

BREATHING FOR SPEECH - AND EMOTIONAL REGULATION

OSSPEAC 2025

MICHELLE RICHARDS
OAKLANDMYO.COM



MY BACKGROUND

- SLP & TSLI, 2002
- Anatomy and Physiology nerd
- Certified in the Buteyko Breathing Method, 2021
- Yoga Teacher Training, 2023





LEARNING OBJECTIVES

01

Review the connection between breath regulation and communication, including fluency, voicing, and overall speech production in school-aged populations; consider alternative reasons for speaking softly.

02

Describe how breathing techniques influence emotional and behavioral self-regulation, with reference to current research on the autonomic nervous system and polyvagal theory.

03

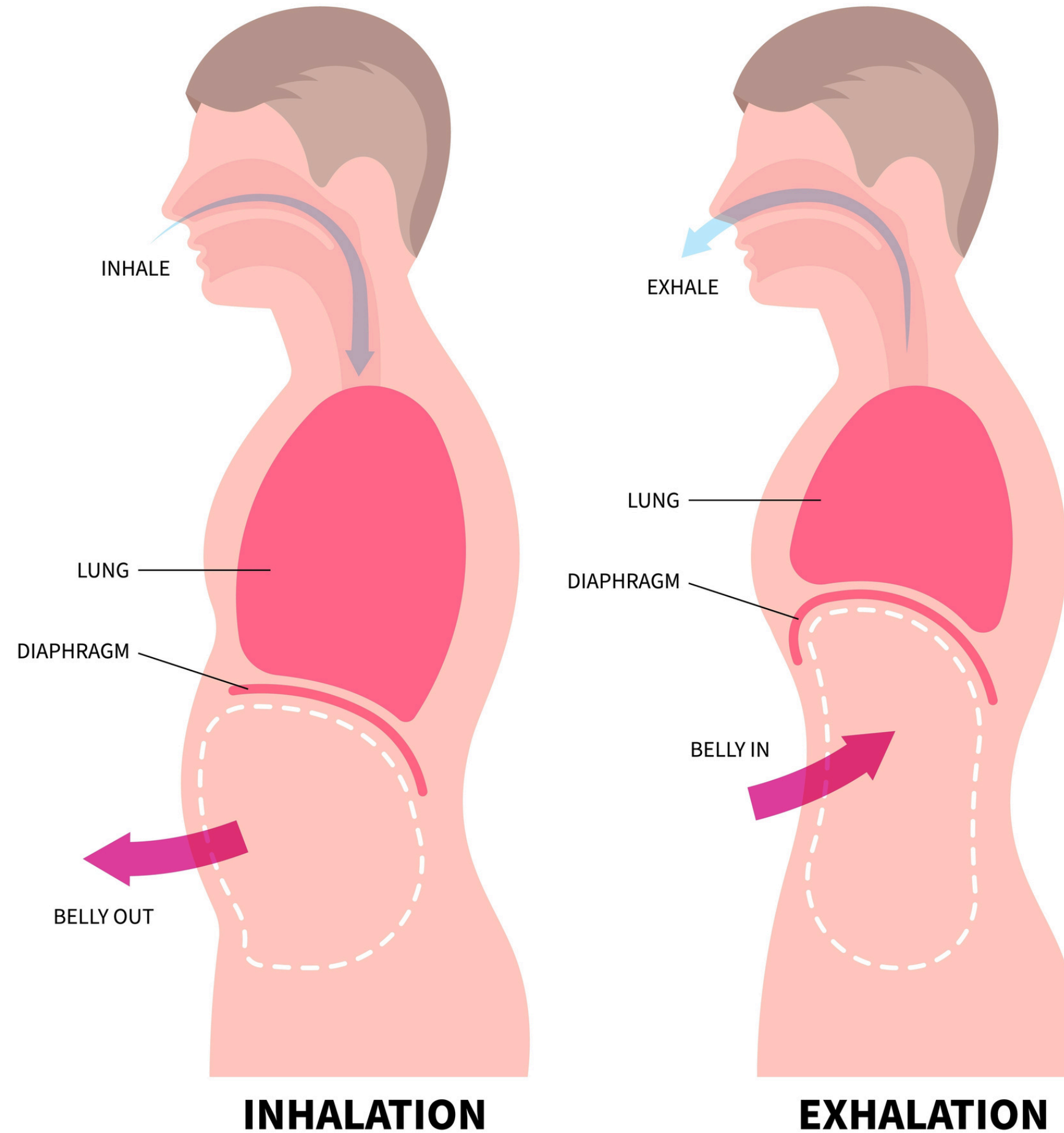
Acquire a variety of simple, evidence-based breathing exercises appropriate for integration into therapy sessions or classroom routines across all ages.

04

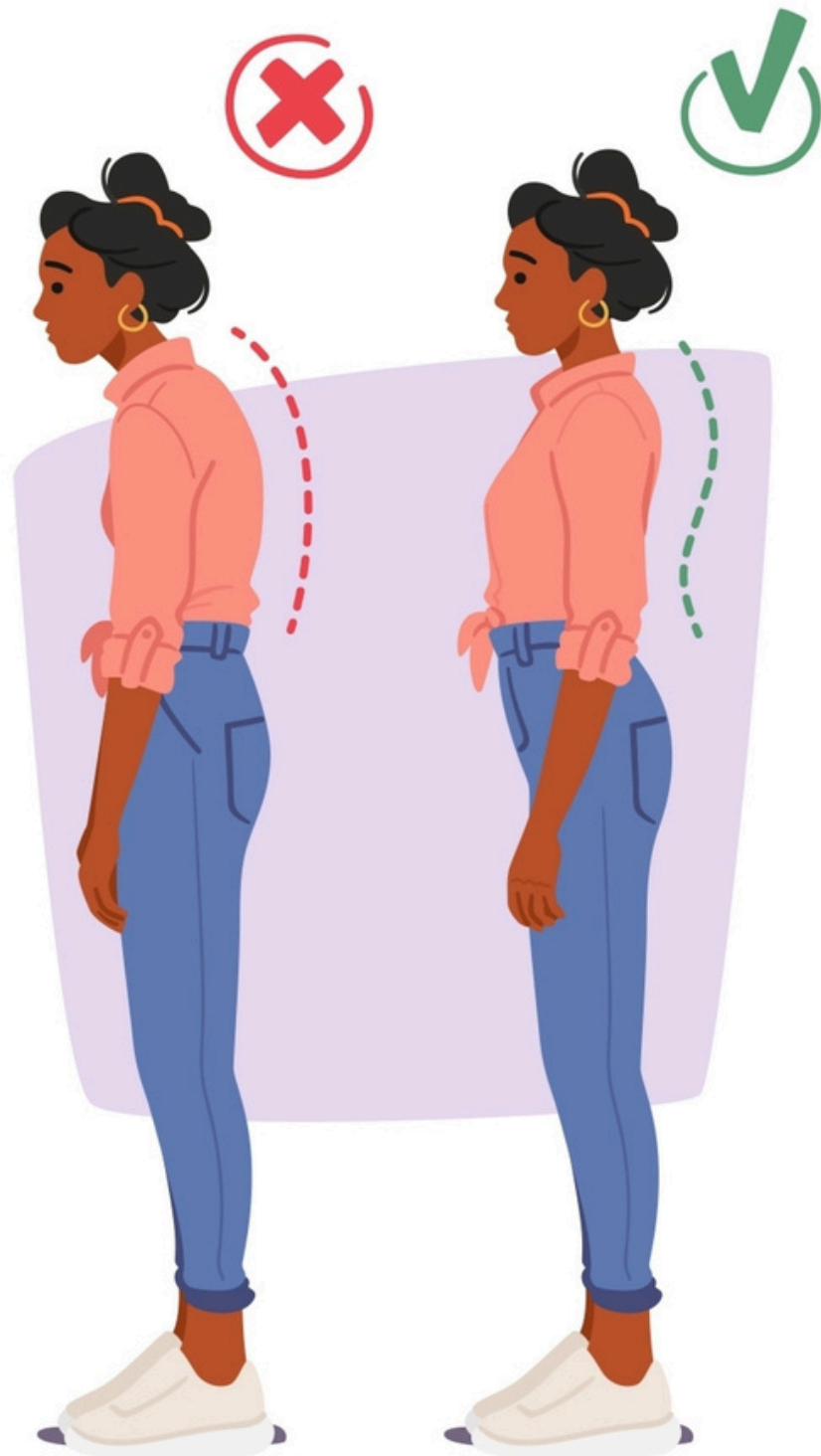
Evaluate how breathing practices can enhance focus, reduce anxiety, and increase readiness to learn, particularly in students with language, social-emotional, or executive functioning challenges.

