

The Biology of Stress

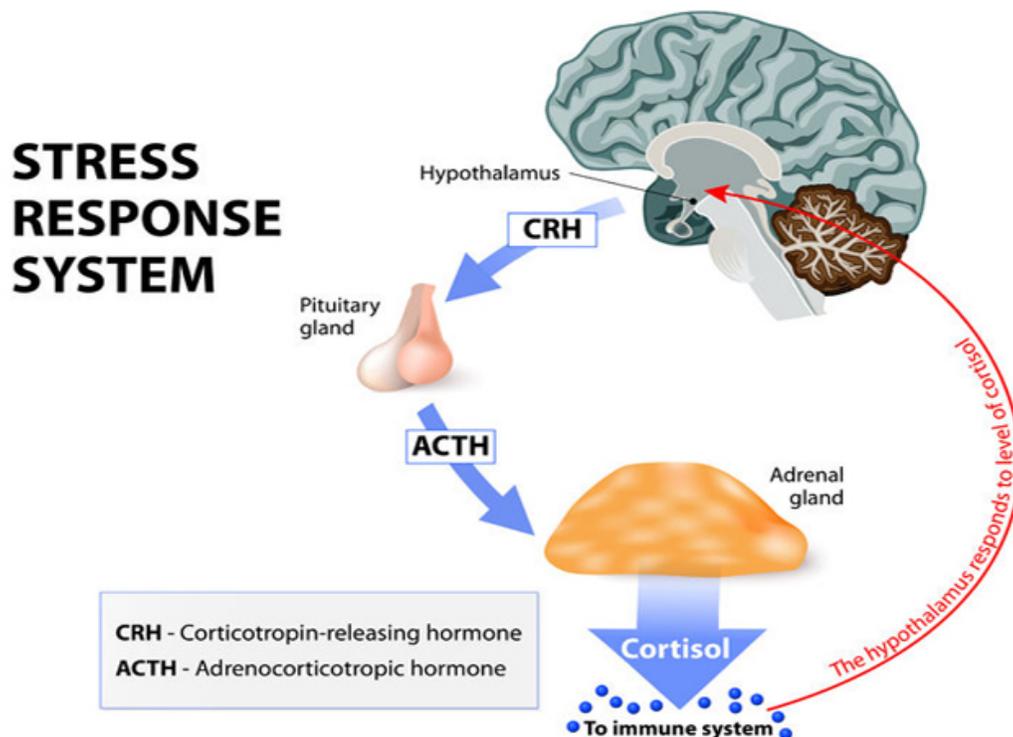
A Brief Introductory Overview

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Stress is part of daily life. It can come from home, work, or just a typical drive down the street. Stress can be hard to deal with, but in many ways, we need it. Humans need stress to survive. Our bodies produce adrenaline in the sympathetic nervous system in a fight or flight response. This is how people can perform superhero acts. Stress helps us to make quick decisions or drives us to achieve higher levels of success. However, too much stress can have a negative impact on our health.

Our bodies are in constant balance to achieve homeostasis. **Homeostasis** is keeping our body temperature, blood pressure, blood pH, blood sugar, and hydration in harmony. All of these body functions produce energy and the balance is our key to survival. The **autonomic nervous system** regulates these body functions in our unconscious mind. This system regulates automatically.

The autonomic nervous system has two components, the **sympathetic** nervous system and the **parasympathetic** nervous system. The sympathetic is the flight or fight stress response. When the body receives a stress signal, the hypothalamus sends corticotropin to the pituitary gland. The pituitary gland sends adrenocorticotrophic to the adrenal gland. The adrenal gland sends the following hormones throughout the body: cortisol, epinephrine (adrenaline), aldosterone, and norepinephrine.



This stress response causes the body to do the following:

- Increase heart rate
- Increase blood pressure
- Increase blood to muscles
- Increase sugar and fats to blood
- Decreases digestion
- Decreases appetite

It is important to note that most anything can cause a stress response, including healthy exercise. Stress becomes a problem when we receive too much cortisol. This leads to chronic inflammation that can lead to disease and even death.

After a stress response in the sympathetic nervous system, the **parasympathetic nervous system** kicks in. This is the recovery response to calm the body down after stress took place. As the parasympathetic nervous system takes over, the body begins to do the following:

- Decrease heart rate
- Decrease blood pressure
- Decrease energy storage
- Increase appetite
- Increases digestion
- Pupils dilate

The body now begins repair to any damage done from the stress. This typically happens when we are resting or sleeping during the REM cycle.

The problem with stress today is that the public is overwhelmed with responsibilities more than ever before. This has led to lack of education and time needed to focus on the recovery phase our bodies need to remain in homeostasis. More than 1/3 of Americans have type 2 diabetes, hypertension, hyperlipidemia, and cardiovascular disease. These conditions stem from poor nutrition, sedentary lifestyles, and chronic stress. These diseases are a product of chronic inflammation and are preventable.

So what can you do to decrease your risks? The best strategy is to sit down with a calendar and make sure you plan the following as a lifestyle habit and priority:

- Walk 8-10,000 steps per day (most phones track our steps)
- Learn to do resistance exercise 3x per week
- Meditate or perform yoga 1-2x per week
- Start a good night time routine free of electronics one hour prior to bed
- Make sure you get 7-8 hours of sleep every night
- Plan one day a week to buy groceries and meal prep for the week
- Only eat out 1x per week
- Increase your intake of water, fruits, vegetables, and whole grains

- Make sure you have social connections throughout your week
- Plan a treat day for yourself 1x per month

These might seem overwhelming now, but careful planning can lead to a fuller life. Take one step at a time. Implement one healthy lifestyle habit ever two weeks. After three months, you should have them all going and your body will thank you for it. Don't let stress overtake your life. Take control of your health today.

**All information is a compilation of over 25 years of experience and knowledge learned overtime in the fitness industry.*