



SOUTH COAST MEDICAL CENTER
FOR NEW MEDICINE

Stress And Your Hormones

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Stress is a common challenge that we all face. The causes of stress can range from minor irritations, such as traffic jams or lack of sleep, to more significant events such as divorce or the loss of a loved one. And while the spectrum of stress is vast, the way that our bodies react to such stressors remains constant.

The Fight or Flight Response

To understand the biology of stress, we must go back to the beginnings of man kind. Imagine that you are walking through a dense forest in search of your next meal. Your senses are already heightened as you move from tree to tree, hoping to catch a glimpse of your desired prey when, seemingly from out of nowhere, you find yourself facing an 8 foot bear. It is then that you realize that you have gone from the hunter to the hunted. In that split second of recognition your body shifts into what is know as the Fight or Flight response. Your brain becomes inundated with sensory overload, thus triggering the adrenal glands to begin releasing the four major stress hormones, cortisol, DHEA, norepinephrine, and adrenaline, throughout your body to prepare you for the challenge at hand. This cascading sequence causes your body to undergo a series of dramatic changes. Your respiratory rate increases. Blood is shunted away from your digestive tract and directed into your muscles and limbs, which now require extra energy and fuel for running and fighting. Your pupils dilate. Your awareness intensifies. Your sight sharpens. Your pulse quickens. Your perception of pain diminishes. Your immune system mobilizes with increased activation. You become prepared, both physically and mentally, for fight or flight.

However, when the adrenal glands begin pumping out these stress hormones it causes an abnormality in the adrenal output rhythm. Throughout the day our adrenal glands release

hormones cyclically, sending out the highest levels of cortisol in the morning and the lowest levels in the evening. As our cortisol levels increase, our DHEA levels decrease. But, when the normal rhythm of output is disturbed it creates imbalance in the body functions which can, over time, lead to serious health problems.

The Effects of Adrenal Imbalance on Our Health

- Increased levels of cortisol production paired with a decrease in DHEA causes a decrease in muscle protein synthesis and reduces muscle mass which can lead to joint injury and chronic pain.

continued on next page



- Cortisol inhibits the hormones required for calcium deposition. Chronically elevated levels of cortisol cause bone growth and repair to be suppressed and may result in osteoporosis.
- Hypothyroid symptoms such as fatigue and low body temperature are often due to adrenal dysfunction but are frequently and incorrectly attributed to hypothyroidism. Treating the problem with thyroid replacement only serves to further exacerbate the adrenal dysfunction.
- Several key aspects of immune function follow the cortisol cycle, which, when disrupted, can severely impair our immunity.
- Elevated night cortisol levels can interrupt REM (Rapid Eye Movement) sleep, the body's regenerative sleep mode- thereby reducing mental vitality and vigor- and leading to depression.
- Human skin is regenerated mostly at night. With higher night cortisol levels, less skin regeneration takes place.
- Growth hormone production declines rapidly after age 30, and this decline correlates directly with the effects and symptoms of aging. Maintenance of one's youthful GH production is a paramount goal of any anti aging program. Unfortunately, cortisol antagonizes GH, and moderate elevations of cortisol after 10:00 pm (as little as 5%), causes disproportionate inhibition of GH release.

In the early days of mankind, such primal biological responses were necessary for the survival of the human species. Unfortunately, in today's day and age, while the sheer volume of stressors has increased, usually the degree of danger is minimal. And, even though we do encounter occasions where our instincts vacillate between fighting and running, most of these situations do not require such a severe response.

Combating the Stress Response

There are several ways that we can begin to combat the negative effects that the stress hormones have on our bodies. Exercise and relaxation techniques can serve as immediate ways to lower the cortisol levels in our bodies and begin to reverse the Fight or Flight response.

Physical Activity- When the body responds to stress, it is preparing for a physical outcome, whether that means engaging in combat or fleeing from the scene of danger. However, our everyday stressors rarely result in physical interactions, even though our bodies are prepared for the challenge. By engaging in a positive form of physical activity we are giving

the body exactly what it expects. Exercise serves to bring down the high levels of cortisol that our body is producing, while increasing our levels of serotonin and endorphins. These two chemicals control the signals from the brain that pump out the stress hormones, so that the adrenal glands, which secrete the cortisol and adrenaline, can calm down. Aerobic activity, such as walking, running, riding a bike and swimming, all directly inhibit the Fight or Flight response.

