



Your Bodybuilding Supplement Guide

Is it true that creatine supplementation can fight off the deleterious effects of high cortisol levels?

Besides helping you gain lean body mass, increase muscle fiber size, improve strength and power, improve the muscular function of those with neuromuscular diseases, decrease brain trauma, etc., etc., now we have evidence that creatine might also counteract the bad effects of corticosteroids.

Though this study was done in rats, it does provide telling clues as to the endless possibilities of creatine supplementation. Scientists at McMaster University in Canada took 40 rats and divided them into four groups: control, methylprednisolone (7 mg per kg per week); creatine monohydrate (2% of diet); or creatine monohydrate plus methylprednisolone. After six weeks of treatment, they found that weight gain in the rats that received methylprednisolone only was less than the other three groups. Muscle creatine and phosphocreatine were greater in the fast-twitch extensor digitorum longus muscle of both groups that received creatine, but was not different in the slow-twitch soleus muscle. Also, muscle fiber size of the type II fibers (fast-twitch) were greater in the extensor digitorum longus muscle of the two creatine-supplemented groups as compared to the control and methylprednisolone-only groups. But again, no effect on the soleus muscle. So this means what?

It means that potentially, creatine monohydrate supplementation might offset the negative effects on muscle that are often seen when you take a corticosteroid. For instance, humans are given methylprednisolone or another steroid called prednisone to combat severe inflammation. If you take these steroids (not to be confused with anabolic steroids), some of the side effects are fat gain, muscle loss, etc. Not good.

And even though in rats creatine seems to make only the fast fibers grow, we do know if in humans both the slow and fast fibers would grow in response to supplementation. So, maybe, as an adjunct to prolonged corticosteroid therapy, regular creatine supplementation may be what the doctor should order! (Can J Physiol Pharmacol, 80:1008-14, 2002)

I know the studies done on andro have shown it to be largely ineffective in males. But, what about women? Since women have such low androgen levels, isn't it possible andro might have a more dramatic effect?

Indeed! A study from Massachusetts General Hospital in Boston looked at the influence of oral andro administration on post-menopausal women. They gave 30 healthy women either zero, 50, or 100 milligrams of androstenedione as a single oral dose. Suffice it to say that the higher the dose, the greater the increase in serum androstenedione and testosterone. In fact, the mean change in serum testosterone was 185 percent greater (50-mg dose) and 457 percent greater (100-mg dose) than in the control group. Serum estradiol was not different between groups; however, serum estrone was greater in the 50- and 100-milligram groups (both increased about 100 percent).

What does this mean? First of all, this is just a short-term dosing study. What would happen if you had these women take andro every day? Would the huge rise in serum testosterone confer gains in lean body mass? A loss of fat? Would the change in serum estrone have any effects? The answers are not quite known at this point. However, one might speculate that because women have such low levels of androgens, taking andro on a regular basis might increase lean body mass. We don't see this effect in men due primarily to the fact that men already have very high androgen concentrations in their blood. (J Clin Endo Metab, 87:5449-54, 2002).

What are the benefits of using vitamin E? Should I add it to my supplement arsenal?

Vitamin E is an essential antioxidant nutrient whose considerable public attention continues to grow. Interest in vitamin E is high because new scientific data suggests that optimal intake can help delay or prevent the onset of cancer, heart disease, cataracts and other major diseases. How so? Well, such degenerative diseases have been linked to damage from free radicals, which are harmful chemicals that originate in body processes and also result from environmental exposures. Fortunately, free radicals are held in check by antioxidants such as vitamin E. So, as long as antioxidants and free radicals are in balance, free radicals don't present a problem.

But, when free radicals abound because of diet, lifestyle, environment or other influences, look out. This is when antioxidant protection is overwhelmed and free radicals wreak havoc upon your poor, unsuspecting body. Before you know it, your head is heavy and your eyes weak, and you're a body of complaints and decay. Pretty soon you're sipping your meals from a straw, using a bedpan, and a tidal wave of disease washes over you, leaving nothing but a brittle skeleton and a broken heart. Okay, okay. Maybe we are exaggerating, but we bet you're ready for some Vitamin E!

