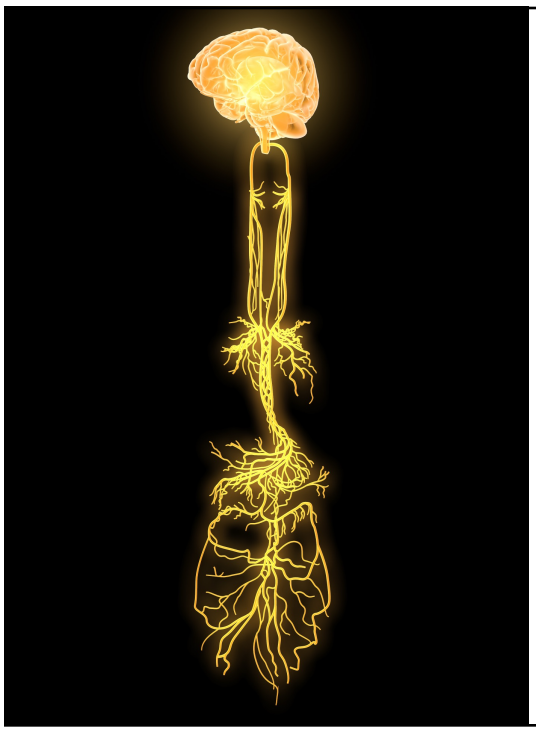


Applied Polyvagal Theory As An Embodied Approach To Psychotherapy (Part 1)

Dr. Arielle Schwartz

1

BIRDWINGS ~RUMI

Your grief for what you've lost lifts a mirror up to where you are bravely working. Expecting the worst, you look, and instead, here's the joyful face you've been wanting to see.

Your hand opens and closes and opens and closes.
If it were always a fist or always stretched open
you would be paralyzed.
Your deepest presence is in every small
contracting and expanding.
The two as beautifully balanced and coordinated as birdwings.

2

Our time together…

Describe	Describe the core components of applied polyvagal theory
Identify	Identify signs of a regulated vs. dysregulated nervous system
Apply	Apply simple vagal toning practices for nervous system regualtion

3

Core components of Applied Polyvagal Theory

- Poly-Vagal
- The Vagal Brake
- Vagal Efficiency
- Vagal Tone
- Social Engagement System
- Tiered Response to Threat & Hybrid Nervous System States
- Neuroception
- Co-Regulation
- Neuromodulation

4

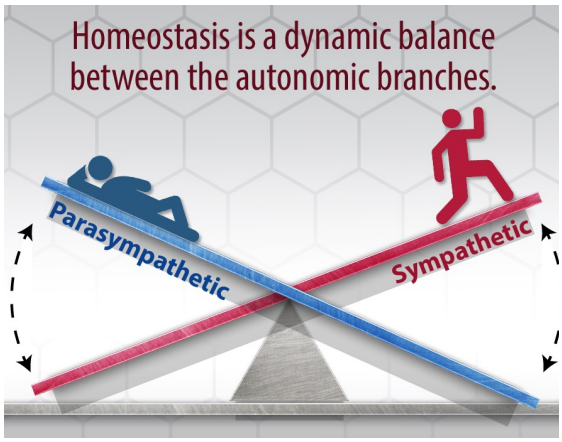
NERVOUS SYSTEM FLEXIBILITY

- The ability to tolerate a range of arousal states while responding effectively and efficiently.
- Autonomic nervous system flexibility supports psychological flexibility. (Porges & Porges, 2023)
- "The mind is better able to form an optimistic and hopeful narrative full of possibilities when we move out of an experience of feeling threatened into a felt sense of safety and connection." (Applied Polyvagal Theory in Yoga, Schwartz, 2024.
- Our mental narratives are often a reflection of the nervous system state that we are currently in.
- "The mind narrates what the nervous system knows. Story follows state" (Deb Dana, 2018, p. 35)
- State also follows story…

Dana, D. 2018. *The Polyvagal Theory in Therapy: Engaging the Rhythm of Regulation.* New York: W. W. Norton.
Porges, S. W., & Porges, S. (2023). Our polyvagal world: How safety and trauma change us. New York: Norton.
Schwartz, A. (2024) Applied Polyvagal Theory in Yoga: Therapeutic practices for emotional health. New York: Norton

