STRESS – recovery

Rationale –

We need stress. The right amount of stress can spur us into action and enhance our executive skills. Excess or chronic stress, however, harms the body and brain. Long-term, stress that overwhelms us or never turns off will eventually precipitate a litany of psychological (*anxiety & depression*), cognitive (*memory & concentration loss*) and physical (*headaches, GI problems, high blood pressure*) problems. The coping skills below are designed to stunt the type of stress responses that overwhelm us, leaving someone in a frantic, confused and/or paralyzed state. The 3 skills serve to slow down a stress response so you can gather your thoughts and regain a sense of confidence that you can manage whoever or whatever triggered your stress in the first place.

1. Reciprocal inhibition –

Much like computer programming, the human brain operates on a binary format. A bit of an oversimplification, the brain's neural impulses trigger *either-or*, *all-or-nothing* reactions. Consequently, the brain struggles to experience competing emotions simultaneously. It is actually quite challenging for your brain to simultaneously activate happiness and sadness, to signal fear while laughing, to feel both amused and irritated, etc. The basic notion behind reciprocal inhibition assumes that we can use a competing emotion to neutralize the distressing emotion behind a toxic stress response. To activate a competing response, a stimulus must be potent enough to trigger the type of *either-or* message noted above.

Whenever your stress level hits a "6" or higher on a 10-point scale, try watching a set from your favorite comedian on YouTube. Or, watch a clip from a favorite comedic movie/ show. Also, videos of giggling babies or puppies playing tend to trigger the type of reciprocal inhibition mentioned here. Another option - watch a particularly poignant scene from a tear-jerker of a movie. Whether it is a comedy or melodrama, the right video can trigger an opioid response in the prefrontal cortex - the area of the brain that serves as our breaking system and soothes us when distressed. The more activate the prefrontal cortex, the less activate the mid-brain - as the source of anxiety and stress.

2. Mammalian diving reflex –

An artifact from our early evolution, the mammalian diving reflex remains hardwired in our DNA. While not originally designed to manage stress, the reflex can nonetheless help to stunt a strong stress response. In fact, the reflex can provide near instantaneous relief from stress. Basically, leaning over and submerging your face in a bowl of cool-to-cold water will trigger the trigeminal nerve, which will then trip a bradycardic response (*pulse < 55 beats/ minute*). The diving reflex acts to conserve oxygen, slowing down pulse to store oxygen in the viscera, to protect your vital organs. In contrast, acute and chronic stress responses prime the fight-flight mechanism and hyperoxygenation. The overly stressed brain will elevate your pulse to push as much oxygen across the body as it can, as quickly as it can, as it responds to a fight-flight alert. An elevated pulse, then, fuels a stress response. An elevated pulse is referred to

STRESS – recovery

tachycardia (*pulse > 100 beats/ minute*). Bradycardia works in competition against tachycardia. In a bottom-up process, the diving reflex will trump the fight-flight mechanism and reset your physiology for the sake of oxygen conservation. In the process, the reflex slows down pulse and essentially shuts down a stress response. Please see the links below.

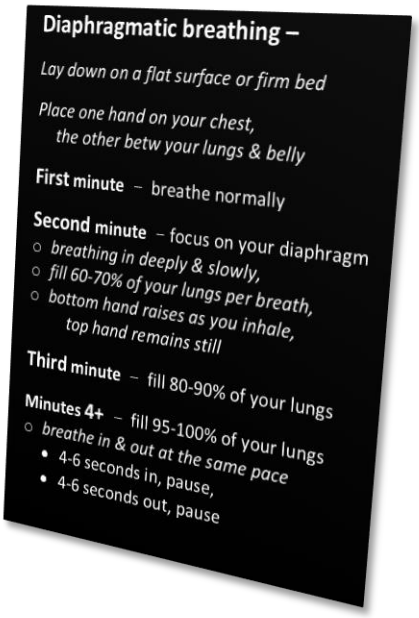
- **Link –** this article explains the mammalian diving reflex in more depth. https://www.theinertia.com/health/the-mammalian-diving-reflex-4-fascinating-things-happening-to-your-body-when-youre-in-water/

- **Link –** this Youtube video demonstrates how to trigger the diving reflex. Note how the participant's pulse drops more than 22 beats/ minute in less than 30 seconds. https://youtu.be/00RKh6NRMqc

3. Square breathing –

Think of square breathing as mindful breathing. Any behavior that can be labelled as mindful will positively help to alleviate a stress response. In square breathing, you focus on the pace of your breaths. The technique is quite simple – breathe in x4 seconds, pause 4 seconds at the top of your inhale, breathe out x4 seconds, then pause 4 more seconds. Rhythmic breathing – cycling between inhalation & exhalation at the same tempo – activates the parasympathetic system (PNS), the part of your central nervous system that slows down physiology. In contrast to the fight or flight mechanism, the PNS associates with a "rest & digest" or "feed & breed" mode. The PNS slows us down and triggers relaxation. At the same time, a mindful approach to breathing can help to distract us from some lingering concern, confusion, or rumination.

People tend to master square breathing quickly, especially if they practice it a few minutes every day (*while sitting in traffic, bored at your desk*). Once mastered, people often integrate either diaphragmatic breathing and/or meditation into the intervention. Diaphragmatic breathing – flexing the diaphragm sheath that connects the base of the lungs to the lower viscera – maximizes oxygenation, which in turn alleviates the demand on the heart. Tiny organs called alveoli line the lungs and help to pass air into the blood supply. Alveoli pack more densely in the lower half of the lungs, so, when you use the base of your lungs to breath in, you more than double what the top half respirates into the blood system. The more oxygen-rich your blood, the less the heart has to work to push oxygen across your body. More so, the lungs and heart are interconnected. When the diaphragm muscle flexes and fully expands the lungs, it secondarily stretches the heart. And, as a muscle itself, the heart loves a good stretch to relieve tension.



- **Link –** this Youtube video demonstrates the basics to diaphragmatic breathing. https://www.youtube.com/watch?v=Apitav4HMCg