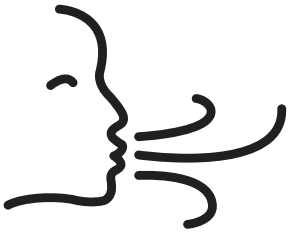
Scientific Support and Concept

This document provides a high-level overview of the theory and research behind breath utilisation for a mixture of emotional, mental and physical benefits. This research fuels the results that our training packages deliver.



Contents:

Stress.

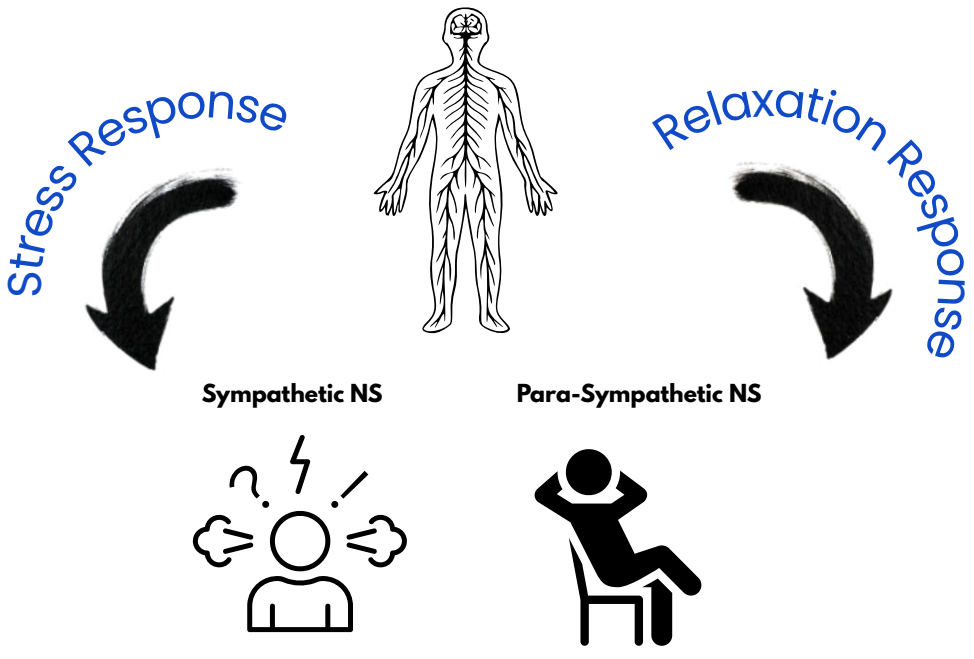
What is Stress?

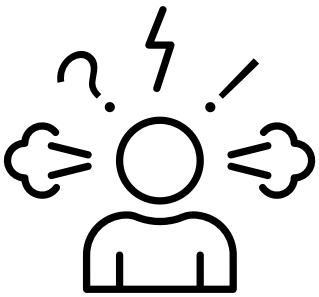
Stress is the body's adaptive mobilisation response to challenge, driven primarily by activation of the sympathetic nervous system, which increases heart rate and blood pressure, redirects blood flow to the muscles, heightens vigilance, and accelerates breathing to prepare for action.

This sympathetic load can be observed and measured through several physiological markers: reductions in heart rate variability (HRV), increases in resting heart rate and blood pressure, elevated cortisol levels, changes in breath mechanics (such as upper-chest breathing or rapid respiratory rate), and shifts in skin conductance due to sweat gland activity. Together, these indicators show how much demand the system is under and how effectively a person can recover from stress.

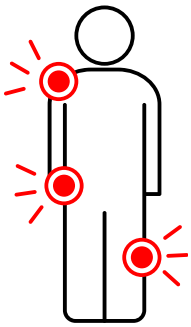
The Nervous System

The Nervous System is the intricate survival mechanism that determines the distribution of energy within the system. When a threat is perceived (this is a crucial differential, not necessarily an actual threat, but a perceived one) the Sympathetic NS is activated preparing the person to mobilise. Certain attributes are heightened whilst others become limited. Conversely, if the NS is healthy, once the perceived threat has passed the system becomes para-sympathetic dominant, in a place of relaxation where the systems energy is spread according to the needs of all the systems functions.



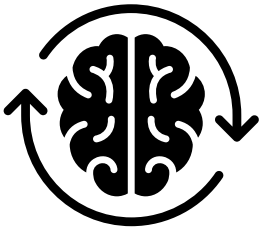


Sympathetic Nervous System Signals



Physical Indicators

- Increased heart rate
- Elevated blood pressure
- Faster, shallower, or vertical breathing
- Muscle tension (jaw, shoulders, chest, hands)
- Dilated pupils
- Warmth or flushing in face/chest
- Trembling or jitteriness
- Tight gut, nausea, digestive slowdown
- Cold hands/feet (blood redirected to core and limbs)
- Sweaty palms
- Restless energy or inability to sit still
- Changes in voice tone (tighter, higher, faster)



Mental Indicators

- Faster thinking / racing thoughts
- Narrowed focus or tunnel vision
- Catastrophic “what if” thinking
- Hyper-vigilance / scanning for danger
- Difficulty problem-solving
- Reduced working memory
- Impulsive or reactive decision-making
- Black-and-white thinking
- Difficulty accessing nuance, empathy, or long-term planning
- Strong internal pressure to act quickly
- Vertigo/ feeling dizzy