Anatomy & Physiology

DIAPHRAGMATIC BREATHING



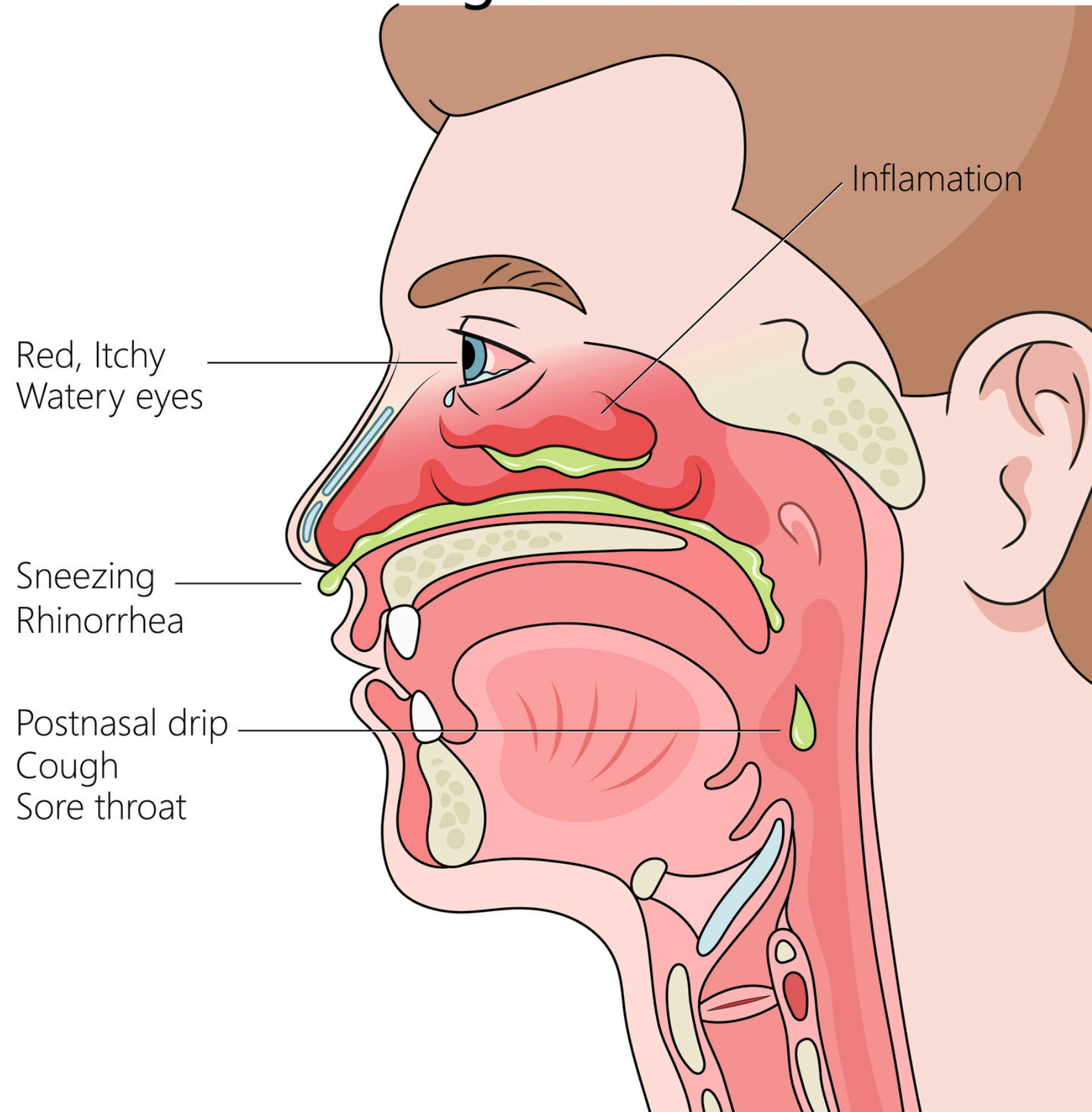
POSTURE IMPACTS



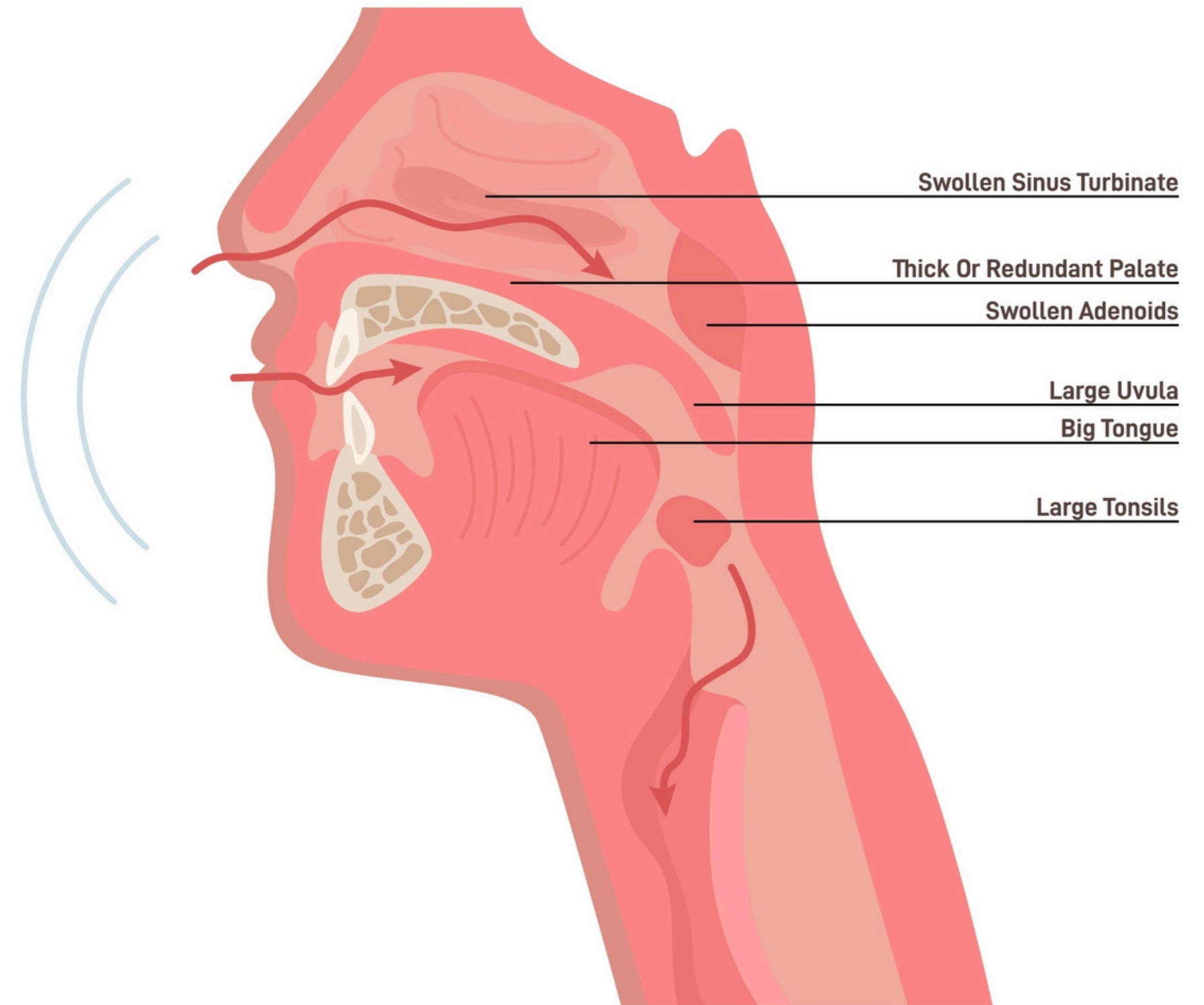
RESPIRATION UH-OHS



Allergic rhinitis



Causes Of Blocked Airway



The Presence Of One Or More Abnormal Anatomical Structures In The Face Can Lead To Obstructive Sleep Apnoea



BUTEYKO METHOD P. MCKEOWN'S "LSD"

Light
Slow

Deep / Diaphragmatic



BREATH TYPES

Shallow Breathing (The "Stress Breath"):