5

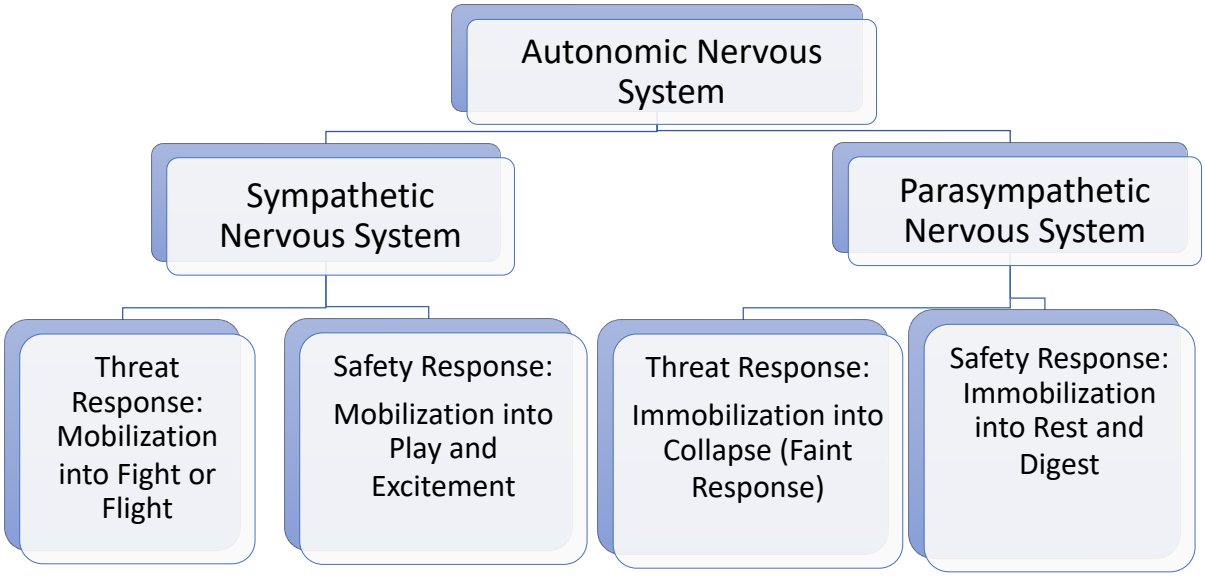
Homeostatic balance



Immobilization Mobilization

6

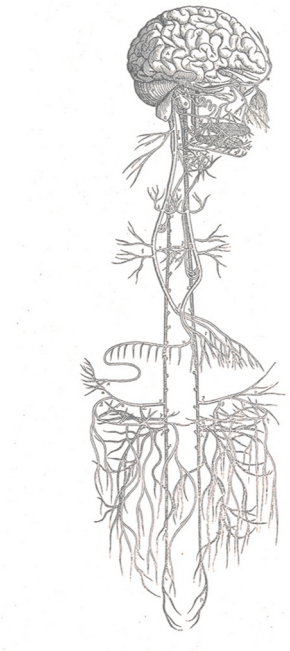
The Autonomic Nervous System



7

THE VAGUS NERVE

- **Cranial Nerve X:** The "wandering nerve" connects to eyes, ears, mouth, larynx & pharynx in throat, heart, lungs, digestive organs
- **Bi-Directional Information highway:** 80% Afferent (from body to brain)
- **The Power Cord to the Computer—the Brainstem**



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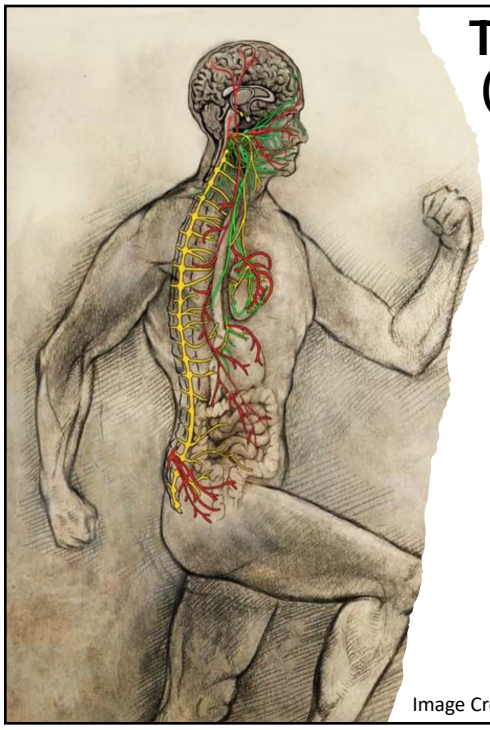


The Polyvagal Theory (Porges, 2022)

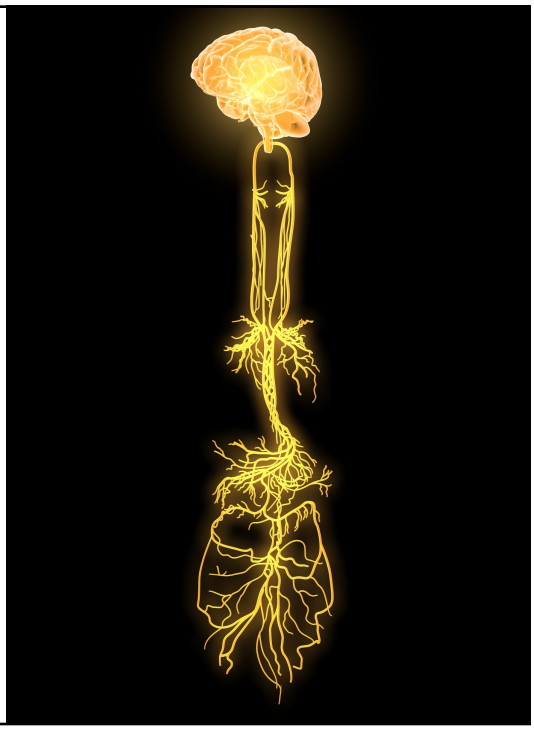
- **Myelinated Ventral Vagal Circuit—"Social Engagement System"** Safe, Social, and Connected. Above Diaphragm extending into eyes, ears, facial muscles, larynx and pharynx in throat, lungs, heart.
- **Dorsal Vagal—Immobilization.** Below diaphragm, into digestive and reproductive organs, has shared neural-circuitry with the ventral circuit. Facilitates "rest and digest" when you feel safe. When unsafe initiates "collapsed immobilization" or a "faint" response.

