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# Creatine Credibility

One of the most popular nutrition supplements in use today is creatine. Whether in the gym or on the football field, creatine use has become increasingly popular among athletes and the general public. But what are the benefits and possible risks associated with this supplement? Here are a few facts athletes should know about creatine.

## What is Creatine and How Does it Work?

Creatine is a naturally occurring amino acid produced by the kidneys and liver. It is transported in the blood to muscles to be used for energy. Typically, the body manufactures about 1 to 2 grams of creatine each day. Creatine can also be obtained from food and individuals who eat meat can consume about 1 to 2 grams of creatine through diet (1). So why take a creatine supplement if it is produced endogenously and can be obtained through food?

Research indicates that additional creatine may be instrumental in allowing muscles to make more adenosine triphosphate (ATP), which stores and transfers energy in muscle cells. This additional ATP is thought to be particularly useful during activities that require explosive bursts of energy, like weight lifting and sprinting (1). In short, creatine may help muscles and nervous tissue recover energy more quickly allowing athletes to increase the duration and intensity of their training.

Creatine is most commonly taken in a powder form known as creatine monohydrate. Many creatine users follow a loading phase in which 20 to 25 grams of creatine are consumed once a day for 5 to 10 days. This phase is followed by a maintenance phase wherein the athlete consumes 2 to 5 grams daily. Alternatively, the same levels of creatine can be achieved by supplementing 3 grams daily for 28 days (2).

## Does Research Support Creatine Use?

A large number of scientific studies suggest that creatine does have a positive effect on performance during exercises that require high intensity, short bursts of energy and may also increase lean body mass size in young men.

However, these studies saw no evidence that creatine supplementation improved performance in women and older adults. In addition, creatine has not been shown to be effective in improving activities that require consistent aerobic output, like running and swimming (3,4).

It is also important to note that studies have not examined the effects of creatine on subjects ages 18 to 19, an age group that now makes increasing use of this supplement. The American Academy of Pediatrics (AAP) reports that there is virtually no data supporting the safety of performance-enhancing substances in the youth population and for this reason, condemns the use of all of these substances, including creatine, among children and adolescents (5).

## Potential Risks

Creatine has been found safe for long term use in healthy adults at doses of 5 grams/day (6). However, higher doses of creatine are associated with several side effects including stomach cramps, muscle cramps, nausea and diarrhea (7). Additionally there have been case reports of kidney and liver damage associated with the use of creatine. For this reason, it is recommended that individuals with existing kidney or liver problems not take creatine (8,9).

Users of creatine should also be aware of product safety issues. Since creatine is classified as a dietary supplement, it is not regulated by the FDA. This means supplement manufacturers do not have to conform to the same safety standards that drug manufacturers must adhere to. Of particular concern is the cross-contamination that may occur in facilities that also manufacture performance-enhancing drugs, or anabolic steroids (1). Consumer Labs, an independent testing facility of nutrition products, has approved several powdered creatine products including, EAS, Everlast, GNC Pro Performance, Muscletech and Precision Engineered. Liquid creatine products by Muscle Marketing USA and Vitol Creatine were not approved as impurities or no creatine was found in these products (10).

## Bottom Line

Research indicates that creatine can be an effective supplement for improving performance involving short burst of high-intensity activities and in building lean muscle mass. For this reason, creatine may be a useful part of some athletes' training regimen. Dietary supplements, like creatine, will never substitute for well-designed and consistent nutrition and exercise programming. ■

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