- Linked to the "fight-or-flight" response
- Short, shallow breaths
- Reduces oxygen to the brain, increases anxiety, and impairs focus
- Panic attacks happen here

Deep Breathing (The "Smart Breath"):

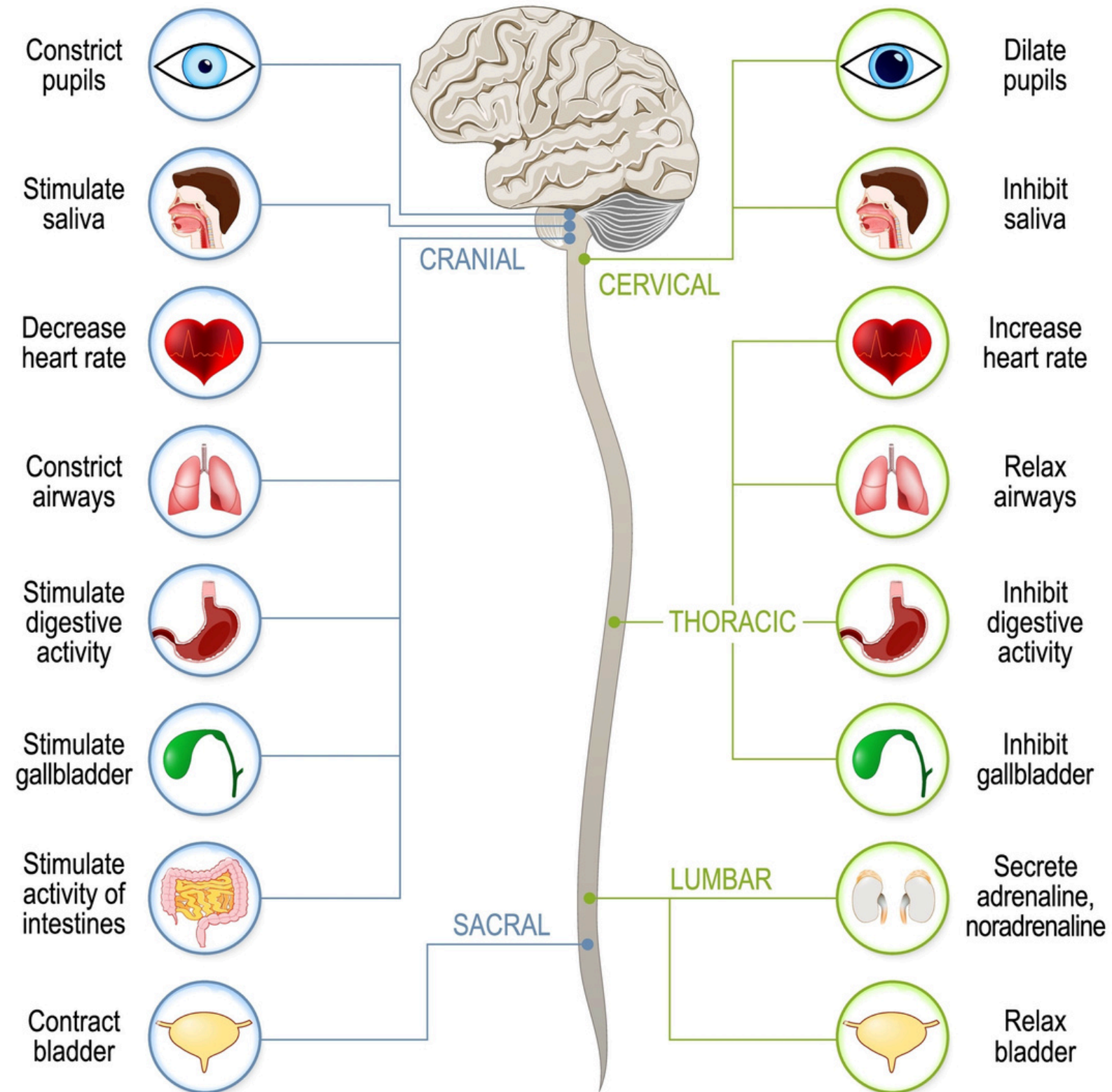
- Activates the "rest-and-digest" system
- Slow, deep breaths
- Enhance oxygenation throughout the brain and body
- Promotes a state of calm alertness optimal for learning and emotional regulation.

