



Pure Community

## Thank you for joining us!


**Session 5: The Neuroscience of Stress, Part 2**  
**Trainer: Anne Contreras**  
**Director of Programs**

**Getting Started:**

1. If you have any questions, please type them into the Q&A box!
2. At the end of this session, when you leave the meeting, there will be a link that will pop-up asking you to complete the Session Quiz / Feedback Form.
3. You will receive a follow-up email within 24 hours of this session. That email will serve as your confirmation of attendance record for this session.

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# Culture of Care Series: Session 5

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## The Neuroscience of Stress: Part 2



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# Your Instructor

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PhD Studies:  
International Psychology  
Trauma/Systems Concentration,  
Global Crisis Informed Care

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# Who We Are

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**Pure Edge, Inc. (PEI)** is a private operating foundation that provides direct service to organizations through professional development & strategy thought partnership.

PEI also provides grants to national organizations that advance the work of whole child development & SEL.


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## Welcoming Activity

So far, which  
 **Brain Break**  
do you enjoy doing the most?



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## Welcoming Activity

- |                       |                                 |
|-----------------------|---------------------------------|
| 1. Anchor Breathing   | 6. Seated Cat/Cow               |
| 2. Breathing Ball     | 7. Seated Figure Four           |
| 3. Chair Pose         | 8. Seated Forward Bend          |
| 4. Chair Twist        | 9. Starfish Breathing or Take 5 |
| 5. Even In – Even Out | 10. Sunrise/Sunset              |



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# Pure Power Curriculum

## Grades K-5

- ❖ Unit 1 – The Power to Be Calm
- ❖ Unit 2 – Power to Tame Your Temper
- ❖ Unit 3 – Power to Laser Focus
- ❖ Unit 4 – Power to Grow and Stretch
- ❖ Unit 5 – Power to Lead with Kindness

## Grades 6-12

- ❖ Unit 1 – Power to Shine
- ❖ Unit 2 – Power of Mindfulness
- ❖ **Unit 3 – Power of Brain-Body Connection**
- ❖ Unit 4 – Power of a Balanced Life
- ❖ Unit 5 – Tool Kit for a Balanced Life



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# Pure Power

Grades  
6-12

Unit 3

Power of the Brain  
Body Connection



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## Learning Objectives

- ❖ Learn about the Vagus Nerve.
- ❖ Understand the affects of the Vagus Nerve on emotions and the Nervous System.
- ❖ Toning the Vagus Nerve.
- ❖ Experience Breathe, Move, & Rest Practices
- ❖ Continue learning to align with SEL lesson structure



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## We will always practice

1. Self-care 
2. Brain Breaks 
3. Modeling SEL Lesson Structure 



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## Signature Practices to Integrate SEL: Welcoming Activity, Engaging Activity, and Optimistic Closure



### Welcoming Inclusion Activities (1-9 minutes)

- Support contribution by all voices
- Set norms for respectful listening
- Create connection and belonging
- i.e. Community building, check-in

### Engaging Strategies (1-15 minutes)

- Sense Making
- Transitions
- Brain Breaks
- Intentionally build adult SEL skills
- i.e. Brain Break, think-ink-pair-share

### Optimistic Closure (3-5 minutes)

- Creates momentum towards taking action
- Reflection and looking forward
- Intentional Closure
- Topic reinforcement
- i.e. Reflective questions

Source: SEL 3 Signature Practices Playbook 2019



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## Engaging Activity: Mindful Minute



- Start in Seated Mountain.
- Bring your attention to the present moment. We are going to start by taking a Mindful Minute.
- Start bringing your attention to the breath, noticing its qualities (fast, slow, warm, cool, shallow, deep...).
- Continue to focus your attention on the breath, and notice how you are feeling. Just notice.

