

# **Cortisol, Stress And Body Fat**

## **Straight Answers To Top 20 Questions About “The Stress Hormone”**

### **By Tom Venuto, NSCA-CPT, CSCS**

It seems that every time science uncovers some type of association between body fat and *anything*, opportunistic entrepreneurs are waiting in the shadows to create a product and a marketing campaign around it. They ride the wave into the multi millions, until the buzz dies down or until the Federal Trade Commission (FTC) slaps a padlock on their warehouse doors. Then, it's on to the “next big thing in weight loss,” because they know there will always be a gullible crowd eagerly waiting for the next quick fix. The most recent example is when researchers discovered a correlation between cortisol and abdominal body fat. Cortisol was blamed as the latest culprit in the obesity problem, and cortisol-suppressing pills were touted as the “miracle solution.”

### **Big Claims, Little Proof**

After a web search on the subject of cortisol, here are some of the claims you may find:

- Stress makes you fat
- Cortisol reducing supplements control stress
- Cortisol is what makes you fat
- Cortisol reducing supplements reduce belly fat
- Cortisol reducing supplements get rid of “stress fat”
- Cortisol reducing supplements balance hormone levels that cause stress
- Cortisol reducing supplements increase muscle growth.
- Cortisol supplements suppress appetite
- Cortisol supplements speed up metabolism

The advertising claims include just enough scientific fact to make even the savviest consumers say, “That makes sense, I think I’ll try that.” They also hit home emotionally by focusing on common hot buttons such as stress (who isn’t at least a little stressed in this day and age?) Brilliant marketing. Convincing. Unfortunately, most of the claims being made are completely bogus, with only a tiny thread of truth woven in.

Cortisol is indeed a very important hormone that you must understand if you want to get maximum results from your training and nutrition programs, but if you don’t educate yourself, you may become one of the millions of victims to fall for this latest fad. The answers to the frequently asked questions in this article will arm you with the science-based facts, while helping you steer clear of the hype-based scams.

### **What is cortisol?**

Cortisol is a hormone produced by your adrenal glands. It falls into a category of hormones known as “glucocorticoids”, referring to their ability to increase blood glucose levels. Cortisol is the primary glucocorticoid.

### **Why does your body produce cortisol?**

Cortisol is a stress hormone. Your body produces cortisol in response to stress, physical or mental. This can include extremely low calorie diets, intense training, high volume training, lack of quality sleep as well as common daily stresses ranging from job pressures, fights with your spouse or being caught in a traffic jam. Trauma, injury and surgery are also major stressors to the body (and it’s worth mentioning that much of the research done on cortisol and stress has been

done on recovering patients, and such findings may not carry over to healthy, athletic populations).

### **What does cortisol do?**

Cortisol is part of the fight or flight response. Faced with a “life or death” situation, cortisol increases the flow of glucose (as well as protein and fat) out of your tissues and into the bloodstream in order to increase energy and physical readiness to handle the stressful situation or threat.

### **How do you know whether your cortisol levels are high?**

You can get your cortisol levels tested if you choose to. The most common method of testing is a blood test (blood cortisol levels). Saliva and 24 hour urine tests are also available.

### **What is a normal level of cortisol?**

Cortisol levels are higher in adults than children and levels fluctuate throughout each 24 hour period, so tests must account for the time of day. Cortisol concentrations are highest in the early morning around 6 – 8 a.m. and they are also elevated after exercise (a normal part of your body’s response to exercise). The lowest levels are usually around midnight. According to the Medline Encyclopedia, normal levels of cortisol in the bloodstream at 8:00 a.m. are 6-23 mcg/dl.

### **Should you get your cortisol levels tested?**

For serious competitive athletes, it may be worth the time, expense and inconvenience to have cortisol tests done on a regular basis. Some strength and conditioning coaches insist on it. For the average trainee, as long as you are aware of the factors that produce excessive cortisol and take steps to keep it in the normal, healthy range, then testing is probably not necessary.

### **Is cortisol related to abdominal obesity?**

Yes. There is a link between high cortisol levels and storage of body fat, particularly “visceral” abdominal body fat (also known as intra-abdominal fat). Visceral fat is stored deeper in the abdominal cavity and around the internal organs, whereas “regular” fat is stored below the skin (known as subcutaneous fat). Visceral fat is particularly unhealthy because it is a risk factor for heart disease and diabetes.

