is when there's no sensory input to the eyes, for instance, in a totally dark room or when properly blindfolded. The brain doesn't perceive absolute darkness as uniform 'black,' and there's still plenty of visual activity even in the absence of light. As if there's a dim inner source of illumination, the eye sensors remain active, and something similar to a computer's screensaver replaces normal vision.

The images on this 'screensaver' resemble a changing hologram or aquarelle painted in varying shades of gray. In some cases, there are glow-in-the-dark specks of light moving around, various

geometric shapes, flashes, traces of color, etc. These inner images have a background called intrinsic gray color or *eigengrau*. The act of looking at the images with closed eyes is what I call *idle visions*.

Things that may impact your idle visions are:

- The last image looked at before light prevention (persistence of vision)
- Changes in light passing through closed eyelids
- Eyelid movements
- Eyeball positioning
- Coughing, sneezing, or other abrupt exhalations
- Breathing



Try it yourself!

Cover your eyes with both palms to tightly block light from reaching them. Keep your eyes covered for a few breathing cycles. Can you see faint grey images in motion?

Continue to cover your eyes tightly and start breathing rapidly for a few cycles (hyperventilate). Do you see a change in your idle visions?

Concentrating on the images projected behind my eyelids helps me assess how a breathing technique impacts me. For example, a pulsating area, particularly at the bottom of the ‘screensaver,’ indicates stress. If a breathing tool reduces or eliminates this pulse’s intensity, it indicates effectiveness.

While practicing yoga postures that require balancing, fixing my gaze on a static point helps me remain stable. If I’m standing in front of swaying trees in a park or looking at ocean waves during the practice, loss of balance is more likely. The slower the objects in front of me move, the easier it is for me to maintain balance. When

practicing with closed eyes, there's no static point to gaze at, so I focus on my idle visions instead. It's easier to balance if the images transition slowly than when they change rapidly. The transition tempo can indicate my state of relaxation.

Eyeball repositioning

In some meditation techniques, shifting the inner gaze is used to increase concentration and focus inward. Inner gaze shifting can also be used to sharpen your idle visions. Close your eyes and try gazing at the tip of the nose or roll your eyeballs upward. Slightly reposition the eyeballs away from their natural center to zoom in on your idle visions.

Repositioning the eyeballs for an extended duration can strain and cause discomfort. When that happens, let go of the inner gaze shifting and allow your eyeballs to return to their normal position.

Possible indicators of stress found in idle visions are:

- Pulsating areas on the 'screensaver'
- Rapidly transitioning images
- Intensity variations in images
- Spots of non-grayscale colors

To use idle visions for evaluating the stress-reduction effect of a breathing tool, first familiarize yourself with your idle visions. What do you normally see when you're relaxed? Then use the tool and assess how it affects your idle visions.



Idle Visions Evaluation

- Lie, sit, or stand in a dark environment.
- Close your eyes.

1. Slightly reposition the eyeballs away from their natural center and focus on your idle visions.
2. Use the breathing tool to be evaluated.
3. Check the idle visions for pulsating areas, image transition speed, and spots of non-grayscale colors. A reduction in one of these indicates that the breathing tool practically relaxes you.

In addition to helping you relax, this often overlooked phenomenon of idle visions can also help you fall asleep faster, anchor drifting thoughts during meditation, and find a sense of stability when staring into the dark. But we'll dive