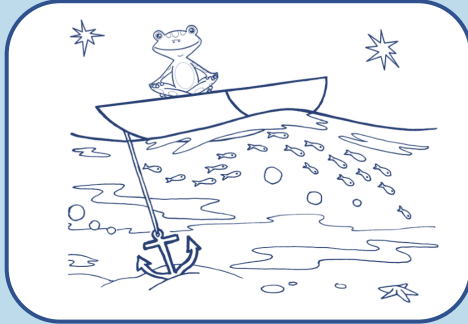


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## Engaging Activity: Anchor Breathing



1. Sit down and get comfortable.
2. Rest your hand on your chosen breathing space: tummy, chest or your nose.
3. Do your breathing and keep your attention on your breathing space.
4. When your attention wanders, gently bring it back to your breathing space.
5. Can you be mindful of your breathing for 5 breaths? For 1 minute?



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## Guiding Question

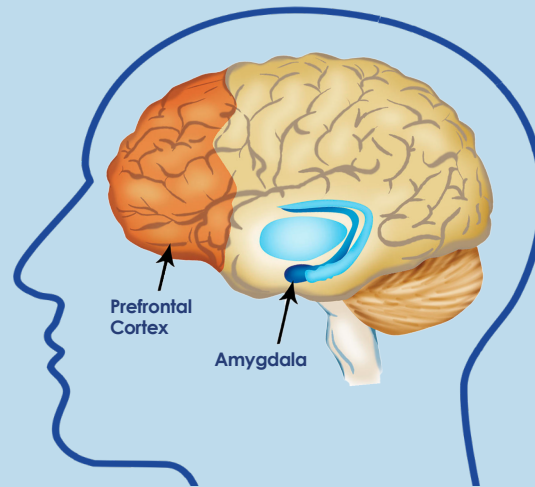
How does mindfulness practice  
tone the Vagus Nerve?



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## Neuroscience



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## Neuroscience: Vagus Nerve

The vagus nerve, the tenth cranial nerve, is the superhighway of the nervous system that **connects** the body and brain.



image: <https://naturalwestmichigan.com/toning-the-vagus-nerve/>



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## Vagus Nerve

Latin for "wanderer," which is appropriate for the longest cranial nerve in the body.

**It is intricately connected to:**

- Mood
- Immune response
- Digestion and
- Heart Rate <sup>1</sup>

<sup>1</sup>Breit, Siarid, et al. "Vagus Nerve as Modulator of the Brain-Gut Axis in Psychiatric and Inflammatory Disorders". *Frontiers in Psychiatry*. 13 March 2018.  
Image: Gersema, Emily. "Gut Instinct may have been the GPS of human ancestors." *USC News*.  
<https://news.usc.edu/144479/vagus-nerve-research-gut-instinct-may-have-been-gps-of-early-humans/>

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## Engaging Activity: Brain Balance Sequence

1. Inhale, take the right arm overhead and the left foot slightly behind, placing only your toes on the floor.
2. Exhale, lift the left leg, knee bent, and touch the right hand to the inside of the left knee.
3. Inhale, return the right arm overhead and the left foot slightly behind placing only your toes on the floor.
4. Exhale and again lift the left leg, knee bent, and touch the right hand to the inside of the left knee.
5. Repeat on the other side.

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# Vagus Nerve

It is also associated with the sensing and expression of emotions.



It innervates (supplies) the **vocal cords** and modulates (varying strength/tone/pitch) how we change **our voices to express emotion**; **our faces**, where we convey emotion; and courses **along our hearts**, where we often feel emotions.<sup>1</sup>

1: David DiSalvo, "Forget survival of the Fittest: It is Kindness That Counts," *Scientific American*, 2009.



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## Engaging Activity: Chair Eagle



1. Sit in Seated Mountain.
2. Cross your right thigh on top of your left.
3. Inhale and bring your arms up with elbows bent and palms facing forward (cactus arms).
4. Exhale and cross your left elbow on top of your right. Touch the back of your hands together. If it feels comfortable, bring palms together.
5. Inhale and lift elbows up until you feel a comfortable stretch.
6. Look at your thumbs and take 3 relaxed breaths.
7. Release on an exhale.
8. Repeat second side (left thigh on top, right arm on top).