Image Credit: Gabriel Kram

9

Vagus Nerve Awareness Practice

Eyes
Ears
Mouth and Jaw
Throat
Heart
Lungs
Diaphragm
Abdomen & Digestive Organs
Reproductive organs



10

VENTRAL VAGUS:
THE SOCIAL ENGAGEMENT SYSTEM

- We recognize it by the sparkle in the eye, prosody of voice tone, natural smile, feeling calm and connected.
- The feeling of the face
- Listening: The face, ears-voice-heart connections
- Communicated between mother and child through rocking, humming, singing, touch…
- Functions as a fine-tuned, refined brake
- Is strengthened by relationship and through repeated practice
- Helps us up-regulate and down-regulate

11

The Vagal Brake (Porges, 2022)

- All three systems (ventral Vagal, Sympathetic, and Dorsal vagal have inputs to the sino-atrial node: the pacemaker of the heart
- Sympathetic input accelerates the heart.
- When we shift into a threat response, the vagal brake which ordinarily slows the heart (held in place by the ventral vagal system) begins to lift and the heart rate accelerates.
- Ventral and dorsal input slows the heart albeit in different ways
- Applying the myelinated ventral vagal brake slows the heart gradually and smoothly and can easily lift which allows the heart rate to increase as needed.
- The dorsal vagal circuit functions as an abrupt brake leading to bradycardia, a rapid reduction of the heart rate or vasovagal syncope (faint response).

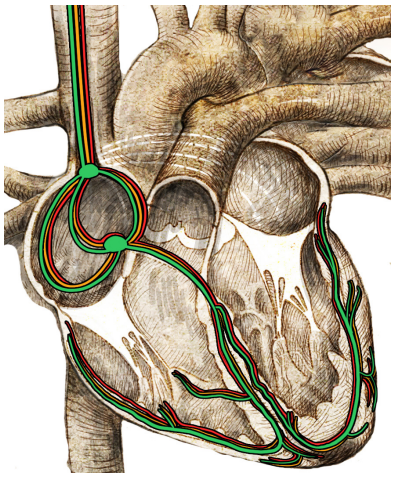
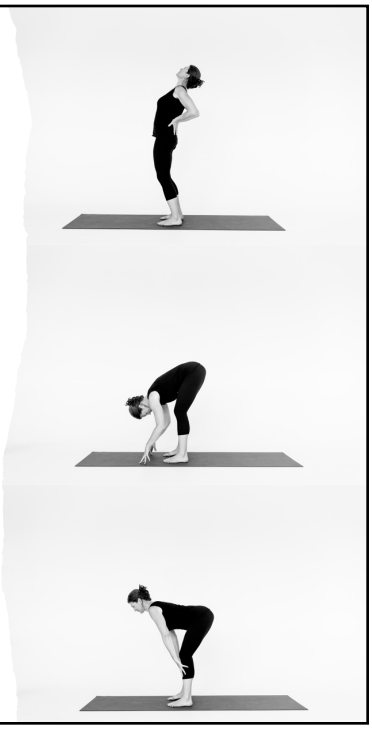


Image Credit: Gabriel Kram

12

Baroreceptors and Vagal Efficiency (Porges, 2017)

- Vagal efficiency refers to how quickly the vagus nerve helps you adapt everyday stressors by applying and removing the vagal brake
- Tolerating postural changes such as moving from laying down, to sitting, to standing, can provide a good measure for resilience of your nervous system.
- Practices that involve moving through postural transitions in a repeated, rhythmic manner allow you to alternately increase and decrease your heart rate.
- You are increasing the resilience of your nervous system in addition to the physical endurance required in these actions.



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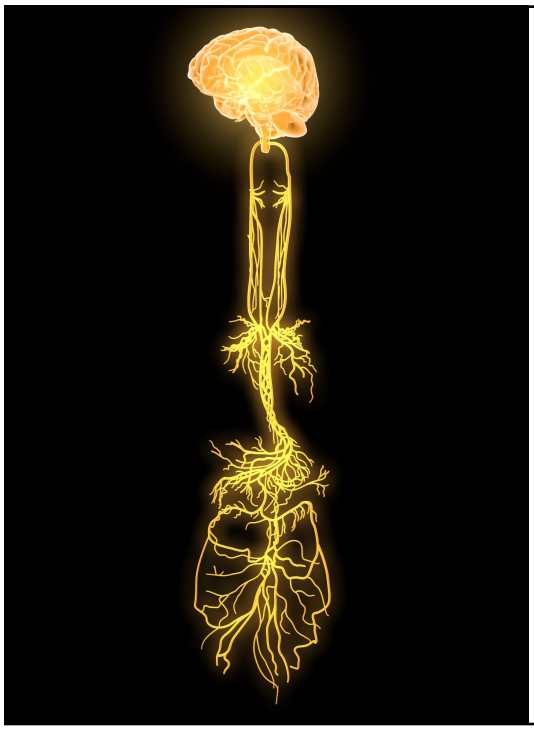

Applied Polyvagal Theory As An Embodied Approach To Psychotherapy (Part 2)