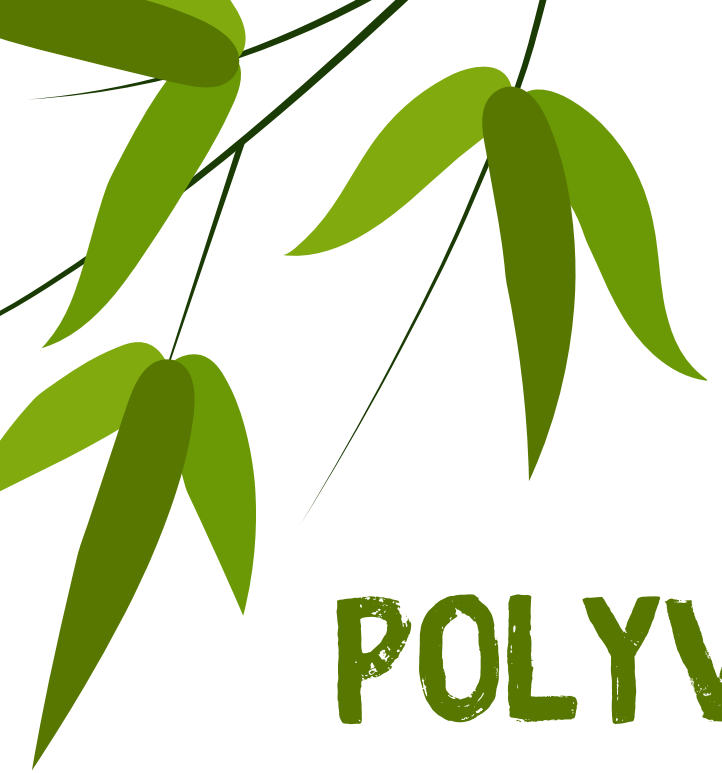


AUTONOMIC NERVOUS SYSTEM

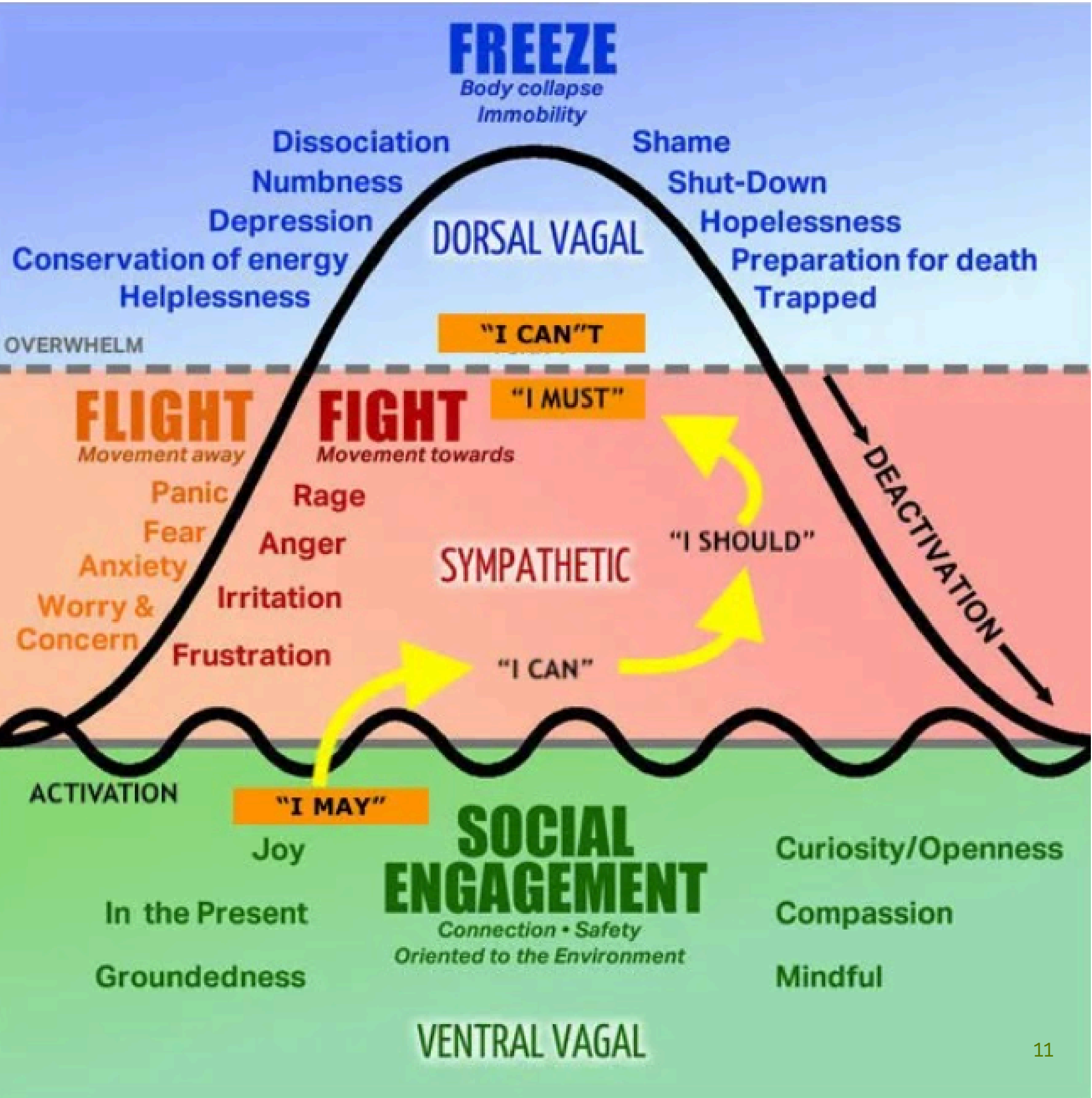
PARASYMPATHETIC nervous system

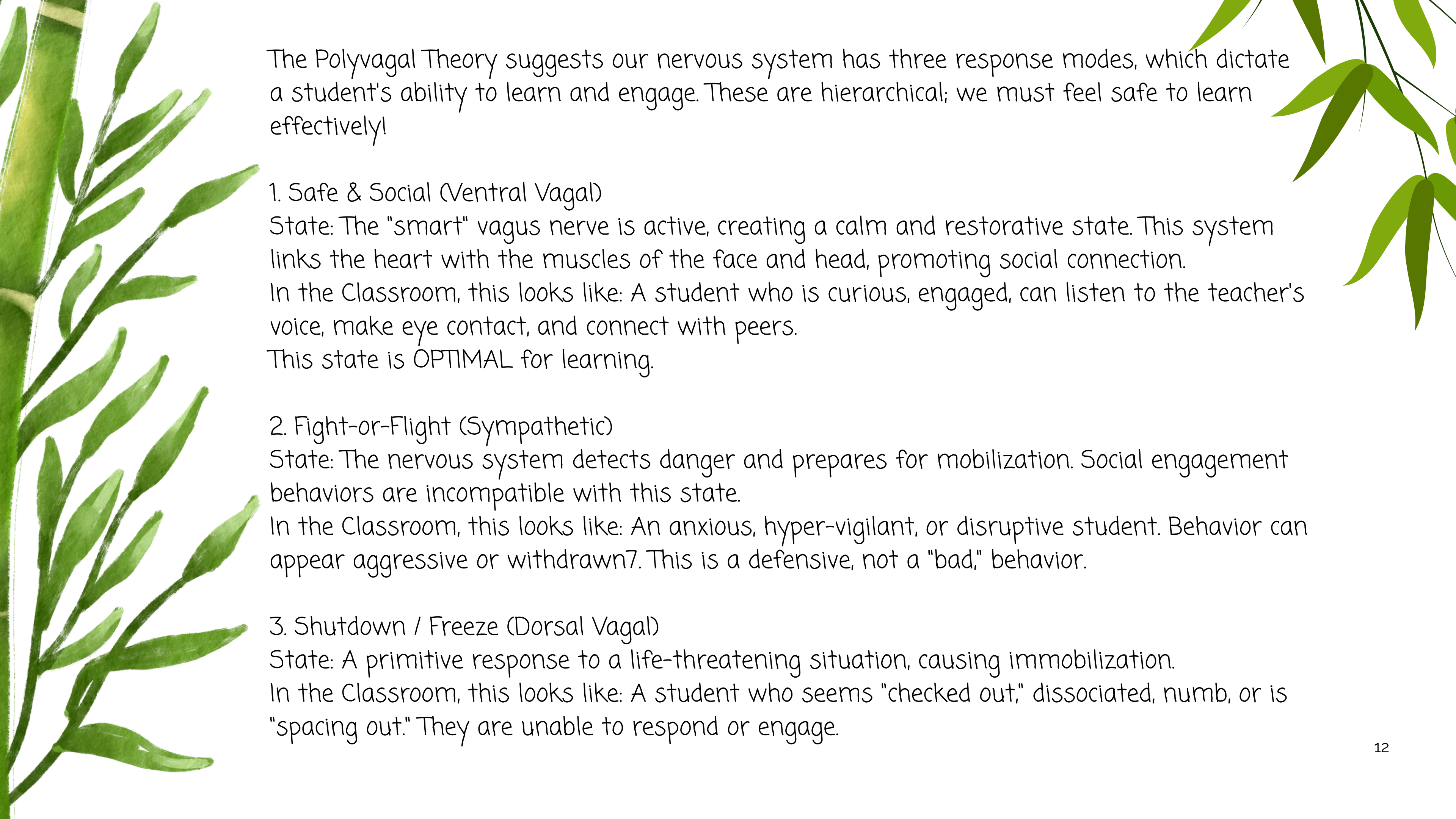
SYMPATHETIC nervous system





POLYVAGAL THEORY





The Polyvagal Theory suggests our nervous system has three response modes, which dictate a student's ability to learn and engage. These are hierarchical; we must feel safe to learn effectively!

1. Safe & Social (Ventral Vagal)

State: The "smart" vagus nerve is active, creating a calm and restorative state. This system links the heart with the muscles of the face and head, promoting social connection.

