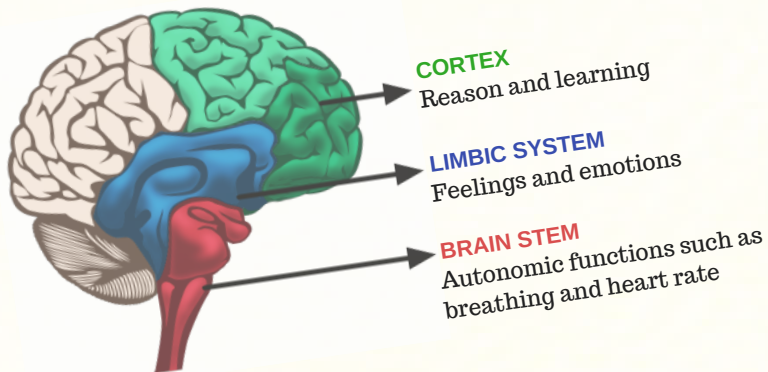


# WHY DO BRAIN INTERVALS AND FOCUSED ATTENTION PRACTICES WORK ON A SCIENTIFIC LEVEL?

van der Kolk, B. (2014). *The body keeps score*. New York, NY: Penguin Books.

Research shows that the brain develops from the bottom up (van der Kolk, 2014, pp. 55-64). When we are born, our brain stem is the only fully developed part of our brain. This is the primitive region of our brain that controls our breathing, our heart rate, our pulse, our temperature, and our balance. Our limbic brain or midbrain is the next to develop, which is the feeling, emotional part of our brain. Our limbic brain activates our fight or flight response when we register a threat, and it thrives on relationships, feeling safe, and positive emotions. The cortex is the third region of our brain, and it is the last to develop. The cortex's focus is on reasoning, learning, analyzing, planning, and imagining, all things that are really important to students being successful in schools!



Most schools are good at taking care of students' limbic brain and cortex through having strong relationships with students as well as encouraging learning and inquiry; however, most schools miss activating and caring for the lowest part of students' brains—the brain stem. Caring for our students' lower brain region is especially important because many students who have experienced adverse childhood experiences have damage to their brains in the

parts that were developing the most at the time the trauma happened—the brain stem and the limbic brain. We want to find more ways to reach our students at the lowest levels of their brains, and focused attention practices and brain intervals can help do just that. These practices speak the language of our lower brain regions, and they work to calm our students' from the bottom of the brain up. Just like you wouldn't build a house starting on the second floor, we need to tap into the bottom of our students' brains first.



**BOTTOM-UP REGULATION INVOLVES RECALIBRATING THE AUTONOMIC NERVOUS SYSTEM, (WHICH ORIGINATES IN THE BRAIN STEM). WE CAN ACCESS THE ANS THROUGH BREATH, MOVEMENT, OR TOUCH. BREATHING IS ONE OF THE FEW BODY FUNCTIONS UNDER CONSCIOUS AND AUTONOMIC CONTROL.**

*-Bessel van der Kolk*



2014, PP. 63-64

# BRAIN INTERVALS

"Parents and teachers can learn to use regulating interventions to help get their students and children back to a state where they can both learn and reason. In fact, unless we do regulate ourselves and then help regulate our children, no learning or reasoning is even possible.

**THE LOWER REGIONS OF THE BRAIN NEED ATTENTION FIRST."**

*-Dr. Bruce Perry*



Have you ever been driving for a long stretch of time, and then you realize that fifteen minutes have passed, and you don't remember thinking about driving because you were in such a relaxed state of alertness? That's not how we want our students to feel at school!

We want to keep our students' brains **ENGAGED** so their best learning can occur. We want to bring novelty, curiosity, and sometimes even a brief state of confusion into the classroom because the human brain pays close attention to these types of experiences, thanks to our **RETICULAR ACTIVATING SYSTEM (RAS)** in our brain stem.

Think of your RAS as the gatekeeper to your conscious mind. Your RAS filters and prioritizes sensory information to allow your mind to stay focused and alert. It decides what is important and what can be safely ignored.