Sympathetic Nervous System Signals

Emotional Indicators

- Irritation or anger
- Anxiety or panic
- Urgency or impatience
- Fear or dread
- Overwhelm
- Frustration
- Feeling “on edge” or “wired”
- Emotional reactivity (quick spikes)
- Reduced sense of safety or trust
- Feeling threatened by tone, expressions, or ambiguity

Behavioural Indicators

- Speaking faster or louder
- Interrupting / talking over people
- Pacing or constant movement
- Avoiding situations or withdrawing (flight)
- Rigid body posture
- Difficulty staying present in conversations
- Rapid task-switching or frantic multitasking
- Overworking or hyper-productivity
- Difficulty relaxing even in safe environments

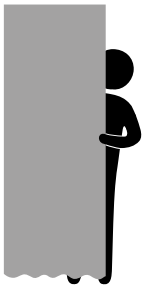
Threat Responses

Fight

Confronting or arguing.

Flight

Avoiding situations or withdrawing



Freeze

Freezing mid-action or pausing.

Fawn

Over-explaining, pleasing, or appeasing.

Breath and the Sympathetic NS.

Breath and the sympathetic nervous system are closely linked, because the mechanics and rate of breathing directly influence levels of physiological arousal. When the sympathetic system activates the breath automatically becomes faster, shallower, and higher in the chest, which signals to the body that mobilisation is required.

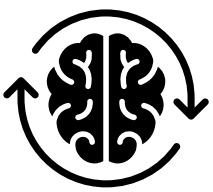
This pattern reduces carbon dioxide tolerance, increases heart rate, and reinforces the fight-or-flight physiology. However, the same pathway works in reverse: slow, nasal, diaphragmatic breathing increases carbon dioxide levels, stimulates baroreceptors, and sends a safety signal through the vagus nerve that counteracts sympathetic drive.

In this way, breath acts as both an indicator of sympathetic activation and a practical tool to modulate it, offering a direct route to reduce stress load, restore balance in the autonomic nervous system, and support clearer thinking, steadier emotions, and improved resilience.

Para-Sympathetic Nervous System Signals

Physical Indicators

- Slower, steadier heart rate
- Lower blood pressure
- Deeper, slower, diaphragmatic breathing
- Softer abdomen and expanded rib movement
- Warm hands and feet (improved peripheral circulation)
- Relaxed facial muscles, unclenched jaw, softer gaze
- Increased saliva production
- Improved digestion and gut motility
- Reduced overall muscle tension



Mental Indicators

- Clearer, more flexible thinking
- Expanded cognitive perspective (less tunnel vision)
- Improved working memory and decision-making
- Ability to reflect rather than react
- Calm internal pacing, reduced urgency
- Greater access to long-term planning

Emotional Indicators

- Feelings of safety and ease
- More grounded, steady emotional tone
- Increased patience and tolerance
- Warmth, connection, or openness
- Reduced fear, irritability, or overwhelm
- Greater ability to experience pleasure and contentment

Behavioural Indicators

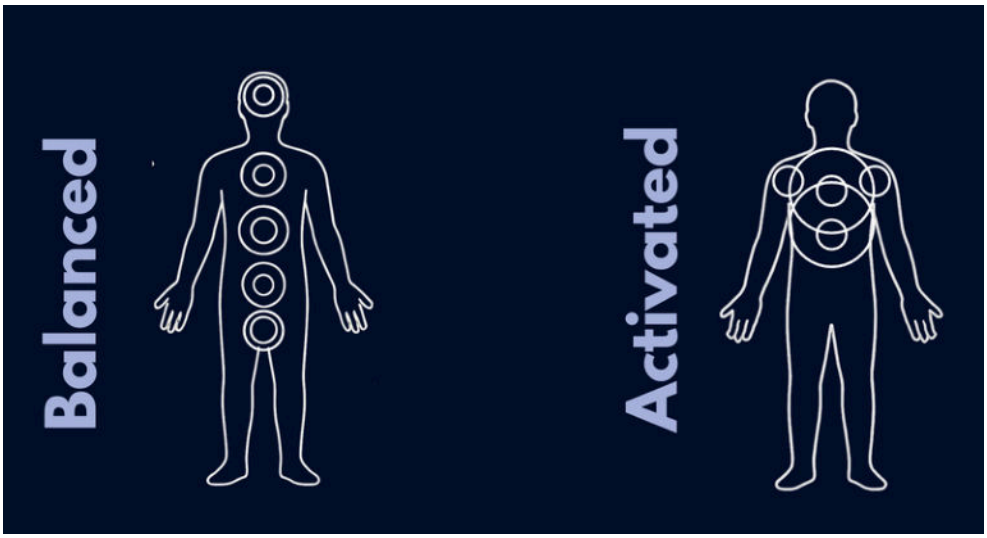
- Slower, more deliberate movements
- Softer voice tone and more natural facial expression
- Increased social engagement and eye contact
- Improved digestion-related behaviours (eating slowly, normal appetite)
- Ability to rest without guilt
- Staying present rather than avoiding or reacting
- Natural pauses, reflective listening, and cooperative communication

Chronic Stress.

Chronic Sympathetic NS Activation.

Chronic sympathetic domination refers to a persistent state in which the sympathetic nervous system remains elevated beyond what is required for immediate challenge or threat. Instead of cycling between activation and recovery, the system becomes stuck in mobilisation mode.

Over time this suppresses parasympathetic activity, lowers heart rate variability, disrupts digestion, sleep, recovery, emotional balance, and decision-making, and contributes to allostatic load. Chronic sympathetic activation has been linked in research to cardiovascular strain, increased inflammation, metabolic dysregulation, and impaired cognitive performance.