In the Classroom, this looks like: A student who is curious, engaged, can listen to the teacher's voice, make eye contact, and connect with peers.

This state is OPTIMAL for learning.

2. Fight-or-Flight (Sympathetic)

State: The nervous system detects danger and prepares for mobilization. Social engagement behaviors are incompatible with this state.

In the Classroom, this looks like: An anxious, hyper-vigilant, or disruptive student. Behavior can appear aggressive or withdrawn. This is a defensive, not a "bad," behavior.

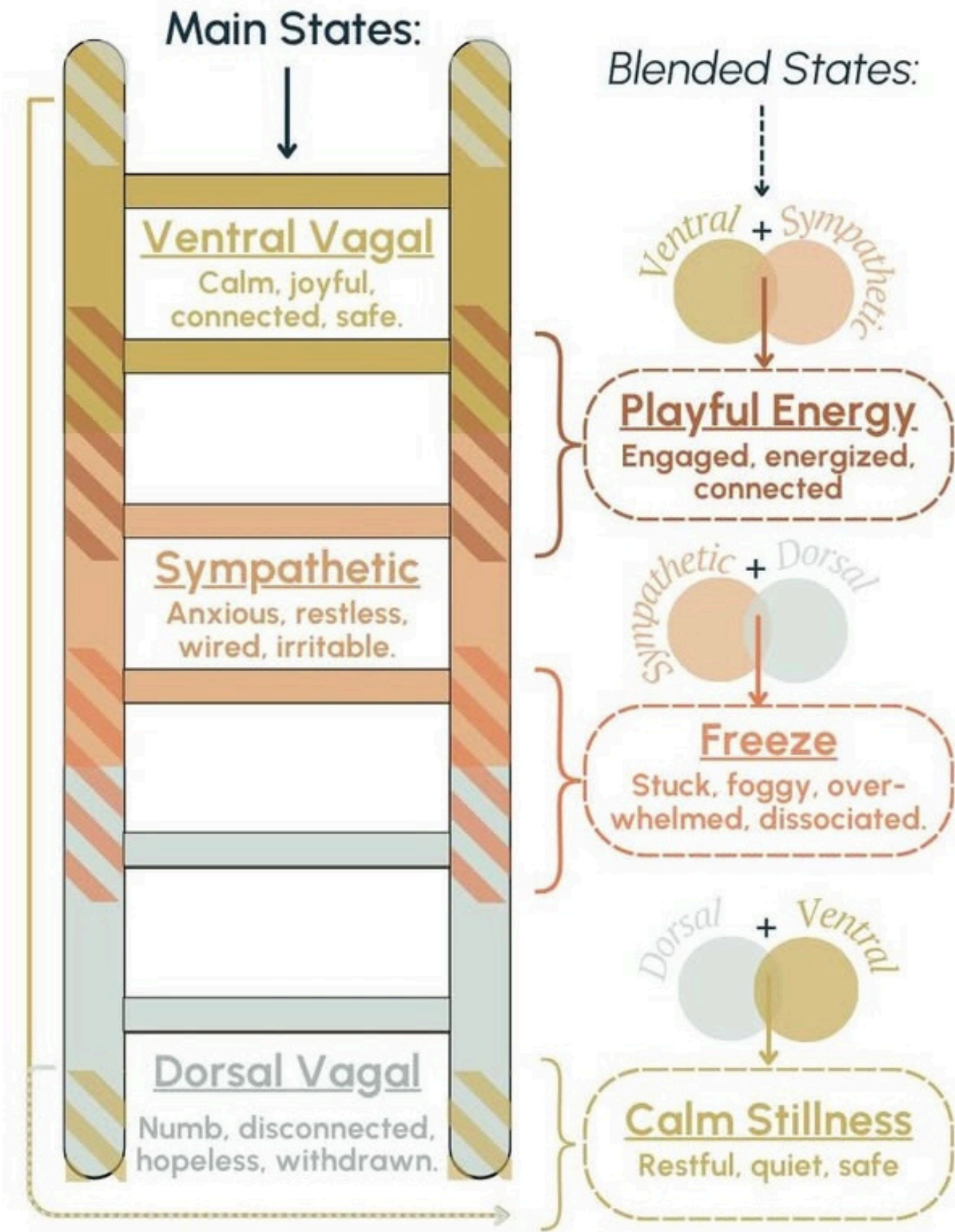
3. Shutdown / Freeze (Dorsal Vagal)

State: A primitive response to a life-threatening situation, causing immobilization.