### **Does Cortisol Make you fat?**

No, cortisol is not “the thing” that makes you fat. In fact, one of the effects of cortisol is to increase the breakdown of stored adipose tissue into glycerol and fatty acids where it can enter the bloodstream and then be used as energy. High levels of cortisol are merely one contributing factor to storage of abdominal fat, not the primary cause. An excess of calories produced by too much food and not enough exercise is what makes you fat.

### **If cortisol is related to abdominal obesity, then will taking a cortisol suppressing pill get rid of abdominal (belly) fat?**

No. Just because there is an association between high cortisol levels and abdominal body fat doesn’t mean that a taking a cortisol-suppressing pill will *remove* abdominal body fat. The studies which showed a relationship between cortisol and body fat did not test whether suppressing cortisol with supplements removes fat that is already deposited on your body.

### **Does stress make you fat?**

No. If it did, then everyone who is stressed would be gaining fat. Many people lose weight while under stress. In some studies, test subjects with the highest cortisol levels lost the most weight. Stress, by itself, does not increase body fat. However, if stress stimulates appetite and leads to overeating, then the excess calories from “stress eating” can make you fatter.

### **Is cortisol is bad for you?**

Cortisol is not “bad for you,” it is a hormone that is essential for life as part of our natural stress response. There are many hormones in our bodies, which in the proper amounts, maintain good health, but in excess or in deficiency, contribute to health problems. Cortisol is no different. You want to maintain a healthy, normal level of cortisol, not suppress your cortisol to nothing or allow it to remain elevated.

Chronically elevated cortisol levels may have a variety of negative effects. For one, cortisol is catabolic and elevated cortisol levels can cause the loss of muscle tissue by facilitating the process of converting lean tissue into glucose. An excess of cortisol can also lead to a decrease in insulin sensitivity, increased insulin resistance, reduced kidney function, hypertension, suppressed immune function, reduced growth hormone levels, and reduced connective tissue strength. Chronically elevated levels of cortisol can also decrease strength and performance in athletes. Incidentally, Cushing’s syndrome is a disease of high cortisol levels, while Addison’s is a disease of low cortisol levels.

### **Can suppressing cortisol improve your muscle growth and strength?**

High cortisol levels can increase muscle protein breakdown and inhibit protein synthesis (building up muscle proteins), so a chronically elevated cortisol level is clearly counterproductive to building muscle. Bringing elevated cortisol levels back to normal may improve recovery, strength, hypertrophy and performance. However, there is no scientific evidence that reducing your cortisol levels below normal will have any effect on increasing muscle growth.

### **Should you take a cortisol-suppressing supplement to help you lose weight?**

In my opinion, no, absolutely not. Cortisol suppressing supplements are not a valid solution for losing weight. The FTC has filed lawsuits against the makers of Cortislim and Cortistress, charging them with making false and unsubstantiated claims that their products can cause weight loss. Lydia Parnes, acting director of the FTC’s bureau of consumer protection says, “The defendant’s claims fly in the face of reality. No pill can replace a healthy program of diet and exercise.” Reducing excessively high cortisol levels through supplement use may prove beneficial in some ways for hard training athletes. However, pills do not make you lose fat. Body fat is lost by creating a caloric deficit through exercise and nutrition.

### **Should you take a cortisol-suppressing supplement to help control your stress levels?**

There are quite a few supplements, mostly herbs, which are reputed to have “calming,” “relaxing,” “tranquilizing,” “stress-relieving” or “anti-anxiety” effects. These include Magnolia bark, kava kava, valerian, L-theanine and way too many others to mention. Very few studies exist which have directly tested the effects of these herbs on cortisol levels. Although some people may find value in these products, the best solution is to reduce the stress or change your perception of the stress to lessen its physical impact. Treating symptoms does not remove causes. It’s dangerous to band-aid the effects of stress while the stress remains in place.

## **What should you do if you have a lot of stress in your life?**

It makes sense to take steps to reduce stress in your life and lessen the impact of stressors that cannot be avoided. Trying to avoid stress completely is not possible, nor is it desirable. Stress is an important part of life because you can't achieve positive adaptations and growth without stress to trigger them. It's continuous stress you want to avoid. It's okay to expose yourself to stress, provided there is a period of rest afterwards so you can fully recover. One of the best ways to keep cortisol in the normal range is to reduce stress and allow time for recovery and renewal. There are effective and natural means of reducing stress that don't cost a penny, including getting out in nature, deep breathing, enhancing sleep quality, relaxation exercises, meditation and visualization-guided imagery. Basically, you must develop a calm mind and sense of tranquility.

