



ANATARA  
GROUP

Along with the more clear-cut ways to improve or maintain good health through diet and exercise, stress management is an equally important component when seeking to acquire and maintain a state of wellness.

The stress response—the body’s hormonal reaction to danger, uncertainty or change—evolved to help us maintain a proper balance and survive; hence, if we learn how to keep it from overrunning our lives, stress can still be useful. In the short term, it can help energize us by revving up our systems to handle what we need to handle. In the long term, stress can motivate us to better perform tasks we care about. A little of it can prepare us for a lot later on, making us more resilient.

Stress is a part of life, and sudden, traumatic stress, as well as long-term stress, can have serious impacts on our health. To illustrate, when a natural disaster takes place, such as an earthquake, hurricane, tsunami, etc., death can be a direct result of the event—e.g., traumatic injury and the spread of disease due to unsanitary conditions. There is also a risk of death that may appear to be wholly unrelated to the event. For example, individuals are at an increased risk of heart complications a short time after a stressful episode occurs due to the increased levels of anxiety and worry these catastrophic events generate. But, consider the implications of dealing with slightly lower levels of constant stress. The long-term effects of stress on the body can be just as damaging, if not more so, than one isolated stressful event.

Heavy workloads, family pressures, social obligations, financial issues, a poor economy, etc., are unfortunately a part of life in contemporary Western society. Regardless, these elements all add stress to people’s lives, and their bodily systems are

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constantly being affected, especially since there is rarely a reprieve.

In addition to the more overt stressors, there are also numerous daily activities that cause stress in less obvious ways. For example, it has been found that regular exposure to traffic and/or air pollution may increase an individual’s risk of heart disease due to emotional strain and frustration, not to mention the physiological stress it imposes on the heart and lungs. We are exposed to environmental stressors every day, and most have accepted that as normal part of life. Even so, this exposure may increase the risk of chronic disease and should be minimized if possible.

## Stress and the HPA Axis

### The Body’s Physical Responses to Stress

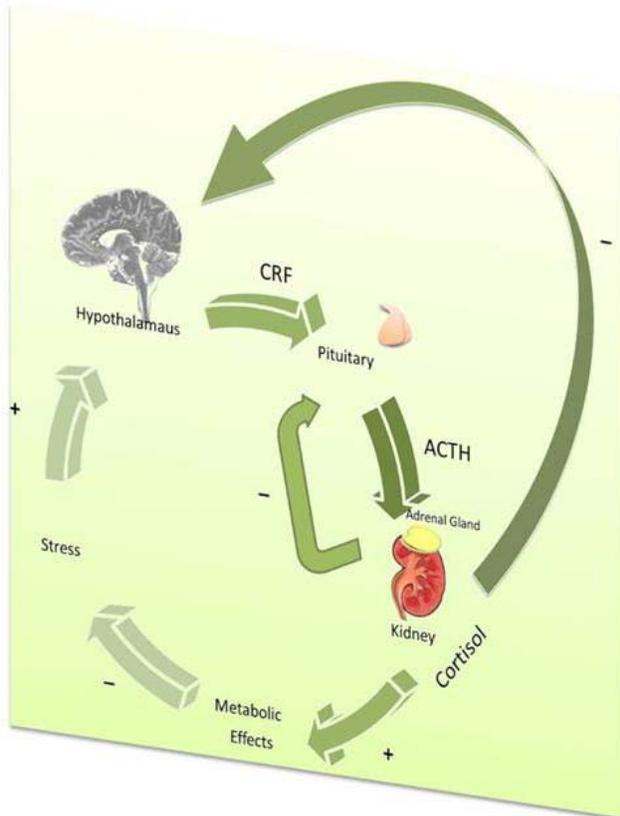
Researchers have been able to identify the chemical processes that take place when a person is feeling stressed, and it reveals that stress is not just a *mental* problem. The chemical reactions that occur within the body are actual physical reactions that take place as a result of the stress.