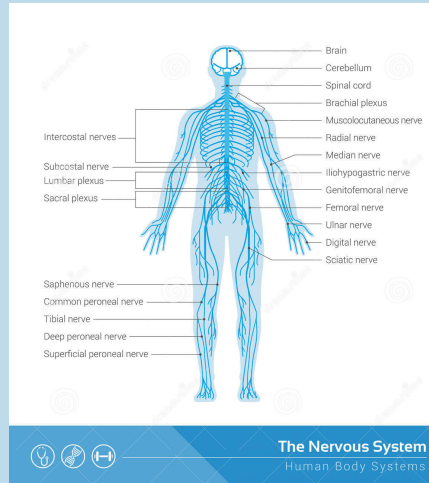
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# Vagus Nerve: autonomic nervous system

The body's unconscious control system

Regulating, internal organs to optimizing health, growth and restoration also known as **homeostasis**.<sup>1</sup>

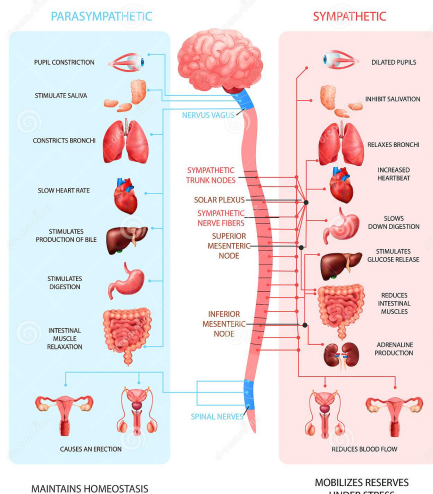


1: Porges, Stephen, "The Pocket Guide to the Polyvagal Theory." (New York: W.W. Norton & Company, Inc., 2017), 15

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## PERIPHERAL AUTONOMIC NERVOUS SYSTEM



dreamstime.com

ID 179551587 © Macrovector

## Vagus Nerve

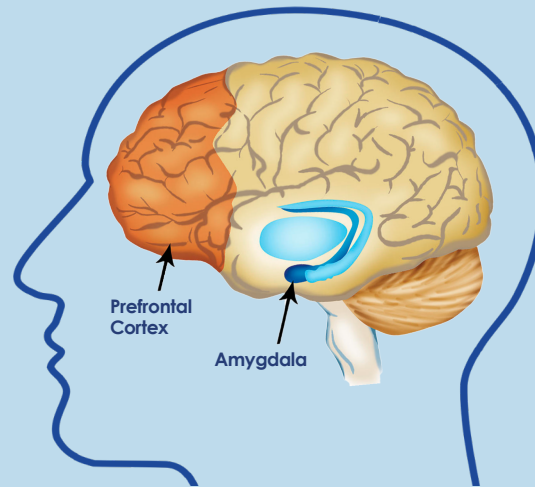
The Vagus nerve resides in the parasympathetic nervous system.

- **Sympathetic:** mobilizes you for action, aka the "on" switch.
- **Parasympathetic:** the "off" switch.

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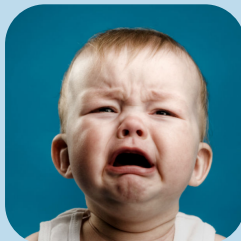
# Neuroscience



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## Stress Response



### "Gas Pedal"

Sympathetic Nervous System:  
Fight or Flight



### "Brake"

Parasympathetic Nervous System:  
Rest and Digest



<https://www.health.harvard.edu/staying-healthy/understanding-the-stress-response>  
Image Sources: <https://www.shutterstock.com/video/clip-22377115-tired>, <https://ggia.berkeley.edu/practice>



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## Engaging Activity: Alternate Nostril Breathing



### Notes:

\*The hand movements will take some practice to feel comfortable.

\*If thumb and pinky are too hard for learners to coordinate, you could use right thumb to close right nostril and left thumb to close left nostril.

\*Once your learners have mastered the hand movements, helpful verbal cues are: inhale right, close, exhale left. Inhale left, close, exhale right.

\*This exercise can take 1 to 3 minutes.