In parasympathetic activation, the system is in homeostasis. When in sympathetic, non-essential functions are down prioritised such as high cognitive function, digestion, and immune function. In chronic activation, this change of priorities can lead to longterm damage.

Chronic sympathetic activation is like a record-player needle getting stuck in one groove. Normally, the needle moves up and down the record, responding to changes in the music. But when the sympathetic system stays switched on for too long, the needle stops moving and plays the same section again and again. Over time, this wears down the groove, distorts the sound, and makes it harder for the needle to shift back onto the rest of the record. In the same way, a nervous system stuck in sympathetic mode loses flexibility, gets worn out, and struggles to return to calm.

Modern Triggers That Perpetuate Sympathetic Domination

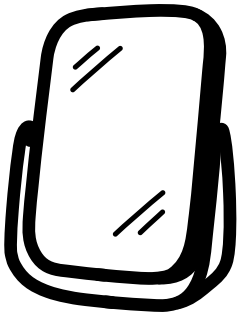
The pace and demands on modern life can nudge us into sympathetic activation. Awareness of this helps us realise the need to have reliable means to nudge us back into para-sympathetic and to be aware of limiting triggers were possible.

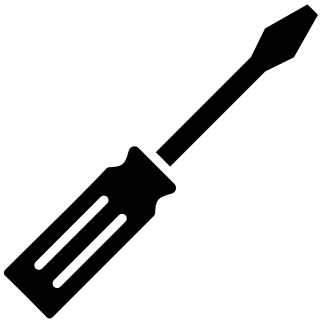
- Constant digital notifications and screen time
- High workloads and tight deadlines
- Multitasking and rapid task-switching
- Chronic sleep restriction
- Caffeine and stimulants
- Noise, crowds, and busy environments
- Social comparison and online pressure
- Unresolved conflict or emotional tension
- Financial pressure and uncertainty
- Perfectionism and fear of making mistakes
- Lack of true rest or downtime
- Overexposure to news and global crises

Breathing Patterns and Chronic Sympathetic Domination

Breathing is both a reflection of sympathetic activation and a driver of it. Chronic upper-chest breathing, mouth breathing, breath holding, and fast respiratory rates all reduce carbon dioxide levels and reinforce sympathetic tone.

These patterns activate accessory breathing muscles, elevate heart rate, and signal threat physiology through baroreceptors and the vagus nerve. Research consistently shows that slower, nasal, diaphragmatic breathing increases vagal activity, raises HRV, and counteracts sympathetic dominance. In this way, breath becomes a practical route to shift autonomic balance.





Burnout

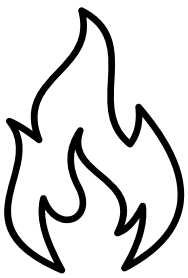
Burnout is the downstream effect of prolonged mobilisation without adequate recovery. It involves emotional exhaustion, reduced cognitive capacity, and a sense of inefficacy, all underpinned by chronic dysregulation of the autonomic nervous system. Burnout is not a psychological weakness but a physiological state where the systems designed to switch off sympathetic arousal become depleted. Persistent stress hormones, low HRV, poor sleep, and high inflammatory load all contribute to the energy collapse and emotional flattening seen in burnout.

Stress statistics and facts UK 2025

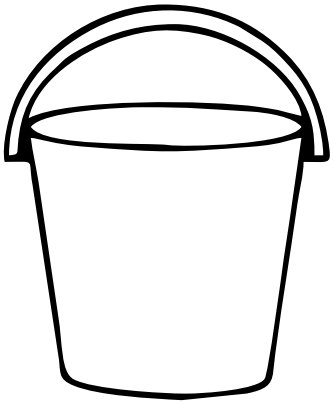
74% of adults have felt so stressed at some point over the past year that they felt overwhelmed or unable to cope, and other statistics and facts about stress.

Modern life keeps most people in a low-grade state of mobilisation almost constantly. Constant notifications, tight deadlines, poor sleep, stimulants, multitasking, and unresolved tension feed the sympathetic nervous system, leaving many stuck in “go-mode” even when nothing dramatic is happening. As a result, burnout is rapidly becoming a widespread reality: recent data suggests that in many workforces, around half of workers worldwide report being at least partly burnt out. In the UK alone, hundreds of thousands of workers suffer from work-related stress, depression or anxiety each year, leading to millions of lost workdays.

This makes breath training not just a “nice to have,” but a deeply relevant tool for resilience and recovery. By retraining the breath and restoring autonomic balance, individuals regain access to steadier energy, clearer thinking, emotional stability, and sustainable performance. In short: breathwork helps counter the chronic load many people are under, and prevents the kind of long-term physical, mental, and emotional exhaustion that burnout reflects.



Allostatic Load



Stress Bucket Analogy.

Allostatic load refers to the cumulative “wear and tear” placed on the body by repeated cycles of stress without sufficient regulation and repair. Over time, chronic sympathetic activity disrupts cardiovascular, metabolic, immune, and neurological systems.

Elevated blood pressure, impaired glucose control, altered cortisol rhythms, low HRV, and chronic inflammation are all indicators of increased allostatic load.

This concept explains why two people with similar stressors may have very different outcomes, what matters is how effectively the body returns to baseline.