You can use **BRAIN INTERVALS** to stimulate the reticular activating system in the brain stem and bring focus and alertness back to the conscious mind. Brain intervals can be used as a way to engage and alert students' brains, **PRIMING** them to be able to soak in new information. Additionally, brain intervals can be used after a period of intense learning to give the brain an interval of time to absorb the learning.

## BRAIN INTERVALS IDEAS:



### MATCH MY TUNE

Have a student hum a pitch. Have other students match the pitch they're making while feeling the vibrations on their vocal chords.

### NAME THAT SENSATION

Project a list of sensations onto the board as warm, hot, sweaty, twitchy, soft, butterfly feeling, goosebump-y, tired, prickly, jittery, weak, empty, calm, etc. . Have students identify where they feel that sensation in their body. They could think in their head, discuss with a partner, or draw a stick person and label where they feel the sensations.

### POPSICLE

Have students tighten up all of their muscles as hard as they can. Then, have students "melt" each part of their slowly starting by softening their feet, then their shins, etc.

Challenge them to see how slow they can "melt."



# BRAIN INTERVALS CONT.

## BRAIN INTERVALS FOR PEACEFUL ENGAGEMENT:

### SINGING BOWL

Have students close their eyes, and make a singing bowl sing. Have them raise their hand when they can no longer hear the sound. If you do not have a singing bowl, you could do this with a chime!

### TRACING

Have your students continually trace their hand on a piece of paper while they take deep breaths.

### WARM WATER

Have students run their hands under warm water, and then have them touch their face.

### INVISIBLE INK

Have students partner up. Have one partner spell ONE word in the air that relates to what they just learned. Have the other partner guess the word. The drawer then has to share why they picked that word. Switch and repeat!

### JUNK BAG

Grab an object from the junk bag. Come up with a new purpose for that object.

### MUSIC SCRIBBLE

Play a song and have students scribble what they envision the song to look like. When finished, students can share if their scribbles look like anything and give their art a name.



## BRAIN INTERVALS TO BRING LAUGHTER AND JOY INTO THE CLASSROOM:

### ICE CUBES

Have students hold an ice cube in their hands and see how fast they can melt it. Then, have them touch their cheeks with their cold hands.

### CHECK THE BEAT

Have students use pencils to create a beat as a class, or have one student create a beat and have others mimic the beat.

### TRUMPET BREATHING

Have students fill up their cheeks with air and blow out the air repeatedly.

### GUESS THAT SOUND

On YouTube, look up the video "Guess the sound game," and play the video for students. It plays a sound, and students have to guess what it is coming from.



# BRAIN INTERVALS CONT.

## BRAIN INTERVALS TO USE SIMULTANEOUSLY WHILE HAVING STUDENTS TALK TO A PARTNER ABOUT WHAT THEY JUST LEARNED

### FOLLOW THE LINE

Create a line on the floor with tape about 10 feet long, or use an existing straight line in the hallway. Have students sit on the line and place balance an object on their head (stuffed animal, eraser, etc.).

Students have to scoot from one side of the line to the other while balancing object on their head.

### BUBBLE WRAP

Have students pop bubbles!

### PINKY/ L SWAP

Have students hold up their pinky finger on one hand and create an L with their index finger and thumb on the other. Have them continue to switch simultaneously!

### PEACE SIGN/OKAY SWAP

Have students hold up a peace sign on one hand and an okay sign on the other. Have them continue to switch simultaneously!

### WALL PUSH UPS

While standing, have students create a push up on the wall.

### TONGUE TALK

Have students tell their neighbor what they just learned while keeping their tongue on the roof of their mouth.



### WINK AND SNAP

Wink with one eye and snap with your fingers on the opposite hand. Switch!

### PEN FLIP

Have students get with a partner. They will need to toss the pen to each other rotating it twice in the air before their partner catches it. To increase the challenge (and laughter), have students use two pens or catch and throw with their non-dominate hand.

### EAR GRAB

Grab your left ear with your right hand, and grab your nose with your left hand. Switch!