## **What is in those cortisol pills anyway?**

The ingredients can vary in type and quantity from one brand to the next. Some ingredients are included in the formulations to have a relaxing or stress reducing effect, some are included to directly reduce cortisol levels, while others are targeted at insulin and blood sugar stabilization. Cortislim contains Magnolia bark, beta sitosterol, theanine, green tea extract, bitter orange peel extract (source of synephrine), banaba leaf extract, vanadium, vitamin C, calcium and Chromium.

Other ingredients that are often used in the various product formulations include Epidemium, phytosterols, tyrosine, Branched chain amino acids, ginseng, ashwaganda, astragalus, kava kava, St. John's wort, Melatonin, SAM-e, Valerian, Gingko Biloba, Phosphatidyl Serine (PS), Acetyl L-carnitine and Glutamine. Reviewing all of these is beyond the scope of this article.

## **If you decide to take a cortisol suppressing supplement what should you look for?**

Before you even think about supplements (or drugs), keep in mind that unnatural suppression of cortisol may not be wise or necessary, especially if you haven't used all the natural cortisol and stress management strategies at your disposal first. Once your nutrition, training and recovery bases are covered, there is some solid research showing that certain supplements may be beneficial, especially for athletes engaged in extremely hard training.

Carbohydrates consumed with lean protein immediately after training has a cortisol suppressing effect. High glycemic index (GI) carbs in particular, cause an insulin spike, which not only helps restore muscle glycogen, stimulates protein synthesis and kick starts the recovery process, it also helps lower the exercise-induced rise in cortisol. The research supporting this practice is substantial. (This should serve as a warning to people on low carb diets that are so strict that they don't even allow small amounts of carbs). Rather than solid food, many athletes prefer a liquid "meal" using a commercial post workout drink containing whey protein and maltodextrin plus dextrose or glucose (fast acting protein and high GI carbs) because the rapid absorption time may speed recovery.

Vitamin C, known mainly for cold or flu protection and antioxidant properties, may decrease cortisol levels. A study by Marsit, et al showed a reduction in cortisol levels in elite weightlifters taking 1000 mg. of vitamin C per day.

Phosphatidyl serine (PS) is a phospholipid, which appears to have cortisol suppressing properties. Studies by Fahey and Monteleone have shown that daily doses 800 mg can reduce cortisol. These studies did not conclude that PS would help you lose weight or gain more muscle.

Glutamine is an amino acid, which in some studies, has been shown to decrease cortisol and prevent a decrease in protein synthesis. Many strength athletes swear by glutamine for improved recovery, but the research is still not conclusive about efficacy or dosages for athletes or

bodybuilders. Much of the research on Glutamine was performed on patients recovering from surgery, burns or traumas (severe stresses to the body).

Acetyl-L Carnitine (ALC) has been studied in Alzheimers patients as a method of improving cognitive function. One study showed that long term use of Acetyl L Carnitine lowered cortisol in the Alzheimers patients. Research on rats and mice has shown that ALC increases luteinizing hormone, which may in turn elevate testosterone. Whether these findings carry over to healthy athletes has yet to be proven, but some coaches and athletes believe that ALC lowers cortisol and elevates testosterone.

It's important to note that the research on some of these substances is often conflicting and inconclusive. Its also important to note that many of the cortisol suppressing supplements which are marketed to athletes or to people seeking weight loss do not contain doses anywhere near the amounts that were used in the research. (Yet another way that supplement companies deceive consumers).

### **How can you lower your cortisol levels naturally?**

You can lower cortisol naturally. In fact, if you are overtrained, unnatural cortisol suppression may be nothing more than a "band aid," and continued overtraining can lead to adrenal exhaustion, which could take months to remedy. Sometimes the best thing you can do is take a rest or decrease your training volume and intensity rather than artificially attempt to suppress cortisol. Symptoms of overtraining include elevated resting pulse, sleep disturbances, fatigue, decreased strength and decreased performance.

- Avoid very low calorie diets, especially for prolonged periods of time. Low calorie dieting is a major stress to the body. Low calorie diets increase cortisol while decreasing testosterone.
- Use stress reduction techniques (anger, anxiety, and fear can raise cortisol)
- Avoid continuous stress. Stress is an important part of growth. It's when you remain under constant stress without periods of recovery that you begin breaking down.
- Avoid overtraining by keeping workouts intense, but brief (cortisol rises sharply after 45-60 min of strength training)
- Avoid overtraining by matching your intensity, volume and duration to your recovery ability. Decrease your training frequency, and or take a layoff if necessary.
- Suppress cortisol and maximize recovery after workouts with proper nutrition: Consume a carb-protein meal or drink immediately after your workout.
- Get plenty of quality sleep (sleep deprivation, as a stressor, can raise cortisol).
- Avoid or minimize use of stimulants; caffeine, ephedrine, synephrine, etc.
- Limit alcohol (large doses of alcohol elevate cortisol).
- Stay well hydrated (at least one study has suggested that dehydration may raise cortisol).