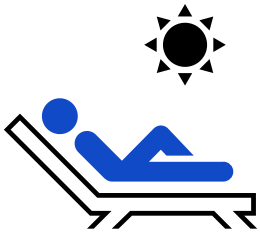
The classic Stress Bucket Analogy shows how when the higher our baseline stress, the easier it is for the bucket to overfill and the person to become overwhelmed.

Normally, the body empties this bucket through rest, recovery, and parasympathetic regulation. But when sympathetic activation is constant and the recovery mechanisms are overwhelmed, the bucket fills faster than it drains. Over time, this creates a chronic overflow that shows up as fatigue, irritability, inflammation, reduced immunity, disrupted hormones, and eventually burnout.

Allostatic load is simply the scientific term for the cumulative strain created when the stress bucket stays too full for too long.

Stress Reduction

Stress reduction isn’t about eliminating challenge, but restoring the capacity to return to baseline after mobilising. Effective strategies target the autonomic nervous system directly: slow diaphragmatic breathing, extending the exhale, structured recovery breaks, sleep quality, reducing cognitive load, managing sensory input, and establishing boundaries around stimulation (digital, emotional, environmental). These practices reduce sympathetic drive, strengthen vagal tone, increase HRV, and rebuild resilience. Over time, improving autonomic flexibility supports better performance, clearer thinking, and more sustainable energy.



Organisational Stress

Stress as Contagious

Stress is inherently contagious because humans are wired to pick up and mirror the emotional and physiological states of the people around them.

Through mechanisms like emotional contagion, mirror-neuron activation, and the social transmission of threat signals (tone of voice, facial tension, posture, speed, and breathing patterns), one person's sympathetic activation can trigger the same shift in those nearby.

Studies show that observing someone else under stress can increase cortisol in the observer, heighten vigilance, and reduce cognitive bandwidth, even without direct involvement in the stressful situation.

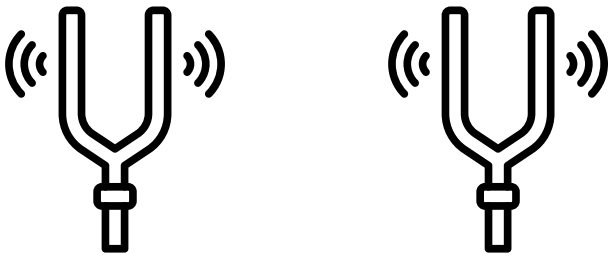
Workplaces, teams, families, and operational environments are especially prone to this effect: when one individual is mobilised, tense, or overwhelmed, it raises the baseline for the entire group.

Conversely, regulated individuals with steady breath, grounded tone, and clear presence act as stabilisers, helping others shift out of sympathetic activation. In this sense, nervous systems co-regulate all the time, for better or worse:

Making personal regulation a form of social responsibility.

Brain-Wave Synchronicity

Brain-wave synchronicity refers to the phenomenon where people's neural rhythms begin to align when they interact or share an emotional or attentional state. Studies using EEG show that individuals in conversation, group activities, or shared focus often develop synchronised patterns of neural activity, especially in the alpha, theta, and gamma bands.



When someone is stressed, their faster, more erratic patterns of activity can influence others, increasing vigilance and sympathetic tone through mechanisms of social attunement.

Conversely, regulated individuals with slower, more coherent brainwave patterns can promote calm and synchronisation in the people around them. This neural alignment supports the idea that our internal states are not isolated, the brain literally "tunes" to the brains around it.

Mistaking Stress Tolerance as Stress Resilience

Many people mistake stress tolerance for stress resilience, but they are not the same. Stress tolerance is the ability to endure high levels of pressure, discomfort, or sympathetic activation without immediately breaking down.

Pushing through long hours and high output looks impressive from the outside, but it often relies on overriding the body's signals and accumulating hidden strain.

Stress resilience, on the other hand, is the ability to mobilise when needed and then return to baseline quickly and fully. It is defined by recovery, flexibility, and a nervous system that can down-shift as easily as it up-shifts.

Someone with high tolerance may appear "strong," but their sympathetic system is often stuck in overdrive, leading to reduced HRV, poor sleep, irritability, and eventual burnout.

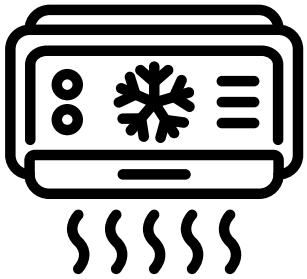
Someone with high resilience may not push as hard for as long, but they perform better over time because their system repairs, resets, and stays adaptable. Confusing tolerance for resilience is one of the main reasons people ignore stress until the cost becomes unavoidable.

Cultures That Embody Stress

Some environments become cultures of stress, where high pressure, urgency, exhaustion, and reactivity are not just common but normalised. In these cultures, long hours are rewarded, rest is viewed as weakness, and constant availability is expected. People learn to speak quickly, move quickly, breathe quickly, and think quickly, because the pace of the environment demands sympathetic activation just to keep up.

Over time, this creates a collective baseline of tension: meetings feel rushed, communication becomes sharper, small problems feel bigger, and the nervous systems of the group start reinforcing one another's activation. Stress stops being an individual experience and becomes a shared culture.

In these settings, regulation is not only rare but countercultural, which makes tools like breath training essential for reintroducing calm, clarity, and sustainable performance into systems that have forgotten what a healthy baseline feels like.