### ARM PULSE

Put your arms out in a T. Close your eyes and pulse your arms for 90 seconds.

“Lower areas are improved by good diet, steady doses of exercise, regular sleep habits, many positive relational interactions, and a steady dosing of patterned, repetitive, rhythmic movements THAT SERVE TO BRING CALM AND ORDER TO A CLATTERING BRAIN.”

-Dr. Bruce Perry



# FOCUSED ATTENTION PRACTICES

Focused attention practices calm and soothe our limbic brain activity and sympathetic nervous system (responsible for the “fight or flight response”), and then they allow access to the parasympathetic nervous system (which relaxes the body and helps us return to homeostasis) through deep breathing and movement. Deep breathing is crucial to supporting people in accessing their parasympathetic nervous system because “there is no medication that can help to boost your parasympathetic nervous system. **YOUR BREATH IS THE BEST CALMING TREATMENT KNOWN**” (NAKAZAWA, 2015, PP. 162-163).

Focused attention practices also activate executive functions in the prefrontal cortex such as sustained attention and emotional regulation, which helps us to create a pause and bit of reflection. Focused attention practices are critical when priming the brain for cognition!

Nakazawa, D. J. (2015). Childhood disrupted. New York, NY: Atria Paperback.

## FOCUSED ATTENTION PRACTICE IDEAS:

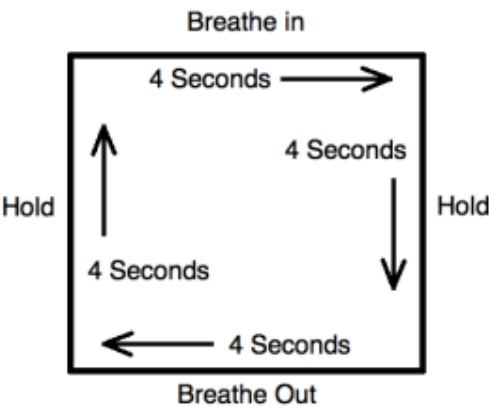


### BELLY BREATHING

Lie down on your back or sit straight up with your hands on your belly. As you take deep breaths in through your nose and out through your mouth, feel your belly rise and fall.

### BOX BREATHING

Breathe in through your nose for 4 seconds, hold for 4 seconds, breathe out for 4 seconds, and then hold for 4 seconds. Repeat while tracing a box in the air for each breath as shown below.



“THERE ARE SCIENTIFICALLY SUPPORTED AND RELATIVELY SIMPLE STEPS THAT YOU CAN TAKE TO REBOOT THE BRAIN, CREATE NEW PATHWAYS THAT PROMOTE HEALING, AND COME BACK TO WHO IT IS YOU WERE MEANT TO BE.

*-Donna Jackson Nakazawa*

Nakazawa, D. J. (2015). Childhood disrupted. New York, NY: Atria Paperback.



# FOCUSED ATTENTION PRACTICES CONT.

## HOBERMAN SPHERE BREATHING

Expand the Hoberman Sphere simultaneously as you inhale deeply. Close the Hoberman Sphere as you exhale slowly.

## HANG TEN BREATHING

Make the Hang Ten sign with one hand. Cover your left nostril with your pinky finger and breathe in. Then switch and cover your right nostril with your thumb and breathe out. Repeat starting with inhale through your left nostril.

## SIX SECOND BREATHING

Take a deep, six-second inhale while reaching your arms overhead.

Exhale while counting backwards from six and slowly bringing your arms back down.

## OBJECT BREATHING

Have students place a light object such as a cotton ball on their desk or in the palm of their hand. Have them inhale through their noses and exhale out of their mouth. As they breathe out, they need to control their breath enough to move the object. You can make this more challenging by creating a path in which they need to move the object on or creating a finish line that they need to move the object to.

## PAPER FOOTBALL BREATHING

Make a paper football. Have students use their breath to move the football down the field. You can have students play against each other or alone at their desk, adding up their touchdowns.

