Cortisol and Obesity:

Could the hormone cortisol be halting your fat loss? The answer is Yes!!! Your stress level, how your body handles stress, and the stress hormone cortisol all play a vital role.

Stress leads to some unexpected effects on our fitness level. The latest research has shown that high levels of stress, inadequate sleep, and improper nutrition create a hormonal environment that leads us away from fitness.

Researchers are beginning to uncover answers to how non-exercise variables including lack of sleep, inadequate nutrition and high stress levels can significantly affect levels of the hormone cortisol that impact exercise recovery, weight management and health.

The topic of stress has received much attention over the last several decades, and there is much controversy over exactly what stress is. More recently, cortisol itself has received much attention.

When we investigate into the physiology of the stress response, we find that there are three pathways of long-term stress response:

- Thyroxine axis
- Vasopressin axis
- Adrenocorticotropic axis (ACTH axis)

It is the ACTH axis that has been focused on most heavily. ACTH stimulates the adrenal glands to release corticoids including cortisol, costicosterone and cortisone.

Cortisol has been studied most extensively. Over the long-term, elevated cortisol may be as detrimental to overall health as elevated cholesterol or elevated blood sugar. High cortisol levels have been linked to a lowered testosterone: cortisol ratio, a prime marker of...
anabolic status and the ability to recover from exercise and build muscle. Further, as cortisol continues to increase, chances for muscle atrophy, impaired immunity, vitamin depletion and increased blood pressure occur. Controlling cortisol is important for people who want to remain in optimum health.

As stress increases, cortisol is released. While cortisol has beneficial effects on the body, the constantly high levels of it are problematic. It is known that stress increases carbohydrate cravings due to the neurotransmitters NPY and serotonin. Thus, stress-related eating may increase caloric intake and increase body fat.

However, even when caloric increases are considered, cortisol still tends to promote the storage of fat, specifically to the abdominal area where it can quickly be utilized for the fight or flight response.

Scientists have found an increased level of activity of the enzyme 11b hydroxysteroid dehydrogenase type 1 (11b HSD-1) in abdominal fat that they believe is the cause of the correlation between cortisol and abdominal fat. A recent study found that stress-related cortisol secretion in men is strongly associated with abnormalities in glucose, insulin and lipid metabolism as well as abdominal obesity.

The testosterone: Cortisol ratios are a marker of an individual’s anabolic status and recover ability. During periods of intense physical work, the body enters a catabolic state where there is a net protein breakdown in the body. During this time, ACTH and cortisol are released to decrease muscle inflammation and to begin breaking down amino acids for the process of protein synthesis during the resting period. This is a natural and necessary response, excessive cortisol has been associated with over exertion syndrome.

Nutrition has a powerful effect on recover ability. In a day where low-carbohydrate diets are popular, it is important to realize how carbohydrate depletion impacts exercise response and recovery. When examining nutrition and stress response, we must look at a www.healthoracle.org
couple of different factors: total caloric balance and exercise nutrition. Cortisol is increased in a linear fashion as we drop below caloric balance. Thus, as people decrease their caloric intake to lose weight, cortisol tends to rise. Cortisol is also increased on low-carbohydrate diets when blood sugar levels drop too low. During exercise, the body breaks down an increased amount of muscle proteins as fuel if there is an inadequate supply of carbohydrates.

However, it has been found that consuming a carbohydrate beverage during intense physical activities attenuates the rise in cortisol levels and limits the amount of exercise-related immuno-suppression.

Current research indicates that sleep deprivation can lead to an elevation in cortisol and is harmful to carbohydrate metabolism; changes which increase the chance of obesity. Sleep loss is associated with striking alterations in hormone levels that regulate appetite and may be a contributing factor to obesity. Anyone making a commitment to losing weight should probably consider a parallel commitment to get more sleep.

The Hans Selye’s a definition of stress was ‘the nonspecific response of the body to any demand made upon it to adapt, whether that demand produces pleasure or pain.’

Within the exercise domain, the interaction between exercise and stress gets more complicated. While there are few black and whites within the complex way our body handles stress, it is generally believed that low-intensity exercise reduces stress, as compared with high-intensity exercise that tends to increase the release of stress hormones.

While the body’s mechanisms for coping with stress worked wonders to keep us alive thousands of years ago, our body was not built to withstand the chronic stressors that humans face today. In today’s
high-stress world, people constantly have stress hormones over-stimulated in their bodies.

Symptoms of stress and chronically high cortisol levels are related to many of today’s health problems including CHD, hypertension, cancer, ulcers, lower back pain and headaches. Scientific research now suggests that an overlooked physical symptom of stress may be weight gain.

This is one possible explanation of why fat loss and fitness improvement may grind to a halt in some individuals, while other individuals continue adapting and progressing in their exercise programs. Cortisol seems to be a major ‘deal-breaker’ for some fat loss programs.

Current research indicates that life-event stress, inadequate sleep and poor exercise nutrition can all lead to elevated levels of cortisol. Scientists believe that this excess cortisol may lead to a variety of health problems including impaired carbohydrate metabolism and increased abdominal fat. Thus, people with high lifestyle stress will release more cortisol during an intense bout of exercise as compared with someone who has a lower stress level.

Researchers have found that mood is an exceptional measure of overtraining within athletes. In a research measure called the Profile of Mood States (POMS), researchers have found that most exercisers will have higher vigor as well as lower tension, depression, anger and fatigue than the general public. However, this can reverse during overtraining in which exercisers and athletes have shown lower vigor as well as higher tension, depression, anger and fatigue than the general public.

In this fast-paced world, effective people know that they need to stay fit to stay on the top of their game. However, many high-achievers push to hard and do not listen to their body’s or pay attention to other lifestyle variables. Your body is not a machine that can keep
going with no maintenance checks or repairs. Chronically high cortisol levels are typical in people who deal with high stress day after day. These cortisol levels are dangerous but can be managed with awareness.

Paying close attention to your sleep, nutrition, and stress levels will help you learn more about how you perform optimally and will help you enjoy a fit and healthy lifestyle for years to come.