The hypothalamic-pituitary-adrenal (HPA) axis is a stress circuit that connects the stress hormones and nervous system. The HPA Axis is actually part of the neuroendocrine system, and it manages the interactions between the adrenal glands, hypothalamus, and pituitary gland. During moments of high stress, a chain reaction commences:

1. First, a stressor occurs,
2. Causing a hormone called CRH to be released by the hypothalamus.
3. Next, adrenocorticotrophic hormone (known as ACTH) is released by the pituitary gland

4. Which leads to cortisol being released by the adrenal glands (adrenaline is released).
5. Finally, the heart receives a message to pump harder in order to increase the blood supply to the muscles, thus preparing the body for immediate response.

This chain reaction is triggered when some type of stressor occurs, and the impact of the stressor may vary depending on the individual's ability to handle high pressure situations. It is normal and expected for a natural disaster to cause increased levels of stress for those individuals living through it, but what about everyday stressors such as concerns about the poor economy, concerns about health and/or difficulty with our spouse or child? This type of daily stress is more insidious in that it causes protracted worry and anxiety, sending a steady stream of stress signals to trigger this chemical reaction.



During periods of increased adrenaline release, the body goes into survival mode, which triggers an increase in blood pressure and heart rate. These responses were designed to prepare individuals for an immediate and active response to a perceived dangerous situation, such as allowing individuals to defend themselves against or escape from a predator. This is commonly referred to as the *fight or flight response*.

The fight or flight response is a critical component to human survival; however, the problem lies in the fact that our stress levels rarely subside. We literally deal with some form of stress on a daily basis, and this steady influx of anxiety causes our HPA Axis circuit to be in constant overdrive, leading to damage to the heart and other organs. In a nutshell, daily stress can actually change cell biology and make adjustments to how the body reacts on a cellular level.

The effects of constant stress (the above chain of events) include negative reactions such as: a steady flood of hormones and chemicals; lower immune system function; interference with cholesterol levels; overworking the adrenal glands; and triggering cravings for unhealthy foods (e.g., refined sugars and flours, sodium, etc.)

### Cortisol Burnout

Over time, the cortisol-HPA Axis reactions can actually burn out. When the body is constantly producing higher levels of cortisol, cortisol can become depleted which makes it hard for the body to function in several ways. For example, it is difficult to feel refreshed in the morning and challenging to wake up when one's cortisol is burned out. Cortisol burnout often causes a condition known as *flatline* cortisol response. This means that there is no longer a normal pattern of cortisol secretion, and the adrenal system has been damaged as a result.

When cortisol burnout occurs, a malfunction of the HPA Axis also takes

place. This malfunction can affect many aspects of normal body functioning such as energy storage, energy expenditure, immune response, digestion, sexual response, mood, and restoration and repair of the body.

It is also common for individuals suffering from cortisol burnout to subsequently experience what is known as *metabolic syndrome*. Some of the signs of metabolic syndrome include: a resistance to insulin and raised blood sugar levels which leads to diabetes; obesity problems—especially in the abdominal area; and increased blood pressure and fibrinogen (blood clotting) levels which can cause chronic heart disease.

### The Link Between Cortisol, Metabolic Syndrome, and Chronic Disease States

Steroid-related research has demonstrated that cortisol may in fact be the most influential hormone in metabolic syndrome. The reason this research is significant is because steroids are technically synthetically-based cortisol. Consequently, it has been shown that when individuals use steroids for longer periods of time, they may begin to develop a condition called Cushing's disease, and Cushing's has many of the same symptoms as metabolic syndrome. The research surrounding cortisol, metabolic syndrome and chronic illness illustrates the correlation between stress and these factors. In addition, understanding this correlation helps us to gain a greater understanding of the importance of reducing stress in our lives as well as managing the unavoidable stresses that may occur.

### Other Physical Impacts of Stress

There are additional physical conditions that can occur as a result of stress:

- Digestion, immunity, and detoxification are suppressed;
- both the parasympathetic and sympathetic nervous systems are stimulated;
- pupils dilate;

- blood pressure increases;
- glucose and cholesterol is released;
- bones are gradually demineralized;
- fatty acid metabolism is impaired, and inflammatory mediators are stimulated; and,
- fat deposits occur, energy decreases, and mood fluctuations occur.

