

# The Science of Building Resilience

## How to Build Habits to Lower the Risk for Stress and PTSD

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Resilience building is a broad term of behavioral health wellness. It is composed of self-care health measures that can **lower the risk for stress, PTS and PTSD**. It is very effective and can be practiced by the responder without the help of a therapist and if necessary, can be taught by department or agency trainers (such as peer support team members).

Resilience has become a topic of many conversations as we learn more about it. We've heard it lowers risk for stress, PTSD and all kinds of (organic) physical health problems from hypertension to substance abuse. Some might think this sounds too good to be true. Some may see these messages (about resilience) as propaganda. Why does it work? What is it? How can I build resilience? A common definition of resilience is the ability to bounce back. For our purposes, we will define resilience as the ability of the body especially the brain and nervous system to return to the baseline. Our baseline is the state of the body at a relaxed state without disturbance or toxicity.

Practicing resilience behaviors is preventative medicine. Resilience decreases risk of PTSD, stress and many other physical and psychological disease processes. Healthy eating habits promote health and resiliency behaviors promote overall health. Interestingly, the practice of building resilience includes healthy eating, healthy sleep hygiene, proper nutrition and exercise as all being a part of the practice of building resilience.

The most current research suggests there is strong evidence that disturbance (stress) activates the body's stress response system. The body at baseline is considered to be in balance or integrated. This is especially true in the brain where different parts are working together to function at optimal levels. The body's stress response system is designed to work temporarily activating the fight or flight system. This alarm system, the hypothalamus-pituitary-adrenal (HPA) system becomes overactive in people with chronic stress. Many caretaking and response careers produce chronic exposure to long term potentially traumatic events or "chronic misery". Our jobs expose us to years of witnessing misery on many people's worst day. The repetitive exposure makes us vulnerable because it keeps our stress systems on "high alert".

Most of us are in this category of being on high alert regardless of our inability to recognize it. The HPA axis is running more than it should and becomes hyperactive. This hyperactivity prepares our brains and body for battle. Adrenaline and cortisol run through our body creating wear and tear on the brain and other organs.

Consider the following steps in building resilience and lowering your risk for many physical and behavioral health problems.

## **THINKING**

The anxious brain responds negatively to toxic thoughts, situations and negativity. Avoiding toxic situations, people and thoughts builds resilience. The avoidance helps us by deactivating or keeping the stress response system (HPA axis) from running. Do you have toxic people in your life? You will benefit greatly by limiting your exposure to these people if possible. People can't totally avoid toxic situations but we can often lower our dosage of toxicity. When we have negative thoughts, turning them to positive thoughts builds resilience?

Example of a negative thought, "I am really angry right now"

Example of a thought intervention, "I am experiencing a feeling of anger right now. It is only a part of me and does not define me"

This simple change in the thought process helps activate our "brake system". Strong evidence suggests that this adaptation in our thoughts activates the prefrontal cortex. This is the part of our brain that evaluates our feelings and helps us calm our emotions.

## **Deep Breathing.**

Controlling the tempo of our breathing will calm us if we can learn and master the technique. Learning and mastering this process takes time and practice. When we breathe slowly and deeply our body's stress response system cannot maintain distress. As a result, we are returned to a baseline state of calm. Meditation, Tai Chi and Yoga all incorporate breathing control and activate the parasympathetic nervous system which is the brake for the tense and anxious brain and body.

## **NUTRITION AND RESILIENCE.**

Behavioral health clinicians teach the acronym CATS to build resilience. CATS is caffeine, alcohol, tobacco and sugar. If you consume these, it is important to consume these in moderation or avoid them. Moderate use or avoidance of CATS helps build resilience.

Caffeine. Interferes with adenosine, a neurotransmitter in the brain that helps us sleep. Specifically, caffeine stimulates the region of the brain (basal ganglia) that adenosine targets to enable sleep.