### **How do you spot a weight loss pill scam?**

The cortisol pill craze is just one in a long string of bogus weight loss products, and it won't be the last! Why? Because weight loss supplements are big business! Eight or nine figure fortunes have been made from the sales of a single product, which was later proven to be a total farce. How do you protect yourself? Do your homework! Don't consume anything unless you know exactly what's in the product, why it's in the product and how much is in the product. Don't buy a weight loss product just because a radio personality says it works! Don't jump on the phone with your credit card in hand after watching a thirty-minute infomercial! In this day and age, you have to be smarter than that!

The United States Federal Trade Commission (FTC) is the government agency responsible for monitoring deceptive advertising. Recently, the FTC published their new 'RED FLAG' brochure and their deception in advertising workshop, designed to help advertising media and consumers to screen out bogus weight loss claims for nonprescription drugs, supplements, creams, wraps, devices and patches. You can download them here:

Federal Trade Commission's Red Flag Brochure (11 pages, free download)  
<http://www.ftc.gov/bcp/online/edcams/redflag/index.html>

Deception in weight loss advertising workshop (74 pages, free download)  
<http://www.ftc.gov/os/2003/12/031209weightlossrpt.pdf>

For more information on the FTC lawsuit against Cortislim and Cortistress:

"FTC TARGETS PRODUCTS CLAIMING TO AFFECT  
THE STRESS HORMONE CORTISOL"  
<http://www.ftc.gov/opa/2004/10/windowrock.htm>

"CORTISLIM SCAMMERS TARGETED BY FTC  
CLASS ACTION LAWSUITS"  
[http://www.dietfraud.com/Dietcraze/scams\\_cortislim.html](http://www.dietfraud.com/Dietcraze/scams_cortislim.html)

"FTC: CORTISOL CLAIMS DEFY REALITY"  
[http://www.consumeraffairs.com/news04/ftc\\_cortisol.html](http://www.consumeraffairs.com/news04/ftc_cortisol.html)

## Conclusions

Excessive cortisol is not good. But cortisol is not inherently bad; it's a vitally important hormone and part of your body's natural stress response. Cortisol does not make you fat. Stress does not make you fat. Stress may lead to increased appetite... Increased appetite may lead to eating too much... Eating too much makes you gain fat. Make sense? If stress were directly responsible for gaining body fat, then everyone who is stressed would gain body fat. Some people, when stressed, lose weight.

Rather than thinking of cortisol blockers as a weight loss miracle (which they most surely are not), get yourself on a solid exercise and nutrition program and seek natural ways enhance recovery and reduce stress. By doing this first, you may be pleasantly surprised to find that you're losing fat and gaining muscle and there isn't even a need to take a supplement at all.

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## Book Review

### **Why Is Burn The Fat, Feed The Muscle The Best Selling E-Book In Internet History, With Thousands Of Satisfied (And Now Fat-Free) Users In 133 Countries from Algeria to Zimbabwe?**

Burn The Fat, Feed The Muscle is the #1 best selling diet and fitness ebook in the history of the Internet. In fact, it's one of the best selling e-books on ANY subject in the history of the Internet - ... And there's a reason why...

It's because thousands of women and men of every age are burning off BODY FAT - not muscle or water weight - and they're doing it naturally, without supplements, pills or "magic potions," simply by using the proven, scientifically-accurate and common-sense advice found inside this amazing diet and fitness guidebook.

Tom Venuto, a respected fat loss expert, natural bodybuilder, and personal trainer, has not just pumped out yet another "diet program" into an already over-saturated market. Tom's Burn the Fat can be more accurately described as a "Fat Loss Bible." It is quite simply one of the most complete, detailed, and precise guides to fat loss you will ever read. What makes it so much different than other weight loss publications on the market?

Well first of all, it's not a "weight loss" program, it's a "fat" loss program. This may seem like semantics or wordplay at first, but once you've read just the first three chapters, there will be no doubt in your mind that pursuing "weight loss" is not only the wrong goal, it may be the reason that you've failed to reach and maintain your ideal body weight. Burn The Fat shows you exactly why it's fat you must lose, not "weight" (which includes muscle, water and other lean tissue) and then goes on to show you exactly how to do it.