## COLOR BREATHING

Breathe in your favorite color. Breathe out a worry.



## BUBBLE BLOWING

Pay close attention to your breathing while blowing bubbles! Students could also pop bubbles while taking deep breaths.

## INFINITY

Hold up your thumb about 10 inches from your face. Create an infinity sign in the air with your thumb slowly. Follow your thumb with your eyes while taking deep breaths.

## DOODLING

Allow students time to doodle. If you want to connect it to academics, give them the chance to doodle what they just learned.

## CAPTURE A SOUND

Sit comfortably. Breathe in and out through your nose. If you hear a sound, capture it. Put the noises you hear into a “jar” in your head and continue breathing.

“When you control breathing, the vagus nerve links it to everything else! [...] You have sensors in your lungs that when you slow your breathing, it slows your heart! When you speed your breathing, it speeds your heart.”

ALL OF THESE ORGANS ARE CONNECTED! ”

-Seth Porges

# EMOTIONAL FREEDOM TECHNIQUES

Calming the lower region of the brain through tapping.

Emotional Freedom Techniques, also known as EFT or Tapping, are evidenced-based strategies that promote stress relief and resiliency through activating a mind-body connection. "The basic Tapping technique requires you to focus on the negative emotion at hand - a fear, a worry, a bad memory, an unresolved problem, or anything that's bothering you. While maintaining your mental focus on this issue, you use your fingertips to tap 5-7 times on each of the 9 specific meridian points of the body. Tapping on these meridian points in sequence while concentrating on the negative emotions engages both the brain's limbic system and the body's energy system, encouraging a sense of safety and resolution" (The Tapping Solution, 2018). Thus, this is a bottom-up regulation strategy! By pairing Tapping with strength-based cognitive reframing, the brainstem is activated through the "language" of sensations.



**1**

**IDENTIFY THE STRESSOR AND ANY ACCOMPANYING FEELINGS, PHYSICAL SENSATIONS, OR CHALLENGING THOUGHTS.**

**2**

**DETERMINE THE TITLE AND REMINDER PHRASE FOR YOUR STRESSOR.**

Example of a title: "Feeling sick to my stomach when I have to get on the school bus"  
Reminder Phrase: "Sick feeling in stomach"

**3**

**RATE YOUR STRESS LEVEL**

Identify your stress from a 0 (no stress) to a 10 (the most stress ever).

**4**

**THE SET-UP PHRASE AND KARATE CHOP POINT**

The set-up phrase is formed by inserting your title as follows:

**"Even though I felt this [insert title here], I [insert positive affirmation here]."**

Tap on the karate chop point (shown to the right) while saying your set-up phrase. Repeat the sequence 3 times while repeating your set-up phrase.



**5**

**THE EFT TAPPING SEQUENCE**

Following the Tapping Sequence in order, tap about 7 times on each spot using the balls of the fingertips of your index and middle fingers on each specified acupoints in the diagram below WHILE repeating your reminder phrase, "this [shortened title]".

- 1- Eyebrow
- 2- Side of eye
- 3- Under eye
- 4- Under nose
- 5- Chin
- 6- Collarbone
- 7- Under arm
- 8- Top of head



**6**



# EMOTIONAL FREEDOM TECHNIQUES

Continued.

6

## ASSESS PROGRESS

Rate your stress from 0 to 10 again. If your stress is the same or higher, repeat steps 4 & 5 up to five times. If it is still not helping, try thinking about a different stress. If your stress is lower, repeat step 4, but change the set-up phrase to "even though I STILL have SOME of this [title], I [insert positive affirmation here]." At step 5, change the reminder phrase to "REMAINING [title]" at each tapping point.

**IF YOUR STRESS IS ZERO, IT IS NOT NECESSARY TO REPEAT TAPPING PROTOCOL.**

Information from: Association for Comprehensive Energy Psychology. The ACEP Recommended EFT Research Protocol. Retrieved from <http://energypsych.org/displaycommon.cfm?an=1&subarticlenbr=132>



**A great children's book to talk about Tapping with your students!**

## RESOURCES:

Bath, H. (2008). The three pillars of trauma-informed care. *Reclaiming Children and Youth*, 17, 17-21.