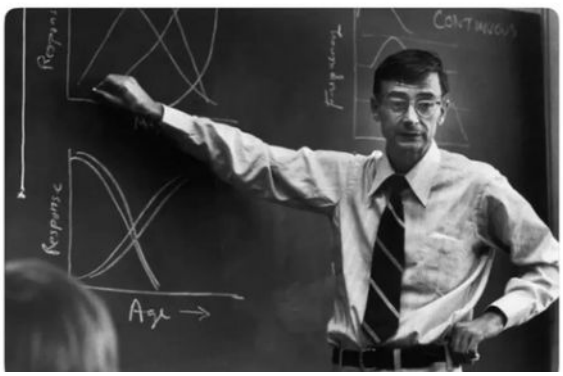


The level of background stress and anxiety becomes the tolerable norm and eventually individuals, groups and the culture become blind or numb to it. It is only when we take the step to regulate that we notice the difference.

Similar to how we only notice and appreciate the quiet when the aircon goes off.

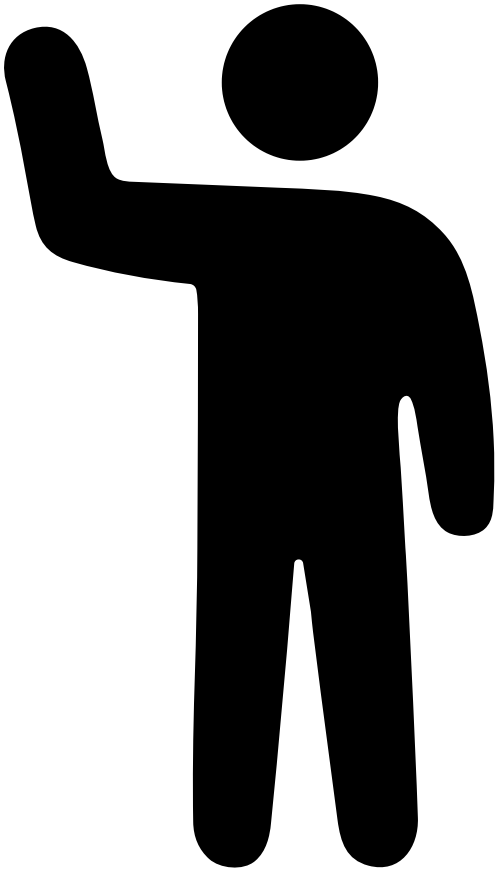
"The real problem of humanity is the following: we have Paleolithic emotions, medieval institutions, and god-like technology."

— E. O. Wilson (1929 - 2021)



Breath Training

The End Goal



Calm Clear Content

- Greater stress resilience (adapt → recover → reset)
- Improved emotional regulation and stability
- Higher heart-rate variability (HRV) and stronger vagal tone
- Reduced chronic sympathetic load
- Lower baseline anxiety and reactivity
- Better focus, clarity, and decision-making
- Increased CO_2 tolerance and efficient breathing mechanics
- More balanced energy levels across the day
- Faster recovery from stress, exertion, and emotional events
- Reduced risk of burnout and long-term allostatic strain
- Improved sleep quality and restorative rest
- Greater capacity to remain steady in stressful environments
- Increased ability to co-regulate others (leadership presence, calm influence)

The end goal of breath training is to create a nervous system that is flexible, resilient, and able to return to baseline quickly and consistently.

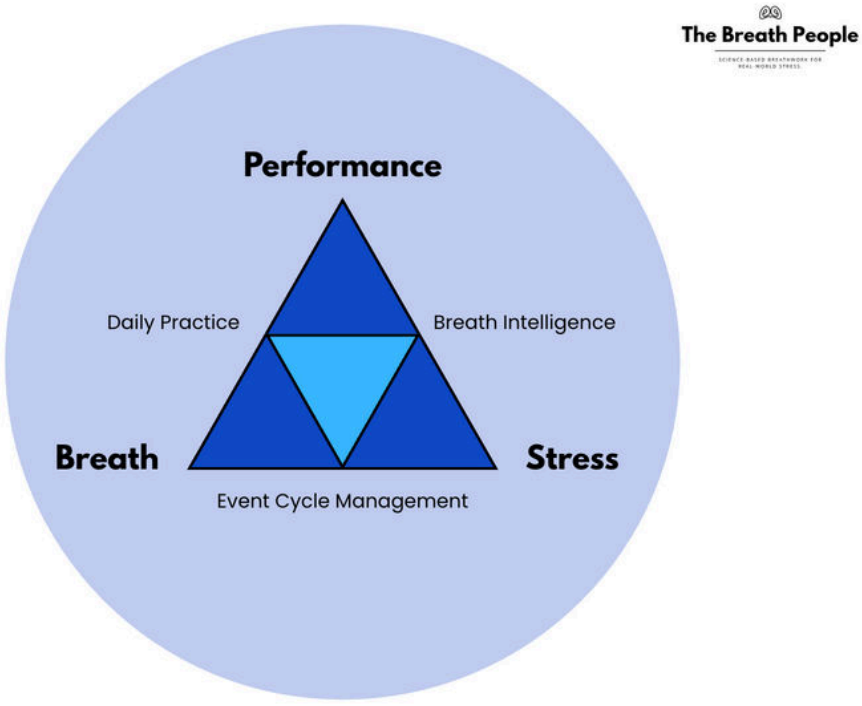
In a world where most people live in chronic sympathetic activation driven by modern triggers, cultural pressure, unresolved tension, and environments that spread stress socially, the aim is not to eliminate challenge but to restore and encourage regulation.

