

## GET ACTIVE. STAY ACTIVE

*Is taking creatine safe?*

- *Jeff*  
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If you are considering taking a supplement, it is important to remember that the Food and Drug Administration do not regulate supplements. As with any medication you may wish to consult a physician before taking supplements. Also, be sure that you read and compare the labels. Each brand could contain different core ingredients.

The Supplement Creatine is gaining popularity among many athletes and weekend warriors alike as means of attempting to improve athletic performance. Creatine is a nitrogenous amino acid compound synthesized from three amino acids: glycine, arginine, and methionine. The body produces 1-2 grams/day mainly in the liver. Creatine is found 95% in skeletal muscle, and is also found in the heart, brain, retina, and other tissues. You can also ingest creatine through eating herring, pork, salmon, beef, cod, and drinking milk. A mixed diet provides approximately 1 g creatine/day. In healthy individuals, normal plasma creatine levels range from 120-140g. This level is lower in vegetarians because of their lower intake of natural sources of creatine.

Creatine is used in the body as a way to restore ATP, which is the primary energy source. Supplementation seems to increase the total amount of work that could be performed during alternating bouts of different intensity exercises. The use of creatine appears to be most beneficial when the activity involves repeated, short bouts of high-intensity exercises such as football and soccer. There may be some strength gain with an increase in the one rep max weight and a decrease in a timed sprint. However, a gain of weight appears to be due to retention of water instead of an actual increase in muscle bulk.

The recommended dosage for creatine supplementation is 5g creatine 4 times/day for 5-6 days, followed by a maintenance phase of 1 g/day. With creatine supplementation, there appears to be saturation in the creatine levels in the muscles just after a few days. This saturation may lead to inhibition of the body's own creatine synthesis. In order to benefit the most from creatine supplementation, cycling periods recommended are 2-6 weeks on and two weeks off.

Ingesting carbohydrates and exercise are good ways to improve the body's response to supplementation. Carbohydrates may increase muscle creatine levels as a result of insulin-induced improvement of creatine uptake by tissues. Exercise also causes an increase in blood flow, which leads to more creatine uptake by muscle cells.

The adverse reactions to creatine supplementation include: gastrointestinal pain, nausea, diarrhea, muscle cramping, dehydration, water retention, and renal dysfunction. Since high doses of creatine might adversely affect renal function, combining creatine with potentially nephrotoxic drugs might have additive harmful effects on kidney.

function. Examples include: NSAIDS – Ibuprofen (Advil, Motrin, Nuprin) and Naproxen (Aleve, Anaprox, Naprelan, Naprosyn).

Caffeine may decrease creatine's beneficial effects by inhibiting phosphocreatine resynthesis. Also, combining supplements may be harmful and even deadly. There is a case of an athlete who had an ischemic stroke after consuming creatine, caffeine, ephedra, and a variety of other supplements daily for 6 weeks. Therefore, combining supplements is highly advised against.

Again, there needs to be further research on the effects of creatine, either positive or negative. There also needs to be more long term controlled studies to follow the effects over a long period of time.

Please submit any questions you may have for our sports medicine experts by e-mailing [cangelel@dmc.org](mailto:cangelel@dmc.org). In the subject line, please write, "Get Active, Stay Active." We will respond to all the questions we receive and select one each month to feature in our column.

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