There are many ways the body is negatively impacted by stress, and this list helps to illustrate the point that when stress is properly managed, we can help to avoid triggering these stress responses. Even so, it is important to note that physical changes that occur due to stress can vary greatly from one person to the next. For example, a stressful situation such as a high-stakes project at work might cause one person to react with excitement and motivation because of the thrill of the project, while a different person may react with high amounts of anxiety and stress because of the pressure from the project. For this reason, it is difficult for doctors to identify specific causes of HPA Axis breakdown simply because reactions vary from person to person.

### Stress Management Techniques

On the surface, stress may not appear to be a serious consideration since many of the physical reactions to stress are not visible. Many people do not realize how critical it is to reduce overall levels of stress based on the subtle ways stress can negatively impact the body. However, decreasing stress levels and managing reactions to stress can be one of the most effective ways to improve health and decrease the risk of chronic diseases. Study after study has shown the correlation between stress levels and chronic illness such as heart disease, diabetes, inflammatory and allergic syndromes and hormonal dysregulation. As a result, it is imperative that we take a proactive approach in order to lower stress, improve on existing health practices, and reduce the overall risk of chronic illness.

The good news for those who suffer from anxiety, depression and other stress-related symptoms is that they can be alleviated through the introduction of positive health practices and specific behavioral techniques.

1. **Get adequate rest.** One of the most significant contributors to stress is lack of sleep. For best results, set a goal to get between 7 to 9 hours of sleep each night. In order to best prepare for a solid night's rest, it is important to avoid ingesting larger amounts of stimulating foods, such as sugar and caffeine. It is also helpful to avoid computer or smart phone use prior to retiring as it can also disrupt your ability to fall asleep easily.
2. **Keep a journal.** By keeping a journal, patients are in a position to write down their thoughts and feelings at their leisure. This can be helpful in identifying and working through particular stressors, and be an outlet for conveying feelings that might otherwise be repressed. These repressed feelings can result in the generation of more stress.
3. **Rely on a support network.** The act of communicating with nurturing and caring family members and friends can also help in the quest to alleviate stress. Most people experience a sense of reassurance and well-being through the knowledge that they are supported by their loved ones. In addition to a native support network, there are also many online communities where individuals share experiences and support each other through social networking.
4. **Seek professional help.** Talking with a professional therapist can provide much needed perspective and encouragement for individuals who may feel overwhelmed by stress in their lives.
5. **Practice meditation.** Meditation is an activity that can be done virtually anywhere and helps both the body and

the mind to relax, thus alleviating stress in a significant way. For over 30 years, Jon Kabat-Zinn has shown the connection between *Mindfulness-based Stress Reduction* and the positive impact of meditation on both physical and psychological symptoms as they relate to chronic illness. There is a multitude of meditation resources available, ranging from in-person classes to books and video or audio lessons. Individuals interested in practicing this method of stress-reduction can easily locate one of these resources and make it a part of their daily routine.

6. **Take time for Self-Care.** Whenever possible, it is essential to engage in activities that provide a sense of relief from the stresses of day-to-day life. Finding the time to exercise (which we will address in detail later in this chapter), have a massage, go to the theater or participate in other types of leisure activities is helpful in breaking the daily routine in a positive way. Furthermore, rediscovering interests and hobbies that may have fallen by the way side is another constructive means of channeling energy and thoughts away from stressors and toward the enjoyment of life to its fullest.

Another facet of self-care involves making the decision to take a much-needed break from technology, for we are constantly “plugged in.” Both home and mobile phone ringers can be turned off from time to time. It is also a good idea to take an Internet break and go offline periodically. Ultimately, the aim of this exercise is to reframe the typical comfort zone from a computer chair or living room sofa to a healthier location—preferably one outside in the fresh air.