Alcohol. Has an initial sedating effect that wears off before the alcohol is completely eliminated from the body? It leaves cells in the brain irritated and can cause agitation. This brain cell agitation may wake people a few hours after they go to sleep.

Tobacco. Some research suggests that tobacco use appears to intensify trauma and increase the risk for PTSD.

Sugar. Sugar and some artificial sweeteners have been linked to increased anxiety and other behavioral health problems.

## **EXERCISE AND RESILIENCE**

It is also important to know that regular exercise helps the brain and neurotransmitters keep the body integrated or in balance. First, the process of exercise can slow or stop the repeated activation of the body's stress (danger preparation) system. The hypothalamus-pituitary-adrenal (HPA) system is activated when danger is detected. It is an alarm system and is not designed to run continuously. The HPA system produces a flood of adrenaline and cortisol in the body. The person who is experiencing chronic stress is essentially experiencing many false alarms in the HPA system.

Current research has provided strong evidence that chronic activation of this system can have a negative effect on the brain and organs. Vigorous exercise rids the body of toxins especially cortisol. Exercise is also thought to bring the brain and nervous system into balance. Regular exercise is good for brain health and helps lower the negative effects of stress.

## **SLEEP AND RESILIENCE**

The last decade has provided greater insights with regard to the brain. Functional MRI (fMRI) and other brain scan technologies have created new ways to look at brain function and health. This technology has provided new ways to study the brain's function and changes.

Research has provided us with strong evidence that our brains accomplish important tasks while we sleep. Eight hours of rest includes four cycles of deepening brain wave patterns. This includes four rapid eye movement (REM) dream cycles that increase gradually in length. This research suggests that these brain wave cycles allow the hippocampus to send information (learned during the day) to (short term memory) the prefrontal cortex. The prefrontal cortex sorts the information that is presented. Important information is then saved into long term memory.

We also have strong evidence that rapid eye movement (REM) sleep is necessary for calming and the relief of stress. The conclusion of these studies reinforces that good sleep is relevant to the overall management of stress and general wellness.

## **THE ANXIOUS BRAIN AND RESILIENCE**

Chronic stress produces an anxious brain. Research data have provided strong evidence that chronic stress negatively alters brain structures. Specifically, the danger alarm of the brain (amygdala) becomes larger and more active and produces more false alarms. This is the activation of the alarm that produces the energy for us to act (fight/flight). In addition, the repetitive alarm activation keeps us from getting the much-needed adaptive information to reset the false alarm. The hippocampus is thought to be the part of the brain that stores this adaptive information. This part of the brain is thought to be inactive in the alarm state. As a result, the hippocampus is reduced in size and is rendered ineffective during the alarm. The result is that we can't get the information we need to deactivate the false alarm. This is the state of the anxious brain in the stress response.

## **THE TAKE AWAYS IN THE PROCESS OF BUILDING RESILIENCE.**

1. Effective resilience building requires practice or mastery. This is essentially mastery in a number of areas that need time invested them
2. Achieve mastery in the way we think and monitoring our dosage of toxic people, situations and thought processes. We also need to master skills to reframe our negative thoughts into productive ones. Gravitate towards supportive people and situations
3. Practice intervention methods (such as deep breathing, yoga, tai chi) to shut off the stress response.
4. We should pay attention to our nutritional habits in order to practice healthy routines (remember CATS). This includes avoiding tobacco and moderating our use of caffeine and sugar.
5. We should be vigilant about our use of alcohol. Do we need to cut down alcohol use or quit altogether? Are we getting adequate sleep and exercising regularly? Are we unplugging and doing things we enjoy?
6. Finally, are we aware of our brain health? The methods that we have discussed will help calm our anxious brains. Remember, the anxious brain is out of balance and is less capable in the learning process.

Effective resilience building requires lifestyle modification (change). Building resilience can lower general stress as well as the risk for PTS/PTSD and many other disease processes.