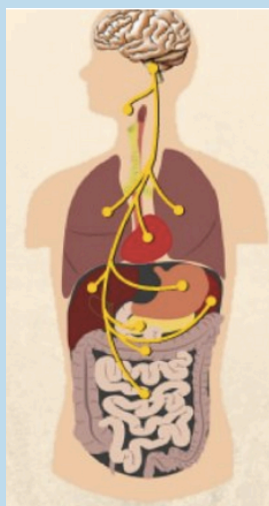
1. Let's start with a few deep breaths through the nose.
2. Inhale, close the right nostril by pressing the side of the nose with the right thumb.
3. Exhale out the left nostril.
4. Inhale through the left nostril.
5. Close the left nostril by pressing the side of the nose with your right pinky and fourth finger. At the same time, take your thumb off of your right nostril.
6. Exhale out the right nostril.
7. Inhale through the right nostril.
8. Close the right nostril with your thumb again and exhale through the left (removing the pinky and fourth finger).
9. This is one round. Complete 2 or 3 rounds by repeating steps 2-8. End on a left exhalation.
10. Take a few regular breaths.
11. Notice how you feel.



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## Neuroscience: Self-care & Vagal Tone



### THE VAGUS NERVE

#### How to Hack Your Nervous System

We can tone the **vagus nerve** through deep breathing exercises.

When the vagus nerve is relaxed, strong emotions are quelled and stress is reduced.

<http://depressedisorder.blogspot.com/2015/09/7-ways-to-stimulate-your-vagus-nerve-to.html>  
<https://www.yogauonline.com/yogau-wellness-blog/vital-vagus-what-vagus-nerve-and-what-does-it-do>



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[image: https://elemental.medium.com/science-confirms-that-the-vagus-nerve-is-key-to-well-being-c23fab90e211](https://elemental.medium.com/science-confirms-that-the-vagus-nerve-is-key-to-well-being-c23fab90e211)

## Parasympathetic

Parasympathetic activation moves the body toward **homeostasis**.

- Our inhalations/exhalations become **smooth & quiet**.
- The nervous system becomes **calm**.



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## What we hope to do

*Respond*


Vs.

**React**



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## Engaging Activity: Chair Boat




1. Slide your chair back from your desk so that your knees are not under your desk.
2. Start in Seated Mountain.
3. Hold on to the seat of the chair or the back of the chair with both hands.
4. Inhale, lift both feet off the ground. Keep your knees touching and stay balanced. Take 3-5 relaxed breaths. If this is difficult, you can lift one foot at a time.
5. See if you can lift your knees a little higher and stay balanced.
6. If you feel steady, see if you can stretch both arms out straight in front of you, shoulder height, parallel to the floor.
7. Exhale, put your feet back on the ground and return to Seated Mountain.

\*If practicing on the floor, simply substitute boat pose.  
 \*To modify, try lifting one foot at a time.

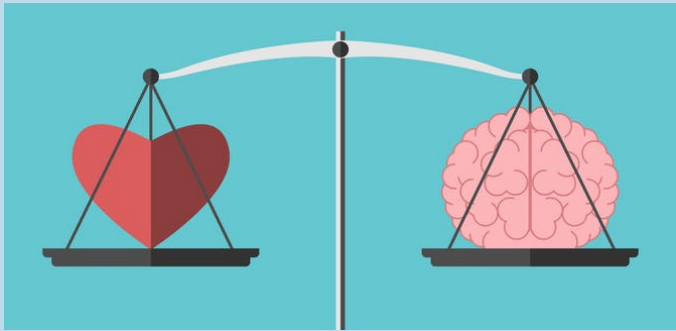


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# Emotional Regulation

**Balanced emotional regulation entails:**



Feelings, thoughts, physiological signals (heart rate and breath pattern), and nonverbal communication – such as body language & facial expression.<sup>1</sup>

1. Saudino and Wang, "Emotional Regulation and Stress," Journal of Adult Development. 2011. <http://link.springer.com/article/10.1007%2Fs10804-010-9114-7#page-2>  
 Image: March 2, 2020, [Understanding emotions is nearly as important as IQ for students' academic success](#)  
 Carolyn MacCann, University of Sydney; Amirali Minbashian, UNSW, and Kit Double, University of Oxford. <https://theconversation.com/us/topics/emotional-regulation-49394>

  
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## Engaging Activity: Guided Rest / Body Scan