Thankfully, antioxidant nutrients like vitamin E play a significant role in the body's defense against excess levels of free radicals and the damage they can cause. These nutrients also include vitamin C and beta-carotene (provitamin A) and several minerals, each with its own role in protection. As for vitamin E, it's of particular importance to active individuals because it's the primary defense against damage to muscle cell membranes that are vital to healthy functioning of the human organism. In fact, several recent studies have investigated the prophylactic affect of taking vitamin E in supplemental form for protection against muscle damage and soreness.

Want proof? One double-blind, placebo controlled study that explored the effects of vitamin E on preventing exercise-induced muscle damage involved 14 male runners aged 18-24.¹ The study period included four weeks of moderate exercise training immediately followed by six days of intense training wherein subjects substantially increased their running distances.

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Basically, they performed the type of exercise that would make an Olympian proud and a couch potato cry. But, it was also the type of exercise that would give free radicals the green light to roam about the body and cause more riots than an Ohio State fan.

So they randomized the subjects to receive either 1,200 IU of vitamin E or a placebo taken daily throughout the study period. Then, serum levels of the enzyme creatine kinase, an indirect marker of muscle damage, were measured before and after the six-day intense training period. Guess what! Levels of this enzyme were increased in both groups following the intense training, but they were significantly lower in the vitamin E group compared to the placebo group. So, naturally, these results suggest that 1,200 IU of vitamin E daily may be protective against exercise-induced muscle damage.

In another study recently reported in the Tufts University Health and Nutrition Letter, Dr. Jennifer Satchek conducted an investigation with several groups of physically active men and found that older people, including very fit seniors, often suffer after exercise from an increase in free radical activity that damages body tissue.² Testing her hypothesis that "giving older exercisers supplements of Vitamin E... would take the edge off muscle damage," Dr. Satchek recruited a group of physically active men aged 66 to 78 and a younger group aged 23 to 35. Test subjects received intake of Vitamin E in supplement form daily for three months, with some getting a placebo for comparison. Both before and after the Vitamin E supplementation period, the men ran for 45 minutes, 15 minutes at a time with five-minute breaks, and then had their soreness evaluated. The men also received blood tests measuring markers for muscle damage, inflammation and stress from free radicals.

"Dr. Satchek's thinking," the report stated, "was that the older men who took Vitamin E would get the biggest benefit and that the younger E-takers would get little, if any, because their bodies would 'know' not to go into free radical overproduction. But, while she thought the older men would respond more dramatically, she was surprised at the significant effect that also occurred in the younger exercisers." So, while the older men experienced less inflammation, even the younger bucks had less soreness and muscle damage. Still, Dr. Satchek concluded that those most likely to benefit from the Vitamin E program are older exercisers of above average fitness.

Vitamin E Strategies. The RDA for vitamin E is 15 milligrams a day for adults, but don't be afraid to bump that up substantially. Many experts suggest that active individuals can safely ingest anywhere from 400-800 milligrams per day. These doses may be significantly higher than the RDA values, but they are well under toxic levels.³ Of course, the problem with Vitamin E intake, from the point of view of active individuals, is that the principal sources for this nutrient are plant oils (and the margarines made from them)— corn, olive, peanut, safflower and soybean— that are virtually 100 percent fat. That tends to keep health conscious consumers at bay. In addition, with the recent concern over trans-fatty acids as possible carcinogens, many people are reducing their consumption of margarine.

That brings us to healthier alternatives. Other foods containing vitamin E include green leafy vegetables (kale, collards, mustard greens and spinach), as well as wheat germ, whole grains, nuts and seeds. However, the gripes continue as many people have dropped several of these foods because of their fat content. I guess nuts are so tasty many people find it hard to eat just a few, so they eliminate them altogether. Even nutritious wheat germ is high enough in calories to frighten calorie-conscious athletes away from eating it. Three tablespoons provide two milligrams of vitamin E, but also supply 110 calories. Oh, well.

Regardless, for optimal health, considering the questionable state of our food and environment,

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and the above-stated increased nutritional needs of active individuals, the literature seems convincing enough to recommend supplementation of one's diet with vitamin E. That's in addition to a balanced diet, of course.

1. Itch H, et al. Vitamin E supplementation attenuates leakage of enzymes following six successive days of running training. *Int J Sports Med*, 21:369-74, 2000.
2. Sacheck, J. Tufts University Health and Nutrition Letter, 2002
3. Laursen, P. B. Free radicals and antioxidants vitamins: Optimizing the health of the athlete. *Nat Strength & Cond Assoc.*, 23:17-25, 2001.