Dr. Arielle Schwartz

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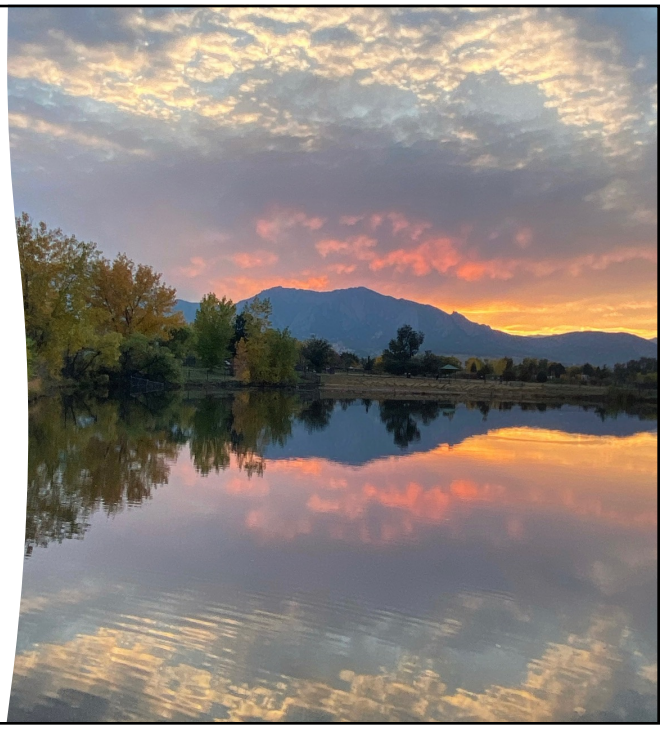
Unobstructed

Like the little stream
Making its way
Through the mossy crevices
I, too, quietly
Turn clear and transparent.

~Ryokan



15

Our time together…

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16

Core components of Applied Polyvagal Theory

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- Neuroception
- Co-Regulation
- Neuromodulation
- Natural Vagus Nerve Stimulation

17

Applied Polyvagal Theory: A Transdiagnostic Approach to Care

- We are addressing the physiological roots that underlie a wide range of physical and mental health conditions.
- Applied polyvagal theory allows therapists and clients to compassionately understand and treat the imbalances within the autonomic nervous symptom that form the basis of most mood, anxiety, or traumatic stress related disorders.
- Treatment begins with building awareness of the state of the nervous system.
- Treatments are most beneficial when they offer psychosensory interventions that target both the psychological and physiological factors that worsen symptoms.

18

How Mind-Body Therapies Work

- **Co-Regulation:** The ability to be in ventral vagal regulation and offer that regulating energy to others. Clinician's use of breath, affect tolerance, and embodiment offers modeling and communicates a willingness to "be with" distress (Porges, 2022)
- **Increased Distress Tolerance** Capacity to observe experience, tolerate discomfort leads to reductions in emotional reactivity and decreases in symptoms of anxiety, panic, chronic pain, and depression (Boffa et al., 2018)
- **Improved Mental Outlook:** Increased self-awareness, self-acceptance & self-compassion (Germer & Neff, 2019)
- **Enhanced Somatic Awareness:** Proprioceptive & Interoceptive Integration (Price, & Hooven, 2018)
- **Increased Self-Regulation:** internal connection between breath, heart, brain, mind, and embodied felt-sense to up-regulate or down-regulate the nervous system as needed. (Schore, 2018)
- **Physiological Changes** Improvements in Vagal Tone, Vagal Efficiency, and Heart Rate Variability (Bolton et al., 2020)

19

Co-Regulation

- **Interpersonal Co-Regulation:** The ability to be in ventral vagal regulation and offer that regulating energy to others.
- **A Shared Window of Tolerance:** Clinician's use of breath, affect tolerance, and embodiment offers modeling and communicates a willingness to "be with" distress
- **Co-Regulation precedes Self-Regulation**
- **Self-Regulation:** Clients internal connection between breath, heart, brain, mind, and embodied felt-sense to up-regulate or down-regulate the nervous system as needed.

20

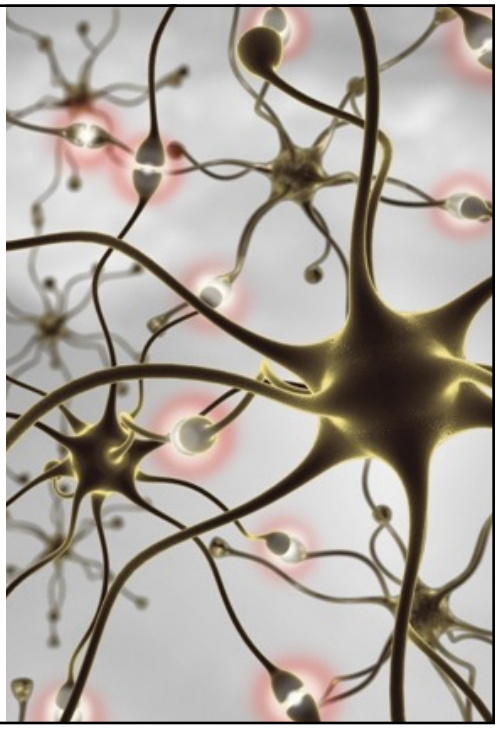
Neuroplasticity & Natural Vagus Nerve Stimulation

- Neuroplasticity supports our ability to grow throughout the lifespan
- There are about 86 billion neurons in the brain, each with thousands of connections to each other.
- All of our memories, beliefs, and behaviors are encoded as neural networks.
- Brain changes with every experience.

21

What are Neural Networks?