Lieberman, M., Eisenberger, N., Crockett, M., Tom, S., Pfeifer, J., & Way, B. (2007). Putting feelings into words: Affect labeling disrupts amygdala activity in response to affective stimuli. *Psychological Sciences*, 18(5), 421-428.

The Tapping Solution. (2018). What is Tapping and How Can I Start Using It? Retrieved from The Tapping Solution: <https://www.thetappingsolution.com/tapping-101/>

## HOW TO USE EFT IN SCHOOLS

- Tap together as a class with a shared worry such as an upcoming test
- One-on-one tapping in which the teacher taps with a student in need
- The teacher taps him/herself while vocalizing the stressor of the child
- A student or small groups taps about a stressor

“Bringing to mind an emotional trigger, problematic scene, or unresolved traumatic memory activates the amygdala, arousing a threat response. Stimulating selected acupoints, according to the Harvard studies simultaneously sends deactivating signals to the amygdala. Repetition of the physical intervention resolves these opposing signals by reducing the arousal while the trigger is still mentally active. The hippocampus records that the memory or trigger is being safely engaged without a stress response, and the neural pathways that initiate the associated stress response are permanently altered.

**BEING ABLE TO ENCOUNTER THE MEMORY OR TRIGGER WITHOUT LIMBIC AROUSAL BECOMES THE NEW NORMAL.**

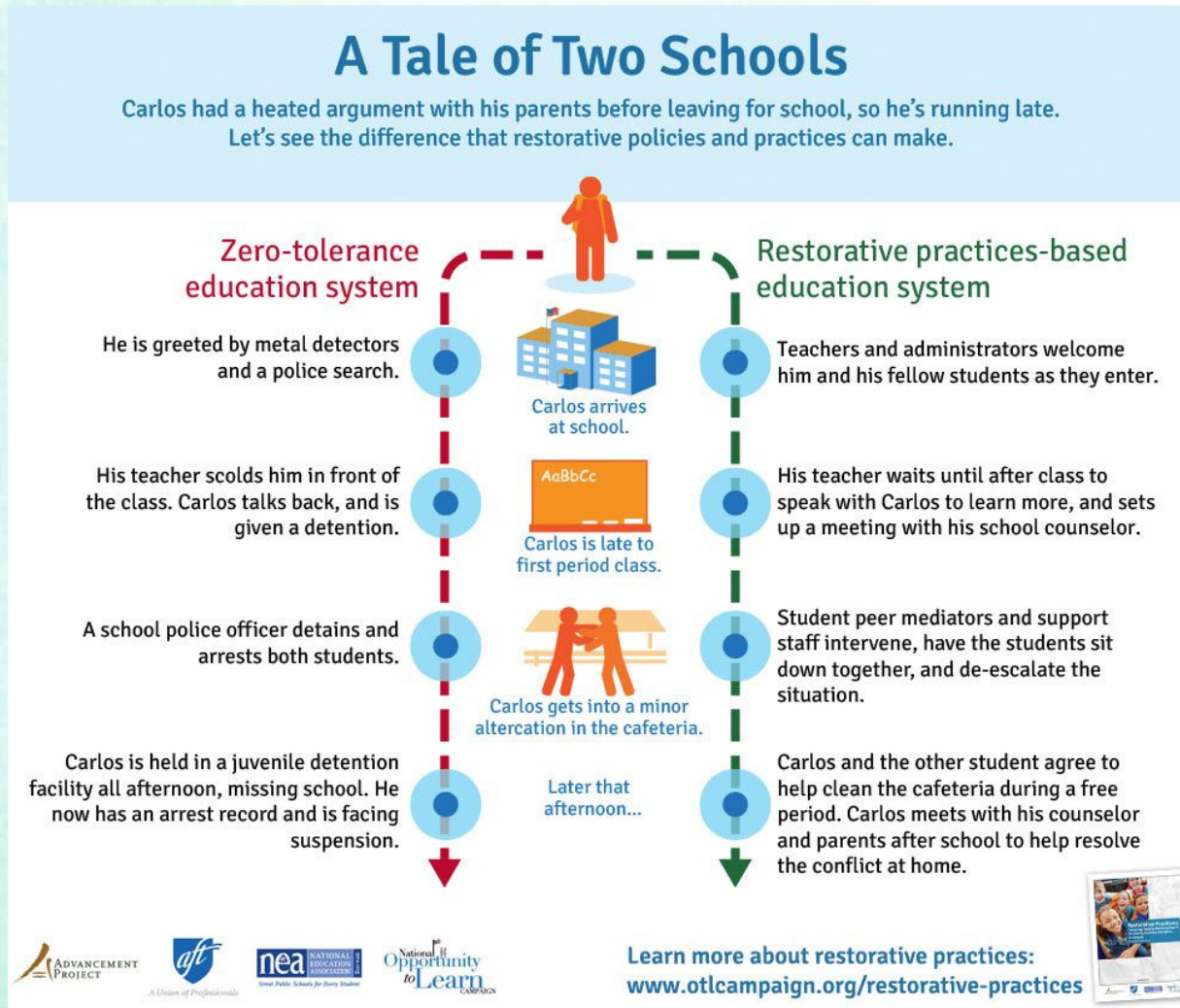
*-David Feinstein, Ph.D.*

Feinstein, D. (2012). Acupoint stimulation in treating psychological disorders: Evidence of efficacy. *Review of General Psychology*. Advance online publication. doi:10.1037/a0028602



# STARTING YOUR DAY A BRAIN-ALIGNED WAY

Let's compare a zero-tolerance education system with a restorative practices-based, BRAIN-ALIGNED education system...



Have you heard of the “school-to-prison pipeline?” When we implement these zero-tolerance policies, research shows that “nearly six in ten public school students studied were suspended or expelled at least once between their seventh and twelfth grade school years” (Fabelo, et al., 2011, p. ix). That is a LOT of kids being suspended and/or expelled. Additionally, this is a racial equity issue because there are “disproportionately high suspension/expulsion rates for students of color: Black students are suspended and expelled at a rate three times greater than white