

## Physical Reactions to Emotions

It has been well researched and proven that emotions affect body systems in many ways. Joy and laughter raise the immune system by increasing natural killer cells, while also decreasing pain by releasing endorphins which activate receptors that produce euphoric effects, thus reducing pain. The saying “laughter is the best medicine” really has merit.

Being a relaxed and happy person is definitely a great way to live. But, for too many, being happy is so far from the reality of their daily lives. Worry, anger, frustration, anxiety and sadness seem to be the experience of far too many people today. And feeling these emotions are not without physical consequences. How do these affect the brain and body? There are many, many chemical reactions that happen in response to stress. Here are just a few responses to anger and stress as published by the National Institute for the Clinical Application of Behavioral Medicine:

Anger (or stress) will cause the hypothalamus (activated by the amygdala) to discharge corticotropin-releasing hormone to activate the pituitary, which releases adrenocorticotrophic hormone to activate the adrenals. The adrenals then secrete the stress hormones adrenaline, cortisol and noradrenaline. These hormones rev up the system, preparing it for fight or flight. Blood pressure is increased, heart rate is increased, arterial tension is increased, as well as blood glucose and fatty acid levels.

What happens if there is no fight or flight, but emotions are internalized, stuffed down and not even a scream is let out to release these hormones? AND, what if this kind of stress episode is repeated often? For many this happens daily. With what effects?

When these cardio, glucose and fat levels are increased another set of body reactions are employed at the same time during these stress episodes, which are short lived if the stress is resolved. But, that is not the case for those dealing with regular stress episodes. These include lowered thyroid function (when cortisol is increased, thyroid hormones are decreased), lowered serotonin (the happy hormone), lowered immune function (decreased natural

killer cells), headaches, lowered digestion function, lowered metabolism, and lowered bone density.

The heart and brain become particularly vulnerable during stress episodes. An episode that happens once in a while allows time for recovery from the effects of the anger or stress. But, repeated episodes from chronic ongoing stress that happens daily or very regularly will wear down and damage blood vessels, creating a situation where the body needs to lay down plaque in the arteries to repair them, creating clogging and/or hardening of arteries. This can lead to a heart attack or stroke.

Anger also changes the brain. When cortisol is elevated, this causes neurons to take in too much calcium through their membrane. This calcium overload can cause cells to fire too frequently and die. Elevated cortisol will kill neurons in the hippocampus, suppressing activity and impairing short term memory. This also impairs new memories from forming properly. This could account for why your mind goes blank when you are being challenged in a very heated argument. Additionally, elevated cortisol can cause a loss of neurons in the prefrontal cortex. This is the area of the brain that helps you to reason, to use good judgment, and make rational and wise decisions. This suppression of neurons in the prefrontal cortex would account for the rash decisions—the insanity, so to speak—that takes place in the heat of the moment when good judgment and rational thinking has been suppressed by stress or anger.

Now that you’ve read the effects of all your stress and anger, you may be feeling even more stress. ☺ If so, it’s time for a nap. Deep sleep is one of the best ways your body has to process out elevated cortisol. The earlier you go to bed and fall asleep the better. Other helpful remedies include exercise, dancing to your favorite tunes, getting a little morning sun regularly, singing and laughing. To combat the damage done by stress hormones, a diet high in antioxidants, B vitamins, and minerals is needed. Additionally, adaptogenic herbs can help the body “adapt” to and handle the effects of stress better.