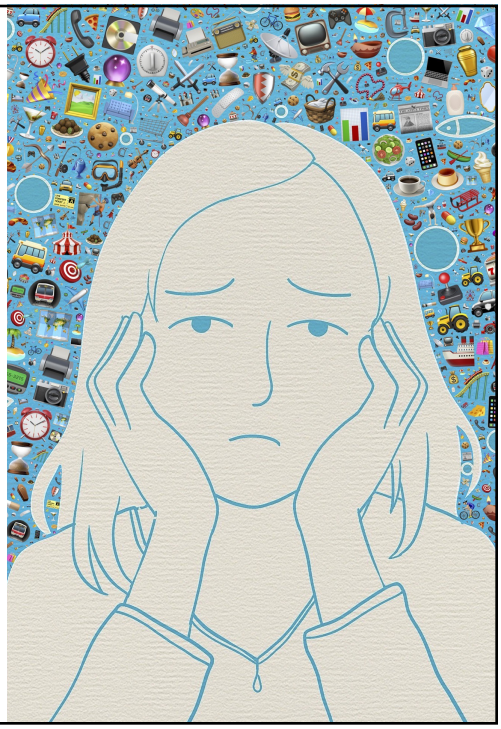
- A neural network is a group of interconnected neurons in the brain that work together
- Neural networks form the basis of all learning.
- Every time we learn a new behavior, we create a new neural circuit.
- Frequent repetitions of the behavior myelinate nerve pathways which allows the signals to move quickly and smoothly.
- All memories are patterns of neural networks.



22

STRESS-INDUCED NEUROPLASTICITY

- Hebb's Law: what fires together, wires together.
- Whatever you repeatedly think, feel, and sense builds new or strengthens existing patterns of neural connections in the brain.
- Anxiety, Depressive thinking, and Post-traumatic Stress are forms of stress-induced neuroplasticity
  - Reviewing the negative images, hypervigilance to threat, nightmares, flashbacks, and repeating unhelpful beliefs and thought patterns strengthen the neural networks of these distressing states.



23

POSITIVE NEUROPLASTICITY

- We can purposefully change our neural networks through directed effort.
- Positive neuroplastic change requires the conscious inhibition of old responses coupled with intentional repetition of new, more adaptive responses. (Ogden & Fisher, 2015).

24

Mind-Body Therapies and Vagus Nerve Stimulation

Neuromodulation and Electroceuticals:

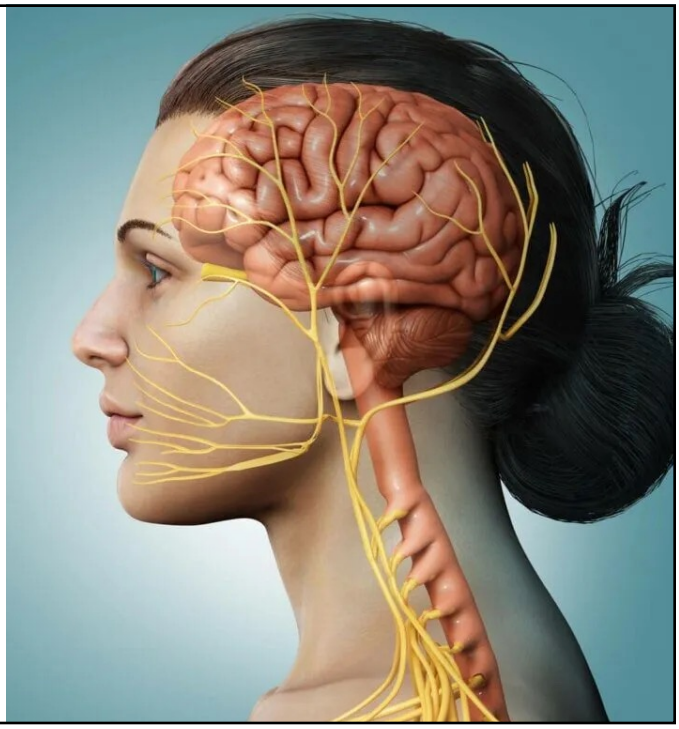
- The field of bio-electronic medicine offers neuromodulation or Vagus Nerve Stimulation (VNS)
- Surgically implanted electronic devices sends shocks to the vagus nerve.
- Treatment for rheumatoid arthritis, epilepsy, fibromyalgia, chronic pain, tinnitus, anxiety, depression, and PTSD
- Exerts a refined inhibiting effect on the sympathetic nervous system.
- Helps to regulate both sympathetic hyper-arousal and parasympathetic hypo-arousal.

- Bremner, J. D., Jospitre, J., Macaluso, M., Bongiorno, P., Hoffman, M., Gidron, Y., ... & Staats, P. S. Non-invasive Vagus Nerve Stimulation in Post-Traumatic Stress Disorder.
- Duff, I. T., Likar, R., Perruchoud, C., Kampusch, S., Köstenberger, M., Sator, S., ... & Abd-Elsayed, A. (2024). Clinical efficacy of auricular vagus nerve stimulation in the treatment of chronic and acute pain: a systematic review and meta-analysis. *Pain and Therapy*, *13*(6), 1407-1427.
- *Goggins, E., Mitani, S., & Tanaka, S. (2022). Clinical perspectives on vagus nerve stimulation: Present and future. Clinical Science, 136(9), 695–709.*

25

Natural Vagus Nerve Stimulation and Strengthing "Vagal Tone"

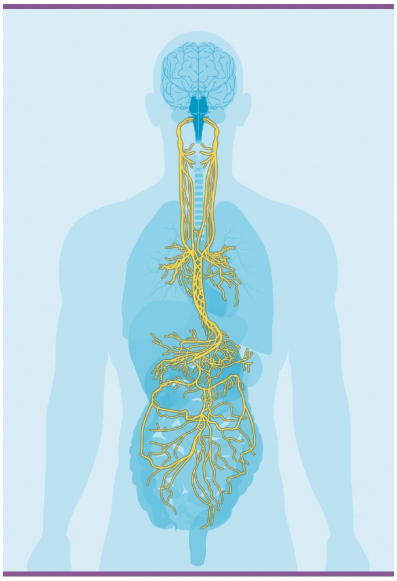
- **Smooth transitions between the Sympathetic and Parasympathetic Branches of the ANS**
- **Neuromodulation vs. Hacking**
- **Gentle Awakening of the Ventral Vagal Circuit**
- **Emphasis on Social Connection**
- **Focus on Safety & Choice**
- **Soothing & Stimulating**