In the Classroom, this looks like: A student who seems "checked out," dissociated, numb, or is "spacing out." They are unable to respond or engage.

THE POLYVAGAL LADDER

Main & Blended States



@primaltrust_official

POLYVAGAL THEORY



Into the Classroom

POLYVAGAL IN THE CLASSROOM

Stress → “Fight or Flight” (reduces focus and learning)

Slow, deep breathing → vagus nerve activates (parasympathetic nervous system) to “rest and repair” or “calm and connect” → heart rate slows → stress reduces in brain → shift from defensive state to calm, receptive state, ready for learning

BREATHING IN CLASS: STRESS, ANXIETY

- Reduce stress, anxiety, fear
 - Reduces “in-the-moment” anxiety state and general trait anxiety (Bentley et al 2022); Deactivates sympathetic NS → activates parasympathetic NS for calm, emotional balance (Santhi 2025; Gupta et al 2014)
 - Effective at reducing fear and pain during stressful medical or dental procedures (Tsakona et al 2025)
 - Students reported the exercises were helpful for calming down when stressed (Bentley et al 2022; Tsakona et al 2025)
 - Test anxiety was less (Gupta et al 2014)
- Behavior:
 - Teachers observed students using breath work showed increased attention spans, stayed on task, greater attention to directions, and had more participation in class (Gupta et al 2014)
 - Better self-regulation: fewer “knee-jerk” reactions / more thoughtful responses; more self-control, focus (Gupta et al 2014)



BREATHING IN CLASS: PERFORMANCE

- Improves school performance and focus
 - Increases oxygen into bloodstream, invigorating all body cells (including brain cells!) which boosts alertness, cognitive processing (Santhi 2024; Gupta et al 2014)
 - One study showed diaphragmatic breathing reduced self-reported anxiety before a math test and led to improved test performance (Tsakona et al 2025)
 - Other studies noted an improvement in school performance and ability to focus (Tsakona et al 2025)
 - 3rd graders in year-long study improved Hindi, English, and Math scores vs control group (Gupta et al 2014)
 - Focus on breath acts as a mental anchor: attentional control strengthened, mental clutter reduces; easier to focus (Santhi 2024; Gupta et al 2014)
- Standardized assessments are mixed
 - Students feel more focused, however the direct impact on scores is not yet statistically proven yet (Bengds 2025; Bentley et al 2022)



FROM STRESSED TO FOCUSED: THE TAKEAWAY

Problem: Short, Shallow breathing keeps the body in a state of stress, which is not conducive to learning.


Solution: Slow, deep breathing techniques can reset the autonomic nervous system, moving students from a state of anxiety, reducing arousal, and into one of calm focus for improved learning, engagement



A cartoon illustration of a pink and black panda. The panda is holding a small globe of the Earth in its hands. It has a red bow on its head and is looking directly at the viewer with a gentle expression. The background is white with some green bamboo leaves in the top left corner.

“TODAY’S KIDS”

- Post-covid, educators are especially concerned with focus, anxiety, and declining academic performance
 - Nearly 1 in 3 US adolescents meet Anxiety Disorder criteria, which impacts development, health, and academic achievement
 - Students report a lack of tools to manage their stress
 - Chronic stress, anxiety, & difficulty concentrating impair cognitive functions (ie memory and attention)



BREATHING: THE BRIDGE BETWEEN COGNITIVE (COMMUNICATION) AND PHYSIOLOGICAL FUNCTIONING





Comprehensive Psychiatry

Official Journal of the American Psychopathological Association

VOL. 16, NO. 4

JULY/AUGUST 1975

Biofeedback and Meditation in the Treatment of Psychiatric Illnesses

Bernard C. Glueck and Charles F. Stroebe

HOMO SAPIENS SURVIVES, and is able to perform the incredibly complex activities demanded by Western society in part because of elegantly sophisticated biofeedback mechanisms built into his anatomy and physiology. The ability to stand on two feet and to locomote requires kinesthetic and proprioceptive feedback signals from the muscles, joints, tendons, etc. that provide instantaneous information about the position of the limbs and the tension or relaxation of the musculature required to overcome gravitational pull. Another example, part of the standard neurologic examination, is the ability, with eyes closed, to bring the extended index finger around to touch the tip of the nose. A few moments consideration will indicate the tremendous complexity of the feedback signals involved in this apparently simple task.

Until recently psychologists taught that it was impossible to condition the autonomic nervous system, smooth muscles, and glands by other than classic Pavlovian techniques. This was in contrast to the very complex types of operant conditioning procedures employed in the animal laboratory which enabled investigators to teach a wide range of mammals intricate skeletal muscle performance tasks. In 1960, Kimmel and Hill¹ demonstrated the possibility of instrumental conditioning of the galvanic skin response (GSR). Since then, there have been reports of learned control of a wide range of autonomic nervous system responses, including the GSR,^{2,3} heart rate,^{4,5} blood pressure,⁶ vasomotor responses,^{7,8} salivation,⁹ and the relaxation of striated muscle.¹⁰

The use of biofeedback techniques requires the application of relatively ordinary technical procedures for a revolutionary purpose: Allowing persons to monitor and alter their normally unconscious physiologic responses to the daily adaptational tasks, in order to help themselves achieve and maintain physical and emotional well-being. The use of these techniques has made it possible for individuals to learn to control physiologic functions that had previously been considered inaccessible to voluntary self-control. In fact, these functions have

From the Institute of Living, Hartford, Conn.

Bernard C. Glueck, M.D.: *Director of Research*; Charles F. Stroebe, M.D., Ph.D.: *Director, Psychophysiology Laboratory and Clinic, Institute of Living, Hartford, Conn.*

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10 KNOWN HEALTH BENEFITS IN 2025

FROM THE BUTEYKO CLINIC

1. Boosts oxygen efficiency and endurance
2. Supports heart health and blood pressure naturally
3. Improve blood sugar and metabolic health
4. Calms anxiety and panic attacks
5. Sleep more deeply and reduce insomnia
6. Strengthens heart rate variability
7. Improves focus, memory, and mental clarity
8. Relieves nasal congestion and boosts nitric oxide
9. Builds stress tolerance
10. Supports pregnancy and postpartum recovery



OPPORTUNITY: BREATHWORK

- Cost-effective
- Enhances cognitive function & self-regulation
- Can be integrated into the school day to support academics and overall well-being
- Prepares the brain for learning





HOW TO HELP REGULATION

- “Neuroception”: the brain's safety detector, always scanning for safety / danger
- Offer a safe environment
 - Warm faces and prosodic voices signal safety & encourages the “Safe and Social” system to activate
 - Create a safe, predictable environment to maintain this safety zone
- Breathwork can be a tool to help relax the vagus nerve to slow the heart rate to be ready for learning



Speech-Language



SPEECH-LANGUAGE NEEDS

- Speech production: Must have air to phonate!
- Fluency: all fundamental treatment focuses on breath support, control
- Voice disorders from misuse, excessive tension, poor breath support
- Short utterances, soft speakers: poor breath support, unable to access diaphragm.