Breath training gives the body a direct, physiological way to counter constant mobilisation, reduce allostatic load, buffer against burnout, and break cycles of stress contagion. It trains the system to shift out of overdrive, re-establish balance between activation and recovery, and support a healthier, more sustainable way of living and performing.

The Breath Performance Triangle

Breath Performance Triangle

Demonstrates the interconnected nature of performance, breath and stress and how it's proportional stability can be upheld with structured breath training.



The Breath Performance Triangle is The Breath People's teaching aid, showing the interdependence of breath, performance and stress. It is the overarching methodology behind all of The Breath People's training courses.

The internal triangle shows how we can uphold the proportional stability of the external triangle by building daily practice, breath intelligence and event cycle management.

List of Sources

Stress

What is Stress?

Chatzaki & Tsiknakis (2025)
An Overview of Stress Analysis Based on Physiological Signals
Shows how stress activates the sympathetic nervous system and can be measured through HRV, heart rate, blood pressure, respiration, and skin conductance.
Link: https://www.mdpi.com/1424-8220/25/23/7108

The Nervous System

Ulrich-Lai & Herman (2009)
Neural Regulation of Endocrine and Autonomic Stress Responses
Shows how stress activates the sympathetic nervous system, increases heart rate, redirects blood flow, primes the body for action.
Link: https://www.nature.com/articles/nrn2647

Sympathetic NS Signals

Ulrich-Lai & Herman (2009)
Neural Regulation of Endocrine and Autonomic Stress Responses
Describes how sympathetic activation increases heart rate and blood pressure, redirects blood flow to muscles, elevates respiration rate, increases vigilance, and raises skin conductance through sweat-gland activity.
Link: https://www.nature.com/articles/nrn2647

Breath and the Sympathetic NS

Laborde, S, Mosley, E. & Thayer, J.F. (2022)
Effects of voluntary slow breathing on heart rate and heart rate variability: A systematic review and meta-analysis
Demonstrates how slower, regulated breathing supports parasympathetic activation and improves HRV—showing how breath and autonomic balance are linked.
Link: https://www.sciencedirect.com/science/article/abs/pii/S0149763422002007

Parasympathetic NS Signals

Thayer, J.F. & Sternberg, E.M. (2006)
Beyond heart rate variability: vagal regulation of health and illness. Annals of the New York Academy of Sciences, 1088(1), pp. 361–372.
Describes how elevated vagal (parasympathetic) tone correlates with slow/steady heart rate, high HRV, improved digestion, better emotional regulation, and systemic homeostasis.
Link: https://pubmed.ncbi.nlm.nih.gov/17192580/

Chronic Stress

Chronic Sympathetic Domination

Sapolsky, R. M. (2004). Why Zebras Don't Get Ulcers.
Explains in plain language how sympathetic activation suppresses digestion, suppresses immunity, and reduces complex cognition, because the body reallocates energy toward immediate survival (mobilisation) and away from long-term health processes.
Link: https://xpdf4u.com/reviews/B149D5/999757/4991875-why-zebras-don-t-get-ulcers

Modern Triggers that perpetuate sympathetic domination

Michie, S. (2002)
Causes and management of stress at work. Occupational and Environmental Medicine, 59(1), 67–72.
Describes how high workloads, deadlines, lack of control, poor sleep, uncertainty, noise, and organisational pressures activate chronic stress and sympathetic arousal.
Link: https://oem.bmj.com/content/59/1/67

Mark, G, Gudith, D. & Klocke, U. (2008)
The cost of interrupted work: More speed and stress.
Shows how multitasking, rapid task-switching, digital interruptions and constant notifications increase stress, time pressure, and cognitive overload (sympathetic activation).
Link: https://www.ics.uci.edu/~gmark/chi08-mark.pdf

Meerlo, P, Sgoifo, A. & Suchecki, D. (2008)
Chronic sleep restriction… autonomic imbalance and stress vulnerability.
Prolonged lack of sleep elevates sympathetic activity and reduces recovery capacity.
Link:
https://www.academia.edu/17429384/Restricted_and_disrupted_sleep_Effects_on_autonomic_function_neuroendocrine_stress_systems_and_stress_responsivity

Breathing Patterns and Chronic Sympathetic Domination

Jerath, R, Edry, J.W, Barnes, V.A, & Jerath, V. (2006)
Physiology of long pranayamic breathing: Neural respiratory elements may provide a mechanism…
Medical Hypotheses, 67(3), 566–571.
Explains how rapid/upper-chest breathing reduces CO_2, elevates sympathetic tone, increases heart rate, activates accessory muscles, and how slow diaphragmatic breathing increases vagal activation and autonomic balance.
Link: https://pubmed.ncbi.nlm.nih.gov/16624497/

Laborde, S, Mosley, E. & Thayer, J.F. (2022)
Effects of voluntary slow breathing on heart-rate variability: A systematic review and meta-analysis.
Shows that slow diaphragmatic breathing reliably increases HRV and parasympathetic activity and reduces sympathetic dominance.
Link: https://www.sciencedirect.com/science/article/abs/pii/S0149763422002007

Noble, D.J. & Hochman, S. (2019)
Hypothesis: Pulmonary Afferent Activity Patterns During Slow, Deep Breathing Contribute to the Neural Induction of Physiological Relaxation
Shows that the neurophysiological processes recruited during slow, deep breathing enhance the cognitive and behavioral therapeutic outcomes obtained through various mind-body practices
Link: https://pmc.ncbi.nlm.nih.gov/articles/PMC6753868/