26

CONSCIOUS BREATHING AND THE VAGUS NERVE

- Travels through the diaphragm along side the esophagus.
- Diaphragmatic breathing creates a massage along the vagus nerve.
- Movement of the diaphragm expands and contracts the space around the heart
- These changes increase and decrease blood pressure via baroreceptors in the heart



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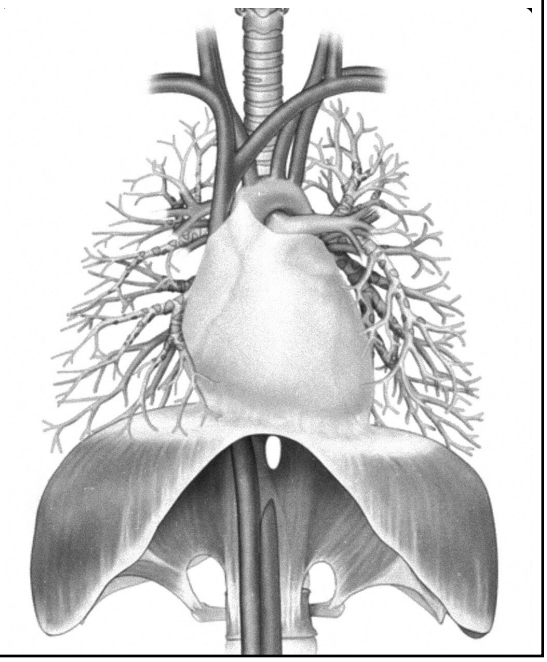
Diaphragm & Pericardium

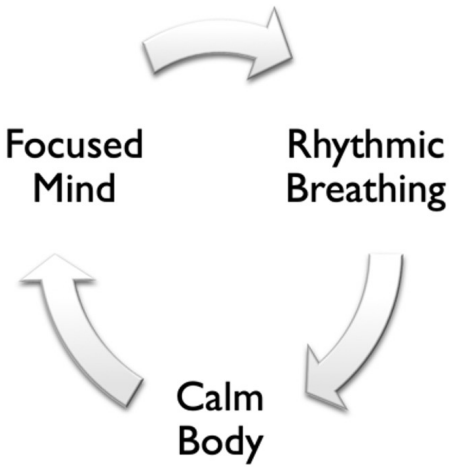
- Movement of the diaphragm expands and contracts the space around the heart
- Diaphragm fascia becomes the connective tissue around the heart…the pericardium or “heart protector”



28

Conscious breathing

- Stressful and traumatic situations can cause shallow breathing, holding of the breath, tightness in the chest, over-breathing, and feelings of panic.
- Breath is the fastest way to regulate the ANS
  - Inhales stimulate sympathetic nervous system
  - Exhales stimulate parasympathetic nervous system.
- The positive impact of conscious breathing is self-reinforcing: rhythmic breathing creates a calm body and focused mind, which helps us stay present with the breath.



29

Nervous system & Posture

- Posture are positions from which only select emotions and behaviors can be possible (Ogden, 2009)
- Posture is a form of implicit memory.
- “We are what we repeatedly do” Aristotle
- Flexion – Parasympathetic
- Extension - Sympathetic

30

PRACTICES TO ENHANCE VAGAL TONE

- Gratitude
- Resonance Frequency Breathing
- Diaphragmatic Breathing
- Physiological Sigh
- Cold Water Exposure
- Self-Soothing Touch
- Auricular Acupressure (ear massage)
- Humming
- Compassion & Loving Kindness Meditation

31

Research support for Natural Vagus Nerve Stimulation "Vagal Toning"

- **General:** Johnson, Rhaya L., and Christopher G. Wilson. "A review of vagus nerve stimulation as a therapeutic intervention." Journal of inflammation research (2018): 203-213.
- **Gratitude:** Jans-Beken, L., Jacobs, N., Janssens, M., Peeters, S., Reijnders, J., Lechner, L., & Lataster, J. (2020). Gratitude and health: An updated review. The Journal of Positive Psychology, 15(6), 743–782.
- **Resonance Frequency Breathing:** Vanderhasselt, Marie-Anne, and Cristina Ottaviani. "Combining top-down and bottom-up interventions targeting the vagus nerve to increase resilience." Neuroscience & Biobehavioral Reviews 132 (2022): 725-729.
- **Diaphragmatic Breathing:** Russo, M. A., Santarelli, D. M., & O'Rourke, D. (2017). The physiological effects of slow breathing in the healthy human. *Breathe*, *13*(4), 298-309.
- **Physiological Sigh:** Balban, M. Y., Neri, E., Kogon, M. M., Weed, L., Nouriani, B., Jo, B., . . . & Huberman, A. D. (2023). Brief structured respiration practices enhance mood and reduce physiological arousal. Cell Reports Medicine, 100895.