1. Lie down on the floor on your back. Spread your feet apart. Turn your palms up to face the ceiling and close your eyes.
2. Put your attention on your forehead. Feel your forehead relax.
3. Put your attention on your eyes. Feel your eyes relax.
4. Put your attention on your cheeks and jaw. Feel your cheeks and jaw relax.
5. Put your attention on your neck. Feel your neck relax.
6. Put your attention on your shoulders. Feel your shoulders relax. (Repeat for arms, wrists, hands, fingers.)
7. Put your attention on your chest. Feel your chest relax.
8. Put your attention on your back. Feel where your back touches the floor (or the chair).
9. Put your attention on your belly. Notice how the breath moves the belly softly up and down.
10. Put your attention on your hips. Feel your hips relax. (Repeat for legs, knees, ankles, feet, toes.)
11. Bring your awareness to your breathing and notice where you feel the breath in your body. Maybe you notice it in your nostrils. Maybe you feel it in your chest. Maybe you feel it in your belly.
12. See if you can get really quiet. Maybe you will even feel your heart beating inside your body.
13. Let learners rest in silence for a few moments.
14. Ring chime.
15. Slowly start to wiggle your fingers and toes. Take a deep breath in and stretch your arms overhead. As you exhale, relax.
16. Open your eyes and slowly return to a seated position.
17. Notice how you are feeling.



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**Optimistic Closure:** Use one word to finish the sentence,  
I feel balance or homeostasis when...

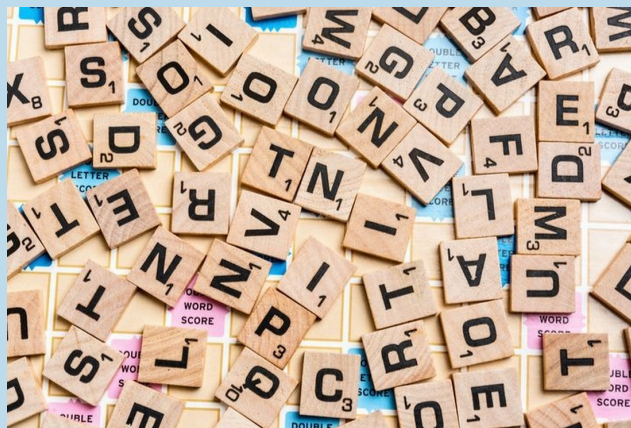


Photo: Juan Monino



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# Brain Breaks Review



## Breathe

- ❖ Mindful Minute
- ❖ Anchor Breathing
- ❖ Alternate Nostril Breathing



## Move

- ❖ Brain Balance Sequence
- ❖ Chair Eagle
- ❖ Chair Boat



## Rest

- ❖ Guided Rest/Body Scan



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# Takeaways

- ❖ Vagus Nerve: Body-Brain Connection – Emotions.
- ❖ Vagus Nerve: Parasympathetic-Sympathetic Nervous System.
- ❖ Vagal Tone
- ❖ Emotional Regulation
- ❖ Breathe, Move & Rest Brain Break Practices
- ❖ The 3 signature practices to integrate SEL into a lesson are:  
Welcoming Activity, Engaging Activity, and Optimistic Closure.



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# Homework

## Self?

Notice when you feel: rushed, energetic, hyper, or worried – sympathetic.

Notice when you feel: relaxed, at ease, or mellow – parasympathetic.

Every time you take a conscious breath, **purposely lengthen** the EXHALE.

## Online Class?

15-minutes into an online class session,  
allow yourself and your students a break  
by interjecting the **Chair Eagle**, Brain Break for 3 breaths.

## Together in Class?

After signing up for a curriculum account at [www.pureedgeinc.org](http://www.pureedgeinc.org):

- 1) Go to the online curriculum
- 2) Go to the BRAIN BREAK videos
- 3) Watch the video for ANCHOR Breathing to eventually,  
do in class with your students.



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Evidence-Based Approach  
Thoughtful Partnerships  
Curriculum & Training

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Online Curriculum

Log Out

+ MENU



• breathe

• move

• rest



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**Session 5:** The Neuroscience of Stress, Part 2  
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