Burnout

Statistics:
https://www.bcg.com/press/11june2024-half-of-workers-around-the-world-struggling-with-burnout
https:/www.priorygroup.com/mental-health/stress-treatment/stress-statistics
https:/www.mentalhealth.org.uk/explore-mental-health/statistics/mental-health-work-statistics

Maslach, C, Schaufeli, W.B. & Leiter, M.P. (2001)
Job burnout. Annual Review of Psychology, 52, 397–422.
Defines burnout as the downstream effect of chronic, unrelieved stress and prolonged activation without recovery.
Link: https://www.annualreviews.org/doi/10.1146/annurev.psych.52.1.397

World Health Organization (2019) — ICD-11 classification of burnout
Defines burnout as:
• Emotional exhaustion
• Reduced professional efficacy
• Mental distancing / cognitive depletion
Link: https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases

Kanthak, M.K. et al. (2017)
Autonomic imbalance in burnout: A systematic review.
Shows consistent findings of sympathetic dominance + reduced parasympathetic activity in burnout populations.
Link: https://pubmed.ncbi.nlm.nih.gov/28514792/

Ungurianu, A. Marina, V. (2025)
The Biological Clock Influenced by Burnout, Hormonal Dysregulation and Circadian Misalignment: A Systematic Review
Demonstrates altered cortisol rhythm, lower HRV, high inflammatory markers, and sleep disruption in burnout.
Link: https://www.mdpi.com/2624-5175/7/4/63

McKinsey Health Institute Report (2023)
Found 52% of workers globally report symptoms of burnout.
Link:
https://www.mckinsey.com/~/media/mckinsey/mckinsey%20health%20institute/our%20insights/mhi%20highlights%202023/mhi-2023-compendium.pdf

Health and Safety Executive (HSE) — UK Work-Related Stress Statistics
2024/25
964,000 workers affected by work-related stress, depression, or anxiety.
Link: https://www.hse.gov.uk/statistics/overview.htm

Allostatic Load

McEwen, B.S. & Stellar, E. (1993)
Stress and the individual: Mechanisms leading to disease
Introduces the concept of allostatic load as cumulative “wear and tear” on the body from repeated or chronic stress.
Link: https://pubmed.ncbi.nlm.nih.gov/8379800/

McEwen, B.S. (1998)
Stress, adaptation, and disease: Allostasis and allostatic load.
Shows how chronic stress dysregulates cardiovascular, metabolic, immune, and brain systems.
Link: https://pubmed.ncbi.nlm.nih.gov/9629234/

Guidi, J, Lucente, M, Sonino, N, & Fava, G.A. (2021)
Allostatic load and its impact on health: A systematic review.
Summarises 267 studies showing elevated BP, glucose disturbance, cortisol rhythm changes, low HRV, and inflammation as allostatic load markers.
Link: https://pubmed.ncbi.nlm.nih.gov/32799204/

Juster, R-P, McEwen, B.S, & Lupien, S.J. (2010)
Allostatic load biomarkers and resilience.
Shows that individual differences in resilience & recovery determine how stressors translate into allostatic load.
Link: https://pubmed.ncbi.nlm.nih.gov/19822172/

Stress Reduction

Thayer, J.F. & Lane, R.D. (2000)
A model of neurovisceral integration.
Shows that resilience = ability to shift between sympathetic and parasympathetic states.
Link: https://pubmed.ncbi.nlm.nih.gov/11163422/

Laborde, S, Mosley, E, & Thayer, J.F. (2022)
Effects of slow breathing on HRV.
Strong evidence that slow diaphragmatic breathing increases HRV and parasympathetic activity.
Link: https://www.sciencedirect.com/science/article/abs/pii/S0149763422002007

Thayer, J.F, Åhs, F, Fredrikson, M, Sollers, J.J, & Wager, T.D. (2012)
HRV as a marker of stress and resilience.
High vagal tone and HRV improve cognitive function, emotional stability, and resilience.
Link: https://pubmed.ncbi.nlm.nih.gov/22178086/

Organisational Stress

Stress as Contagious

Engert, V. et al. (2014)
Investigating the cross-over of stress between individuals.
Shows that simply watching a stressed person can raise cortisol in the observer (26% of observers showed a cortisol rise).
Link: https://www.sciencedirect.com/science/article/abs/pii/S0306453014001243

Hatfield, E, Cacioppo, J.T. & Rapson, R.L. (1994)
Emotional Contagion.
Foundational text showing humans automatically "catch" emotions from others through facial, vocal, and postural mirroring.
Link: https://psycnet.apa.org/record/1994-97007-000

Rizzolatti, G. & Craighero, L. (2004)
The mirror-neuron system.
Demonstrates neural mechanisms for mirroring others' states, providing biological basis for emotional + behavioural contagion.
Link: https://pubmed.ncbi.nlm.nih.gov/15217330/

Olsson, A. & Phelps, E.A. (2007)
Social learning of fear.
Demonstrates that people learn and adopt fear responses by observing others' threat behaviours.
Link: https://pubmed.ncbi.nlm.nih.gov/17726475/

The Contagious Leader: A Panel Study of Occupational Stress (2022)
Shows that leaders' stress spreads to workers, raising their stress levels across the organisation.
Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9540037/

Dumas, G. et al. (2010)
Inter-brain synchronization during social interaction.
Shows synchronised brain activity between individuals engaging in coordinated behaviour.
Link: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0012166