32

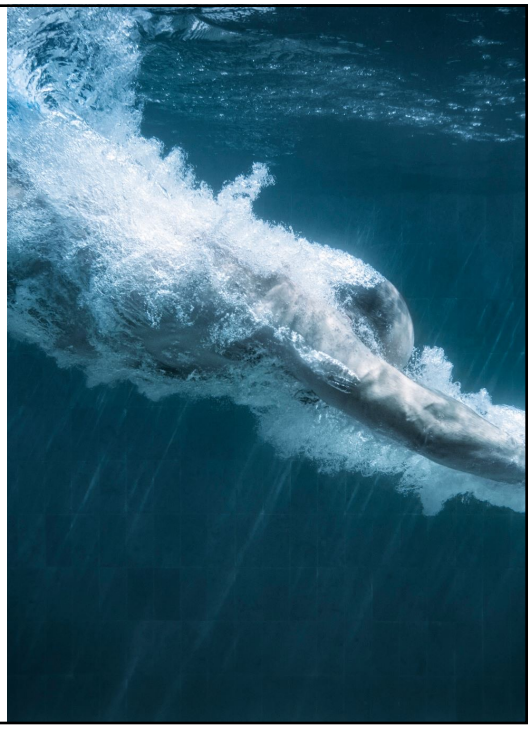
Research support for Natural Vagus Nerve Stimulation "Vagal Toning"

- **Cold Water Exposure:** Jungmann, M., Vencatachellum, S., Van Ryckeghem, D., & Vögele, C. (2018). Effects of cold stimulation on cardiac-vagal activation in healthy participants: randomized controlled trial. *JMIR formative research*, *2*(2), e10257.
- **Self-Soothing Touch:** Dreisoerner, A., Junker, N. M., Schlotz, W., Heimrich, J., Bloemeke, S., Ditzen, B., & van Dick, R. (2021). Self-soothing touch and being hugged reduce cortisol responses to stress: A randomized controlled trial on stress, physical touch, and social identity. Comprehensive Psychoneuroendocrinology, 8, Article 100091.
- **Auricular (ear) VNS acupressure:** Trinh, D. T. T., Nguyen, N. C., Tran, A. H., Bui, M. M. P., & Vuong, N. L. (2024). Enhancing Vagal Tone, Modulating Heart Rate Variability with Auricular Acupressure at Point Zero: A Randomized Controlled Trial. *Medical Acupuncture*, *36*(4), 203-214.
- **Humming**: Nivethitha, L., Manjunath, N. K., & Mooventhan, A. (2017). Heart rate variability changes during and after the practice of bhramari pranayama. International Journal of Yoga, 10(2), 99.
- **Compassion:** Bello, M., Carnevali, L., Petrocchi, N., Thayer, J. F., Gilbert, P., & Ottaviani, C. (2020). The compassionate vagus: A meta-analysis on the connection between compassion and heart rate variability. Neuroscience & Biobehavioral Reviews, 116, 21-30.

33

Cold Water Exposure

- **Diving Reflex:** splashing cold water on your face from your lips to your scalp line stimulates the diving reflex. You can also achieve the nervous system cooling effects by placing ice cubes in a ziplock and holding the ice against your face and a brief hold of your breath. The diving reflex slows your heart rate, increases blood flow to your brain, reduces anger and relaxes your body. (Al Haddad et al., 2010).



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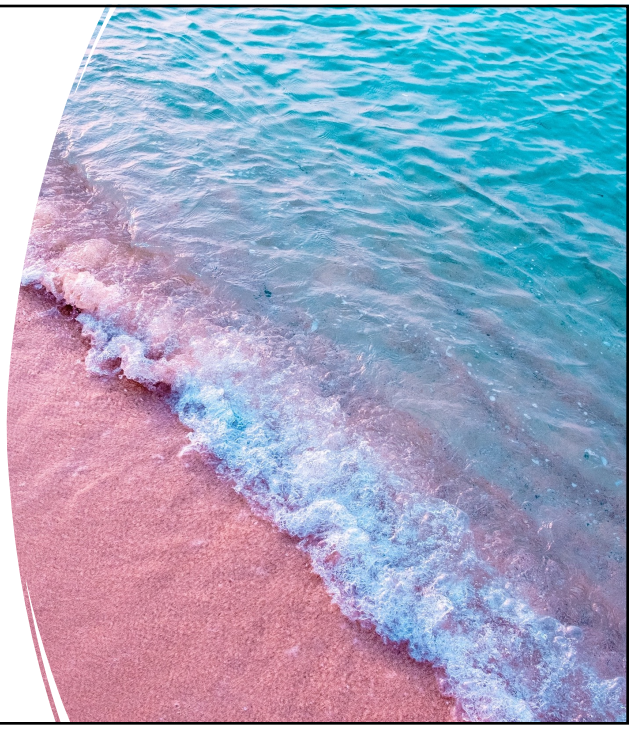
Gratitude

Health benefits of maintaining gratitude journal:

- An increase in positive moods, greater feeling of connection to others, better sleep more optimistic about the coming week, report fewer physical symptoms, and feel better about their lives when compared to a control group (Emmons, 2007).
- Improved vagal tone (McCraty & Childre, 2004)
- Even if it is difficult to find something to be thankful for, the positive results are associated with simply remembering to look for things to be grateful for (Korb, 2015).