students” (U.S. Department of Education Office for Civil Rights, 2014). Additionally, we know that once a student has been expelled or suspended that their likelihood of being involved in the juvenile justice system increases significantly in the following years (Fabelo, et al., 2011, p. xii). Is this racially biased, zero-tolerance system what we want for our children? I say no. That is why I urge you to make your first interaction with your students each morning count. Instead of making your first interaction with a student one that escalates them, perhaps you could give them a hug and ask them how they are before any needed redirections. We need our students to know from the moment they walk in the door to our classrooms and schools that they are known and loved—that we see them for who they are and not for their behavior.

# STARTING YOUR DAY A BRAIN-ALIGNED WAY

Continued

I challenge you to shift the paradigm of behavior management from one of consequences and punishment to one of regulation, restoration, and teaching into the correct behavior. I urge you to shift your thinking from, "What is wrong with this kid," to "What happened to this kid," because many of our students are walking in with a lot of pain and trauma. Instead of always just punishing the negative behavior, we need to help them first regulate their brains and bodies, connect with them to show them we will stick with them through the conflict, and then help them find a way to repair any harm that they may have caused.

One way we as educators can begin to help our students regulate from the moment they walk in is through your classroom environment, brain-aligned bell work, and a morning meeting fueled with love and positive relationship building. In terms of environment, I like to start the day with lavender diffusing throughout the classroom, soft lighting, and the sounds and sights of the ocean by projecting a video of crashing waves on the screen in my room. When each student comes in, I greet them at the door with a good morning, and a hug or high-five. For students who need some extra help regulating in the morning, I sit with them as they do their morning work, talk to them about how they're doing, and even let them hold our classroom lizard to help them start off their day on a positive note. More ideas for brain-aligned bell work and morning meeting ideas to follow.