Kinreich, S. et al. (2017)
Brain-to-Brain Synchrony during Naturalistic Social Interactions
Demonstrates synchronisation of neural rhythms during real-life interactions and shared attention.
Link: https://www.nature.com/articles/s41598-017-17339-5

Hu, Y. et al. (2022)
The intrapersonal and interpersonal consequences of interpersonal synchrony
Shows how we move towards attributes and behaviours of others.
Link: https://www.sciencedirect.com/science/article/pii/S0001691822000282

Luft, C. et al. (2022)
Social synchronization of brain activity increases during eye-contact
Shows that eye contact increases gamma-band synchrony between two individuals.
Link: https://www.nature.com/articles/s42003-022-03352-6

Redclay, E. Schilbach L. (2020)
Using second-person neuroscience to elucidate the mechanisms of social interaction
Reviews evidence of brainwave synchrony during shared focus and interaction.
Link: https://pmc.ncbi.nlm.nih.gov/articles/PMC6997943/

Mistaking Stress Tolerance as Stress Resilience

Kalisch, R, Müller, M.B. & Tüscher, O. (2015)
A conceptual framework for the neurobiology of resilience.
Defines resilience as efficient recovery after stress, not simply the ability to endure or tolerate stress exposure.
Link: https://pubmed.ncbi.nlm.nih.gov/25158686/

McEwen, B.S. (2004)
Protection and damage from stress mediators: allostasis and allostatic load.
Shows that people can “perform” under stress while accumulating hidden physiological dysregulation (allostatic load).
Link: https://pubmed.ncbi.nlm.nih.gov/15677391/

Kanthak, M.K. et al. (2018)
Autonomic dysregulation in burnout and depression: evidence for the central role of exhaustion
Shows burnout is linked with chronic sympathetic dominance, reduced HRV, poor sleep, and emotional dysregulation.
Link: https://pubmed.ncbi.nlm.nih.gov/28514792/

Tugade, M.M. & Fredrickson, B.L. (2004)
Resilient individuals use positive emotions to recover from stress and achieve better long-term outcomes.
Demonstrates that resilient individuals recover faster and perform better over time, compared to those who suppress or endure stress.
Link: https://pmc.ncbi.nlm.nih.gov/articles/PMC3132556/

Cultures That Embody Stress

Hargrove, M.B, Quick, J.C. & Nelson, D.L. (2011)
The theory of preventive stress management: A public health model.
Shows how organisational cultures normalise overwork, urgency, and chronic stress patterns.
Link: https://www.scribd.com/document/521017428/The-Theory-of-Preventive-Stress-Management

McKinsey Health Institute (2025)
Investing in holistic employee health can create almost $12 trillion in global economic value.
"Well-being is the ultimate productivity multiplier. And when companies invest in their people's well-being, it's a win-win—creating workplace cultures where individuals can maximize their productivity and creativity, which in turn enables businesses to grow and maximize their impact.
Link: https://www.mckinsey.com/mhi/our-insights/thriving-workplaces-how-employers-can-improve-productivity-and-change-lives

Cooper, C.L. & Cartwright, S. (1997)
An intervention strategy for workplace stress.
Demonstrates that stress-reduction interventions (including breath-focused relaxation protocols) shift organisational culture toward wellbeing.
Link: https://www.sciencedirect.com/science/article/abs/pii/S0022399996003923?via%3Dihub

Maslach, C. & Leiter, M.P. (2016)
Understanding the burnout experience: Recent research and its implications.
Shows how chronic stress becomes normalised, making individuals unaware of their rising stress baseline until recovery occurs.
Link: https://pmc.ncbi.nlm.nih.gov/articles/PMC4911781/

Breath Training

The End Goal

Kurdziel, L. McDevitt, L. Hardway, C. (2025)
Acute Effects of Slow-Paced Breathing on Emotion Regulation: A Pilot Study
Slow deliberate breathing can be used as a tool for emotional regulation.
Link: https://www.sciencedirect.com/science/article/pii/S0149763411001977

How breath-control can change your life.
Slow nasal breathing reduces anxiety, reduces physiological arousal, and increases calm.
Link: https://www.frontiersin.org/articles/10.3389/fnhum.2018.00353/full

Tsai, H-J. et al. (2015)
Slow breathing & sleep quality.
Linked with increased parasympathetic activity = better sleep.
Link: https://pubmed.ncbi.nlm.nih.gov/26162926/

Grossman, P. et al. (2004)
Mindfulness-based stress reduction & autonomic stability.
Breath-centred regulation improves calm and stability under pressure.
Link: https://pubmed.ncbi.nlm.nih.gov/15256293/

Juster, R-P, McEwen, B.S. & Lupien, S.J. (2010)
Allostatic load biomarkers & resilience.
High vagal tone + stress-recovery capacity protects against allostatic load and burnout.
Link: https://pubmed.ncbi.nlm.nih.gov/19822172/

West, T. Mendes, W.B. (2023)
Affect contagion: Physiologic covariation and linkage offer insight into socially shared thoughts, emotions, and experiences
Calm individuals lower arousal in others; regulated breathing improves interpersonal influence.
Link:
https://www.sciencedirect.com/science/chapter/bookseries/abs/pii/S0065260122000272

Balban, M.Y. Et Al. (2023)
Brief structured respiration practices enhance mood and reduce physiological arousal
Shows hoe breath utilisation can be used to boost mood.
Link: https://pmc.ncbi.nlm.nih.gov/articles/PMC9873947/

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