Relaxation- Relaxation techniques, such as yoga, meditation and massage, serve to draw our attention away from the stressful situation and refocus our attention on restoring inner order. When the body is responding in Fight or Flight, our sympathetic nervous system dominates. Through relaxation, our parasympathetic nervous system shifts into power. The parasympathetic nervous system controls digestion, breathing and heart rate during times of rest, relaxation and sleep which is necessary to repairing, maintaining and restoring balance to our bodies.

While physical activities and relaxation techniques can help to alleviate the immediate effects of stress, often times it is necessary to address with a physician or health care professional the long term and potentially dangerous effects that stress can have on our health.

Adrenal Stress Index- In 1993 a laboratory test called the Adrenal Stress Index (ASI) became available to physicians, making it possible to have a detailed assessment of our adrenal hormone cycles by simultaneously measuring cortisol and DHEA levels throughout the day. The ASI is a simple, non-invasive test that uses saliva samples to measure our adrenal rhythm and to obtain our DHEA-to-Cortisol correlation. Measurements are gathered from four specimens collected throughout the day (8:00 am, 12:00 noon, 4:00 pm and 11:00 pm), resulting in an in depth analysis of our adrenal cycles, and can contribute to the design of a more precise and personalized approach to balancing adrenal functions.

Once your adrenal stress index has been established, you can begin to work with a physician to determine an all natural approach to restore the adrenal glands to their proper balance.

All Natural Supplements- Several common supplements can be used to treat adrenal imbalance, however it is important to consult with a health care provider, whom is knowledgeable in nutritional supplementation and the correction

of adrenal problems, before choosing which supplements will be the most effective.

- DHEA is a male sex hormone (androgenic hormone) produced by the adrenal glands, the same adrenal glands that produce cortisol. In the body, DHEA is converted into other hormones such as testosterone, estrogen, progesterone, or cortisol- so too much cortisol often means not enough DHEA. DHEA levels are known to decrease with age, particularly after the age of forty, but perhaps as early as ages twenty to thirty; therefore, dietary supplementation with DHEA is typically recommended to slow aging, improve memory, increase sex drive, alleviate depression, boost energy, promote weight loss, and build muscle mass.

- The ingredients in Adrenal Support may offer help in supporting adrenal functions and maintaining health. The B vitamins, for example, support most of the biochemical processes in the body, notably energy production. Vitamins B1 and B2 are necessary for helping the body endure emotional stress and maintaining the cardiovascular system.

- GABA is essential for brain metabolism, aiding in proper brain function. GABA is formed in the body from another amino acid, glutamic acid. Its function is to decrease neuron activity and inhibit the nerve cells from over firing. Together with niacinamide and inositol, it prevents anxiety and stress related messages from reaching the motor centers of the brain by occupying the receptor sites. GABA can be taken to calm the body in much the same way as Valium, Librium, and other tranquilizers, but without fear of addiction.

- High concentrations of Glycine are found in the skin and connective tissues and helps repair damaged tissues and promotes healing. Glycine supplementation can be used to help prevent epileptic seizures and has also been used to treat bipolar or manic depression and hyperactivity. Having the right amount of Glycine in your body will boost your energy level naturally.

- L-Glutamine is an important amino acid that helps brain function, as it converts quickly into glucose, the only source of energy to the brain. L-Glutamine promotes better thinking ability,

and increases the amount of GABA, which aids in proper brain function. In addition to enhancing mental ability, L-Glutamine plays an important role in many functions of the body such as energy levels, intestinal health, protein synthesis, and can even help build and maintain muscle.

- Chromium is an essential part of the GTF (Glucose Tolerance Factor) molecule. GTF is an important cofactor for insulin in the regulation of blood sugar which is necessary for proper metabolism.

It is very important that all aspects of adrenal gland balancing be monitored by a physician, as the list of recommended supplements will vary depending on each individual's chemical makeup. It is not recommended that you begin taking any supplements with out first consulting with your physician.

Dr. Connealy is the medical director of South Coast Medical Center for New Medicine in Irvine, California. The center strives to look at the whole person and explore the effects and relationships among nutrition, psychological and social factors, environmental effects and personal attunement.