Written By: Becky Pokrandt, Indianapolis Public Schools Teacher

## Works Cited

Fabelo, T., Thompson, M. D., Plotkin, M., Carmichael, D., Marchbanks III, M. P., & Booth, E. A. (2011, July). Justice Center. Retrieved from Breaking schools' rules: a statewide study of how school discipline relates to students' success and juvenile justice involvement: [https://csgjusticecenter.org/wp-content/uploads/2012/08/Breaking\\_Schools\\_Rules\\_Report\\_Final.pdf](https://csgjusticecenter.org/wp-content/uploads/2012/08/Breaking_Schools_Rules_Report_Final.pdf)

U.S. Department of Education Office for Civil Rights. (2014, March 21). Data snapshot: school discipline. Civil rights data collection. Washington D.C.

## BRAIN-ALIGNED BELL WORK ACTIVITIES:

From: <https://www.edutopia.org/blog/new-way-deliver-bell-work-lori-desautels>

1

### FANTASY INTERVIEW

When students enter the class, they choose a half sheet of colored paper with a set of instructions displayed on the smart board. In the front of class is an empty chair and a few props to create a comfortable setting. I begin with a question: "If you could spend 15 minutes with any person in the whole world discussing, questioning, and sharing, who would this be and why did you choose him or her?" The students can write or draw their responses and, if they choose, share them following the exercise. When I implemented this experience with middle school and undergraduate students, the sharing and empathy in the room was palpable, and I learned so much about the emotional and social profiles of these students!

## Take the time to know.

Make your first interaction each morning count. Let our children know that they are known and loved.



# STARTING YOUR DAY A BRAIN-ALIGNED WAY

Continued

**2 THE THINGS I CARRY**  
At the front of the room is a backpack containing five or six items, pictures, or words that I identify with or hold close to my mind and heart. As I model for my students the contents of my own backpack, I begin sharing who I am as a person. This is a powerful way of not only getting to know your students, but also tying in the backpack's contents with a class novel, science experiment, or any standard that you're teaching -- simply by aligning items in the bag with what students need to know. Students can guess what items might be in the backpack before you reveal them. Prediction is an effective brain state which increases the brain's dopamine levels that are responsible for pleasure- and goal-seeking behaviors.

**3 JUST TEN WORDS**  
Write or draw a ten-word story on a specific topic that you're teaching, or have students write a ten-word story describing their strengths and expertise. Another option for those who don't want to write is creating an infographic.

**4 PREDICT AN OUTCOME**  
Choose a short TED Talk or documentary and watch the first minute. Following this one-minute presentation, students will predict two or three outcomes as to how this presentation will end. This can be related to subject matter that you're teaching, or it could be a motivational video addressing social and emotional skillsets.

**5 BELIEFS OUTCOME**  
Using images, words, colors, or technology, have students design an infomercial about a strong belief that they hold. It could be a longtime personal belief, one that they've developed through recent experiences, or one that they're beginning to question.

**6 REINVENTING GUM**  
Place a stick of gum on every desk as students walk in. On five notecards, have them design five new inventions for chewing gum. Students can share and compare at the end of the bell work.

**7 MEETING OF THE MINDS**  
Students will select characters from a book, historical figures, or any author, inventor, scientist, or individual whom they've been studying. Given a 21st-century challenge, how would these individuals solve it? What would their discussion look like, and how would they relate to one another?

**8 THE TRAVELING PANTS**  
Place an old pair of trousers or blue jeans on a table in the front of the room. Present a variety of questions and activities about these pants, such as: Where have they been? Where would you travel? Describe three places you'd travel or goals you'd accomplish while wearing these pants. What will it take for you to get there? How can you begin creating these destinations or goals today?

# STARTING YOUR DAY A BRAIN-ALIGNED WAY

Continued

## MORNING MEETING ACTIVITIES:

### THE EMOJI SHARE

Project the "How are you Feeling Today?" poster on the projector. Have students share what emoji(s) they are feeling today and why.

### PITS & PEEKS

Students can share a "pit" and a "peek" about their day, week, etc. A "pit" is something not great happening in their life, and a "peek" is something great happening. You can also call this "highs" and "lows" if you prefer.