ASSESS BREATHING

- Control Pause
 - From the bottom of a breath, how long can you do a breath hold “until your body WANTS to take air in”
- S/Z ratio
- Sustain /a/, /i/
- “take a deep breath”
- “Pac Man Hands”
- Number of breaths per minute



BREATHWORK + STUTTERING

PART I: DIAPHRAGMATIC BREATHING

- Improve breath control
 - Diaphragmatic breathing creates steadier, controlled airflow - essential for smooth speech
- Reduce anxiety and tension
 - Diaphragmatic breathing promotes the body's relaxation response: nerves calm, tension in chest and throat reduces
- Improve fluency
 - Reduced tension / more relaxation improves breath support; speech flows more freely → fluency and communication confidence increases



BREATHWORK + STUTTERING

PART II: TWO EVIDENCE-BASED PATHS

Fluency Shaping (FS): Using Breath to Prevent Stuttering

Goal: To establish a new, fluent way of speaking that prevents stuttering from occurring by managing airflow and vocal fold movement.

Therapist's Role with Breath: Teach specific breath-control techniques that shape fluent speech.

Focus on skills like:

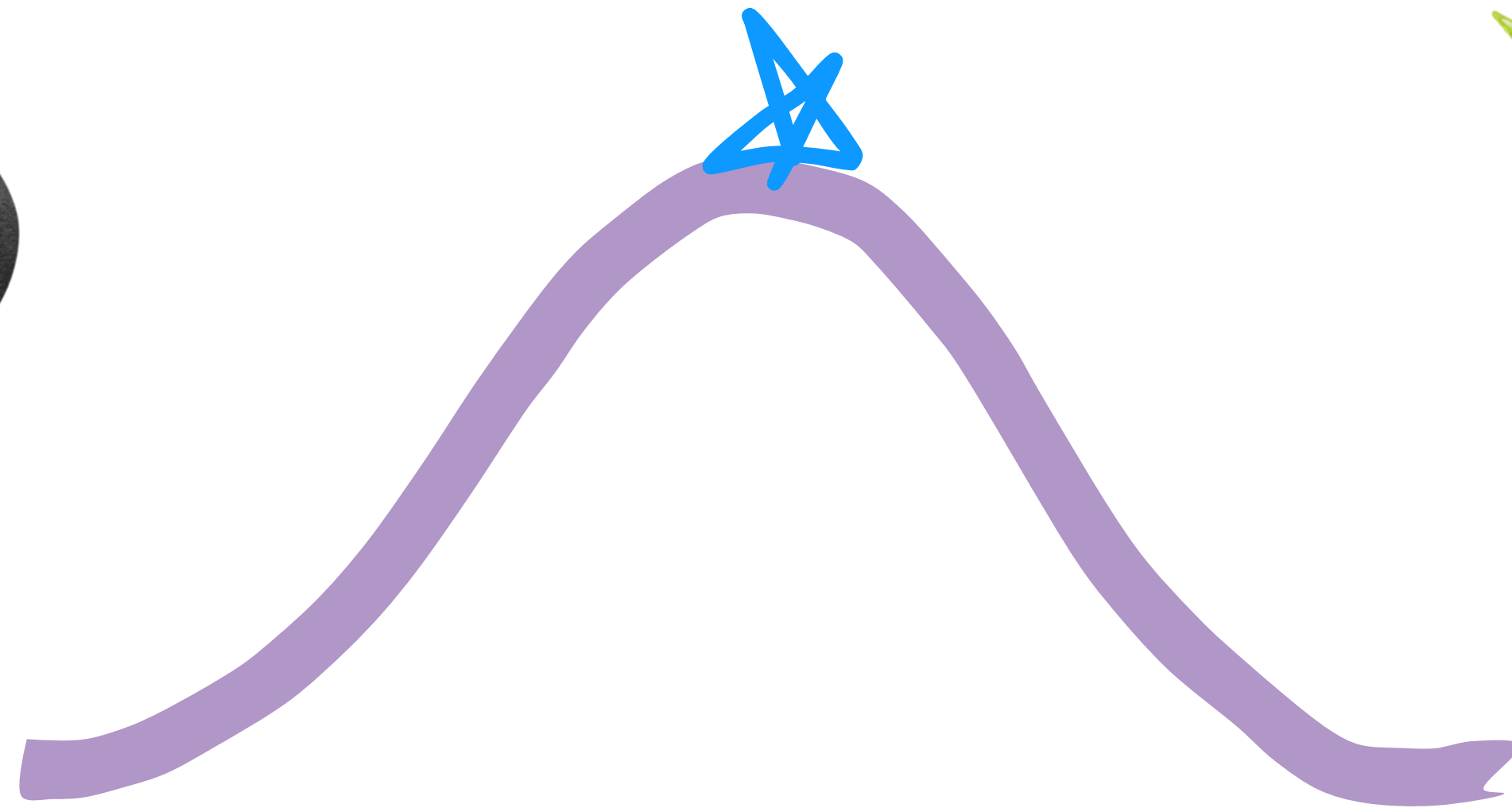
- Prolonged, continuous phonation (keeping the voice flowing)
- Slow articulatory movements
- Easy voice and articulatory onsets (starting sounds gently)

Stuttering Management (SM): Using Breath to Manage Stuttering

Goal: To help the client react to moments of stuttering calmly and with less tension (starting with breathwork), not to eliminate them entirely.

- Starts from a state of physical quiet ("quiescence")
- Initiates airflow simultaneously with the attempt to speak
- Produces the first sound with a forward-moving gesture, like a non-stutterer might

PARTS OF THE BREATH



Implement it

WHAT YOU CAN DO!

- <5 minutes provides results! (Gupta et al 2014)
 - focus before a test; settle down after recess
- Offer in-person -not as homework- for compliance, education, support (Bentley et al 2022)
- Model and lead for at least a week before students become comfortable with the techniques (Santhi 2024; Gupta et al 2014)
- Where does it fit naturally? Health or Wellness events? PE classes? Get buy-in! (Bentley et al 2022)
 - I teach it in Middle School Science (whole classroom) as a part of my “Study Skills” curriculum
- Explore, teach symptoms to monitor before/after (Bentley et al 2022)
 - heart rate, thoughts buzzing, breath rate, saliva, extremity warmth, etc



PLEASE DON'T SAY:

“Take a deep breath”



A cartoon illustration of a panda's head and upper body. The panda has a light beige face with black circular patches around its eyes, black ears, and black limbs. It has small pink rosy cheeks and a small black nose. It is holding a blue book with a vertical blue stripe down the center. The panda is looking down at the book. In the top left corner, there are green bamboo leaves. In the bottom right corner, there are green bamboo stalks.

TEACH IT!