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The Power of Positive Thinking

- Research indicates the human tendency to focus on the negative.
- The capacity to focus on the positive needs to be developed.
- In order to counteract this negativity bias, we need to actively look for evidence of positivity and goodness in our lives (Hanson, 2016)

36

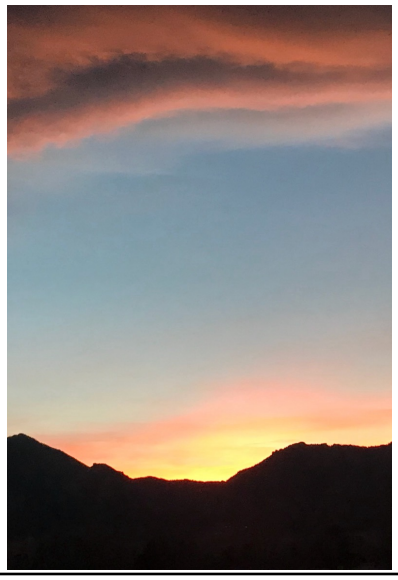
Practice: Gratitude (Center for Greater Good, Berkely, CA)

- Daily Gratitude journal (3 things)
- Gratitude List: write down as many things that you feel grateful for 3 minutes a day
- Share: Tell someone else about something you are grateful for
- Embellish: Pick one of your gratitude items and embellish it with descriptive details
- Savoring walk: Receive the sensory experiences of the world around you.
- Thank you: The act of expressing gratitude to others…a gift that is shared.

37

RESONANCE FREQUENCY BREATHING

- Resonance Frequency Breathing (Pagaduan, et al., 2019):
  - 5-count inhale
  - 5-count exhale
  - Breathing in and out of your heart as you focus on anything that brings you a genuine sense of care, warmth, appreciation, or gratitude (McCraty & Childre, 2004; McCraty & Zayas, 2014)



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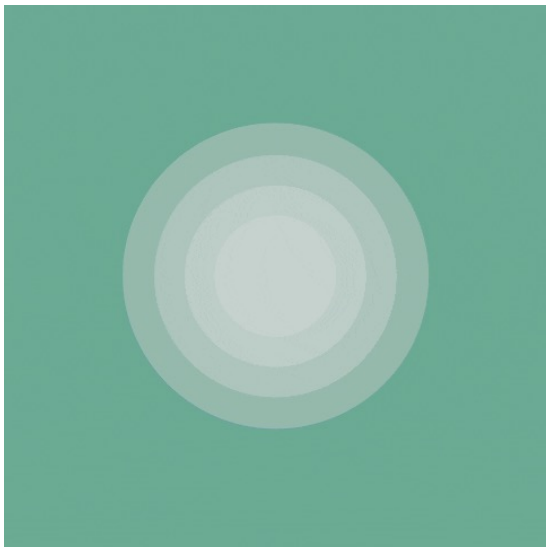
Resonance Frequency Breathing



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The physiological sigh

Take two sharp inhales of breath, typically through the nose, followed by an extended exhale through the nose or mouth (Del Negro, Funk, & Feldman, 2018, Ashhad et al., 2022).

40

Self-Havening Touch (Truitt, 2022)

Touch helps to reduce heart rate and blood pressure, lower norepinephrine and cortisol, increase oxytocin, GABA and Serotonin, increase positive emotions

- **Touch palms**
- **Hands to your forehead and outward to your temples.**
- **Hands to your cheeks and outward toward your ears.**
- **Moving hands from shoulders down to elbows**

41

Savor to Nourish Your Nervous System

- Have a positive experience
- Enhance through sensory Awareness
- Absorb by pausing and savoring any subtle shifts towards ease, safety, & connection

42

Cultivate Sensory Awareness (Rosenberg, 2017)

- The vagus nerve works closely with other cranial nerves that come close to the surface of the skin in your face, ears, and neck
- Massage the space between your eyebrows with gentle circular movements.
- Create circular movements around your temples.
- Place your fingertips by the bridge of your nose and find sweeping movements along the tops of your cheekbones, outward toward your temples.
- Place your fingertips by the bridge of your nose and create sweeping movements under your cheekbones, outward toward your ears.

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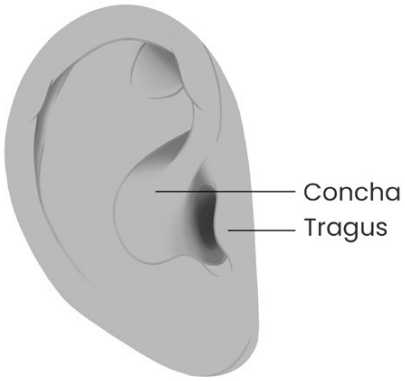
Natural Vagus Nerve Stimulation

Tragus and Conchae Stimulation: Massaging the cartilage in front of the ear stimulates the auricular branch of the vagus nerve (ABVN) also known as Alderman's nerve or Arnold's nerve improves vagal tone. Conchae consist of 100% Vagal Fibers.

Manual Auricular Stimulation is associated with improvements in symptoms of migraine, anxiety, hypertension, and emotion regulation



Chopra, D., Smith, R. L., Castle, R., & Murali, P. A Prospective on Vagal Tone via Auricular Stimulation and Deep Breathing.

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STAY IN TOUCH

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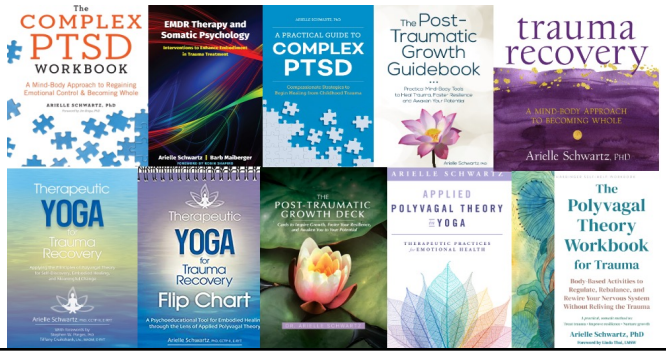

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