Secondly, what makes Burn The Fat different is the amount of attention that is paid to each and every element of successful, healthy, permanent fat loss. Burn The Fat not only thoroughly dispels the lies, myths and fallacies surrounding a very confusing subject, it is simply the most detailed book about fat loss ever written. By reading Burn the Fat, Feed the Muscle, (or better yet, "studying it"), you will learn more about fat loss than you could from an entire semester of nutrition classes or from an entire shelf of mainstream diet publications at your local bookstore.

You may be wondering, "Is this a low carb diet? A high protein diet? A high fat diet? what type of program IS it???" The truth is that Burn the Fat is neither a high protein diet, or a low carb diet. That's because with the information in this book, you will be able to easily determine your own ideal protein, carbs and fats ratio. You will be able to analyze your body type (are you an endomorph, ectomorph, or mesomorph?), you will determine your BMR (Basal Metabolic Rate, or the amount of "maintenance" calories your body requires every day), and you will find out whether you are carb tolerant or carb intolerant.

This personalized approach makes perfect sense because each of us is a unique individual and no two people are exactly alike in terms of body physiology and personal goals.

One of the most powerful chapters in the book is the first one called, "How To Set Powerful, Compelling Goals That Will Propel You Forward and Charge You Up with Unstoppable Motivation." In this chapter, you will learn what is probably the ultimate secret to burning fat and getting in shape... and it has nothing to do with diets, supplements or training programs. There's

also a great quote in this chapter from the legendary Green Bay Packers coach, Vince Lombardi...

"The dictionary is the only place success comes before work. Hard work is the price we must all pay for success." That line does a nice job of expressing the "no quick fix" philosophy behind the entire book. In the rest of the book, you'll learn the complete and exact mechanics of fat loss - explained on both a scientific and a practical level (which you can easily apply in your own daily life in terms of what to eat and how to exercise to burn fat).

If there is any drawback to the Burn The Fat ebook, it's that it contains so much information, that some readers may find it a bit overwhelming. Those who are looking for a "cliff's Note's" quick start type of fat loss program, might be a bit intimidated at first. The good part however, is that even these types of readers can feel confident and assured that it will be worth the effort because this will literally be the last book they ever have to buy on the subject.

Who will benefit most from Burn the Fat?

In the broadest sense, anyone and everyone who needs to lose weight will benefit from Burn The Fat. Men, women, bodybuilders, fitness enthusiasts, and especially motivated individuals and avid readers will love this book. Although it was written by a bodybuilder, this book is certainly NOT just for bodybuilders.

You will find no "30 lbs. in 30 days" miracles at work here. It's all about intelligent eating choices, planning, hard work and lifestyle change. As Burn The Fat author Tom Venuto says,...

"Burn the Fat is simple, but it's not easy."

In terms of graphic design, Burn the Fat is a clean and professionally formatted PDF e-book. It's a little on the plain side, being just text, but that makes it ideal for printing and reading in the comfort of a favorite chair. Because of it's size, it does require a robust printer and a good stack of paper.

Initially, some people thought that Burn the Fat was priced a little on the high side because \$39 might seem like a fair chunk of money for an ebook download. However, after they saw the amount of information contained within Burn The Fat's 340 pages, along with the special bonus ebooks and reports that come with it, they said it was not only worth the \$39, but many times that amount.

As with any how-to publication, you're not really paying for the materials used to compile the document, but for what the information can do for you, and clearly, this publication has changed many lives and the hundreds of testimonials and success stories found on the Burn The Fat website are proof of that (I recommend you take a look at that "testimonials" page on the Burn The Fat website because some of the before and after transformations are simply incredible - as well as inspiring).

The Bottom line?

Anyone looking for a quick fix solution to fat loss, anyone looking to be told fairy-tales, and anyone looking for a "magic bullet" offered by the likes of body wraps, fat burning pills, diet shakes, or "fat-burning" creams and gels might be best advised to steer clear of Burn the Fat.

On the other hand, anyone tired of "spinning their wheels" going nowhere, who wants the truth about fat loss and who is ready and willing to put in the hard work and discipline and make the lifestyle changes necessary to get a fat free body, will find Burn The fat to be one of the best investments they ever made in their lives. Click here to learn more about Tom Venuto's Burn the Fat, Feed The Muscle program:

<http://www.BurnTheFat.com>