MY HIERARCHY “LEVELS”

1. Posture
2. Nasal breathing
3. Slow rate of breathing;
Extend the exhales
4. Diaphragmatic breathing

EXERCISES TO USE TOMORROW

Calming Exercises

- Nasal breathing: a challenge for habitual mouth breathers (but also may be due to narrow airways)
- Hands on chest and stomach (can be used with several breathing methods!)
- Feather breathing: hold finger under nose and "don't move the feather"
- Cup Your Face: mimics paper bag breathing, reduces ease of taking in air too fast
- 1 Nostril breathing: alternate between the two
- Box Breathing: in 4, hold 4, out 4, hold 4
- Trace hand: as your finger moves up the finger take air in, exhale as the finger tracing moves down
- Cadence/Counting: in for 2-4, out for 4-6; aiming for longer, slower exhales
- Countdown: Adult keeps the pace for breathing in/out (could use with other variations!). Lead (perhaps 5-10?) slow breaths
- Big bubbles: slower, deeper breaths make great bubbles!
- Humming: stimulates the vagus nerve to activate the parasympathetic NS
 - Option to time how many seconds a hum can be sustained?

Focus Exercise

- Many Small Breaths: Breathe normally in/out. Pinch nose. Small breath hold 5 seconds. Repeat several times.



EXERCISES TO USE TOMORROW

Find Your Diaphragm

- Lay on belly; feel stomach press into the floor
 - Progress to leaning back from sitting position, and slowly transition to a chair or standing
- Pac Man hands on ribs; feel ribs expanding and contracting with each breath
- Teen 'Tude: slouch in chair with arms crossed; observe belly rising, falling

Advanced Breathwork

- Candy Corn Breathing (Dirga Pranyama): Breathe into diaphragm, then ribs, then take an additional "sip" into collar bones to fill up. Release the air from the top down (collar bones, ribs, then diaphragm).

Decongest Your Nose

For you/family/friends only *in good health*

- Normal breath in, out. Plug your nose. Nod your head or move your spine 45 degrees in each direction. Hold your breath as long as possible. When you need to take air in, use your nose for at least 2-3 breaths. Try to continue nasal breathing. Repeat up to 4 more times to continue clearing congestion.

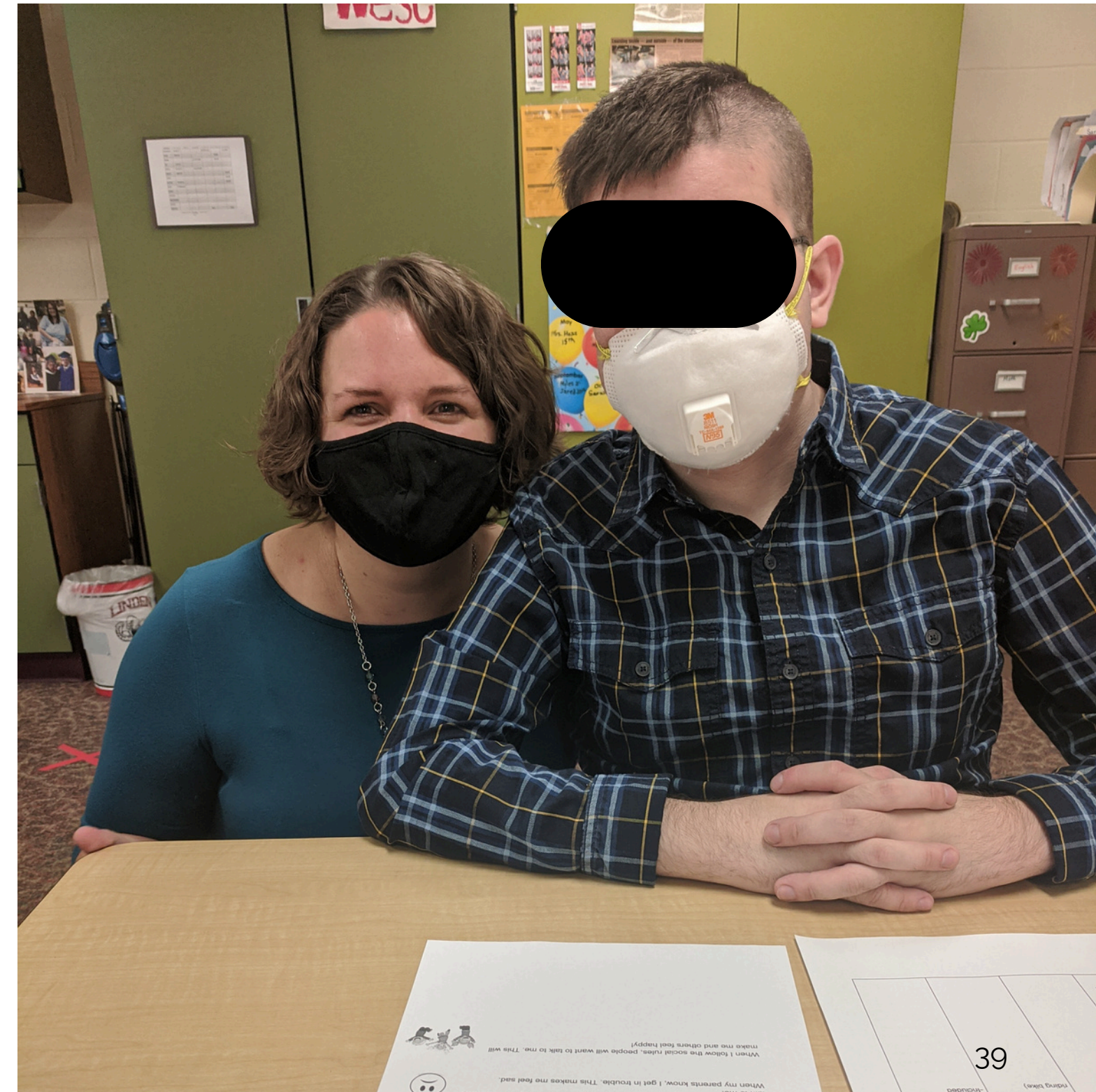


DOWNLOAD EXERCISES



OaklandMyo.com/Speaking

MY NONSENSE EXPERIENCES



WARNING!!



Do not use long breath holds with

- medically fragile
- heart issues
- pulmonary hypertension

DO:

- Celebrate where you/others are
- Acknowledge what the body needs (yawn, sigh, mouth breathing)
- Observe changes in the body (focus, saliva, warmth, calm, etc!)



**BREATHING:
THE TOOL
YOU
ALWAYS
HAVE
ACCESS TO**





SUPER POWER: SELF-EFFICACY

**THE PERSON'S BELIEF IN THEIR ABILITY TO CONTROL
THEIR SPEECH, THOUGHTS, BEHAVIOR**

In Fluency:

- Fluency Shaping = proactively reshape entire speech pattern
- Stuttering Management = modify the moment of stuttering

In Voice, Fluency, Language + In the classroom and beyond:

- Train to monitor and control use of breath-support strategies
- Train to monitor tension, breathing pattern, internal state
- Identify strategies which help regulate thinking, behaviors, speaking
 - Support implementation and independence of these strategies

***Create awareness, acceptance,
confidence, empowerment***

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THANK YOU

Michelle@OaklandMyo.com
OaklandMyo.com

