

# Impacts of Stress

## Or

### How You End Up Crying Over Chips

By Elizabeth Harrison

As college students and especially as pre-med students we all face a certain amount of stress. Some might even say that stress comes with the territory of being a pre-med student, between the heavy course loads and busy schedules so many of us juggle. As we enter finals week here at the University of Delaware the campus-wide stress level starts to climb through the roof. But when you are living with a very high amount of stress for a long time it can start to take its affect both mentally and physically.

Let's take a look at how stress works on a physical level. Stress isn't just a source of mental distress, it can affect your entire body. The human brain has developed a pretty amazing stress response over thousands of years to save us in life threatening situations. If you had to fight off a tiger or run from a stampede tomorrow, your chance of survival is greatly increased by how your brain responds. Unfortunately, the body doesn't differentiate the tiger fighting response from the freaking out about your latest chemistry exam or lab practical and prolonged stress caused by these kinds of fears can really negatively affect your health.

The stress response starts in the brain, in the amygdala. The amygdala serves as the alarm that alerts the rest of your brain to a danger. The amygdala sends a signal to the hypothalamus which in turn signals the sympathetic nervous system. The adrenal glands become active and start pumping out a range of stress hormones, including epinephrine, into the blood stream. As the epinephrine circulates the body undergoes physical changes like a dramatic raise in heart rate and blood pressure, and a switch from normal breathing to fast-paced breathing. This stage is commonly known as the fight or flight response. The body is going into overdrive, opening up the lungs and increasing heart rate to flood the body and the brain with oxygen, so that the threat can be faced or fled from. The initial epinephrine rush is short lived. If you were in a very high stress but short term danger situation, like a car about to hit you, once you were out of the immediate danger, like you manage to jump out of the way, then your body would begin the parasympathetic response. The parasympathetic response is a comparatively much longer process and serves to help the body return to normal after high stress. This is why you might be able to react within seconds to a dangerous situation but it will take you several minutes and possibly longer to be able to fully calm down and return to normal. However, if your "danger" that triggered the response is not so immediately dealt with you will undergo a prolonged response. If the brain still perceives danger after the initial response then instead of activating the parasympathetic system, the hypothalamus will release corticotropin-releasing hormone, which brings the pituitary gland in on the action. The pituitary releases adrenocorticotrophic hormone which prompts the adrenal glands to begin pushing out cortisol into the blood stream and to keep pumping it out until the brain no longer feels threatened. Cortisol like epinephrine is a hormone

that triggers responses that can save your life in the short term, but long term exposure to elevated levels of cortisol start to wreak havoc on your body.

The effects of prolonged stress are a laundry list of detrimental responses that range from annoying to life threatening. High levels of cortisol interfere with learning and memory that can end up resulting in a kind of “brain fog”. This is why you may spend hours studying for an exam, but if you’re exceedingly stressed about it you won’t be able to properly encode and retain much of the information. This is also the reason why you can never seem to find your keys, wallet, etc. when you’re running late and stressed. Too much cortisol in the brain for long periods of time can cause hippocampal brain damage which disturbs sleep cycles. Elevated cortisol also lowers immune function and bone density, increases weight gain, increases blood pressure, and increases cholesterol. Repeated triggering of the stress response will cause damage to the blood vessels and arteries from overexposure to epinephrine. This increases the risk for not only heart attacks but also strokes. Prolonged stress can overexert the adrenal glands, resulting in adrenal fatigue, which will manifest as exhaustion.

The physical effects certainly aren’t pretty but the mental symptoms are what will really impact quality of life first for most people. Prolonged stress leads to anxiety and puts people at a much higher risk for depression. The exhaustion and memory impairment caused by prolonged stress will greatly affect a person’s mood. The longer a person is suffering from prolonged stress the more their stress tolerance for any extra problems decreases. The build-up of stress can really get to us and make us act in ways we never would under normal circumstances. I personally watched a fellow student have a full on breakdown in the library during finals week last semester because she couldn’t get barbecue chips. That’s what stress will do to you ladies and gentlemen, have you sobbing in the corner of club morris over your lack of barbecue chips.

Long story short, too much stress is bad, like REALLY bad. So before you end up being that person crying over chips, or running out the door screaming, take a breath. Now take another. There are lots of healthy methods to help deal with stress. Regular exercise and regular eating habits will go a long way to helping you fight off the physical toll. While it may seem like finals-week logic to stay at your desk for 10 hours straight and then eat half a pizza, you’ll really benefit by taking breaks to eat regular balanced meals. Getting enough sleep is also crucial, while an all-nighter might seem like a good idea at 2am, so sleep will be the better choice. Breathing exercises and meditation can also help you break out of a prolonged stress response and get the calming effects of your parasympathetic nervous system back on track, so when you feel like you can’t focus in on anything just a few minutes of calm meditation can relax you and help you refocus. Making time for friends and family is also a big help to preventing and coping with stress. Studies show that people who feel more socially connected are less likely to suffer from chronic stress and tend to have higher stress tolerances than people who feel isolated.

So breathe, go take a break, go catch up with a friend and remember that while as pre-meds we aspire to being able to help take care of others, it’s also important to take care of ourselves mentally and physically.