“

We tend to view **misbehavior as resistance** because we understand where we want children to go. Children view **misbehavior as protection** because they know where they've been.

- L. Tobin

Tobin, L. (1991). What do you do with a child like this?: inside the lives of troubled children. Whole Person Associates .



# TRAUMA RELEASING EXERCISES (TRE)

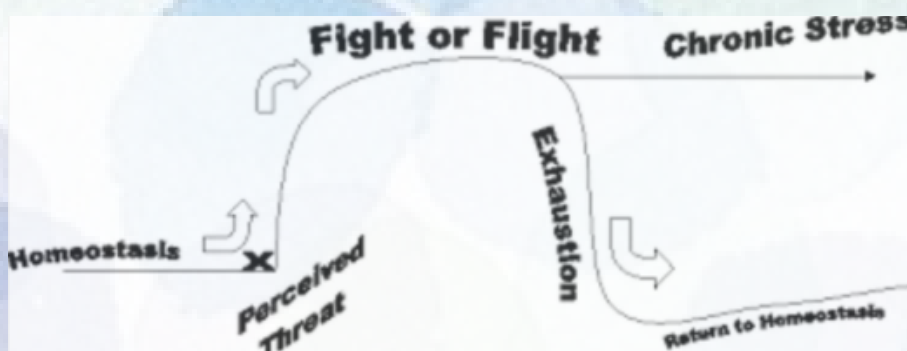


## The "Fight or Flight" Response

Imagine a caveman. When a caveman encountered a threat such as a lion, the caveman could either fight the lion or flee from the attack. When this happened, the caveman's heart would beat faster, his blood pressure would rise, and his cortisol and adrenaline levels would rise. He would then fight or flee, and his stress hormones would be discharged, and his body would go back to homeostasis.

## The "Freeze" Response

When fighting or fleeing isn't an option, animals can also go into what is called the "freeze" mode to try and stay safe. Since the animal did not engage in the fight or flight response, the chemicals released during the stress response are still in their body. After the predator leaves and the animal is now safe, their body starts trembling and shaking to release all of the chemicals and muscle tension built up from the stress response.



## What "Fight, Flight, or Freeze" looks like today, and how TRE can help!

The problem is that today when humans encounter stressors, our bodies still react as if there was a physical threat to our lives such as a lion, although the stressors often come from unmanageable deadlines, relationships, violence, etc. Our bodies can also go into the "freeze" response; however, it has become socially unacceptable to allow our bodies to shake after the stressor has passed, so we do not release the built up chemicals and tension from the stress response. This leads to muscle pains, headaches, and psychological symptoms such as anxiety, depression, poor concentration, and more. TRE "exercises safely activate a natural reflex mechanism of shaking that releases muscular tension, calming down the nervous system. When this muscular shaking/vibrating mechanism is activated in a safe and controlled environment, the body is encouraged to return back to a state of balance. Tension & Trauma Releasing Exercises (or TRE®) is based on the fundamental idea, backed by research, that stress, tension and trauma is both psychological and physical" (TRE, 2018).

TRE. (2018). Trauma Prevention. Retrieved from Tension & Trauma Releasing Exercises: <https://traumaprevention.com/>

# TRAUMA RELEASING EXERCISES (TRE)

Continued.

## TRE-inspired exercises to use with your students:

### Grounding Exercise

Bend your knees slightly, and rock to one end of your feet. Take a couple nice full breaths. Switch to the other edge of your feet and take a nice deep breath again with a sigh. Repeat one more time on each side.

### Wall Sits

Engage in a wall sit until your legs start to shake. If it becomes slightly painful, move up the wall about two more inches. The quivering may get a little stronger and the pain should subside. Find a position in which your legs are quivering but there is no pain. After five minutes, come out of the wall sit and hang forward.

### Prayer Push

Place your hands in prayer pose (palms together and elbows out). Push your palms together as hard as you can. Hold the pose while your arms shake. Release after a minute or two.

