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## **CREATINE**

### **What is Creatine?**

Other Names: creatine monohydrate, creatine phosphate, creatine citrate. A lot of studies suggest that creatine is better absorbed with carbohydrate and that's one reason there are a few different forms with different binders

Creatine is a compound that's involved in the production of energy in the body, in the form of adenosine triphosphate (ATP). Made in the liver, approximately 95% of the body's creatine ends up being stored in skeletal muscles and the remaining 5% is found in the brain, heart and testes. Once it's used, creatine is converted to a waste product called creatinine and excreted in urine.

Creatine is found in small amounts in red meat and fish. However, much of it is destroyed by cooking. It's also made naturally in the body from L-arginine, L-glycine and L-methionine, amino acids that are principally found in animal protein. Insulin is needed for creatine to enter muscles, so consuming carbohydrates with creatine may increase the amount of creatine available to muscles.

Creatine supplements are available in capsules or as a powder at health food stores, some drug stores and online. One of the most popular forms of creatine is creatine monohydrate.

### **Why Do People Take Creatine**

Research suggests that creatine may provide some benefit in improving performance in high-intensity, short-duration activities such as weight lifting and sprinting. Creatine increases production of ATP, an energy source for muscles during brief, explosive periods of activity. It hasn't been found, however, to help with aerobic or endurance sports such as marathon running which motocross would fall closer to this category.

Creatine may also decrease muscle fatigue. It appears to reduce lactic acid, an energy waste product that causes muscle fatigue.

More research is needed on the effectiveness of creatine. Excess creatine is removed by the kidneys, so some experts question the use of creatine supplements in people with sufficient levels of creatine in their muscles. Creatine is extremely popular with athletes and bodybuilders, many of whom consider it to have similar effects as anabolic steroids without the side effects. It hasn't been banned by many athletic associations. Still, some organizations question whether it's ethical to permit athletes to take a supplement that could potentially enhance performance. Others have expressed concern that use of performance-enhancing supplements could lead to the use of other potentially risky supplements and drugs.



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### **Side Effects and Safety Concerns**

Possible side effects of creatine include:

- Stomach cramps
- Nausea
- Diarrhea
- Loss of appetite
- Muscle cramps
- Weight gain

Creatine may cause water to be drawn away from other areas of the body and into muscle tissue, which could increase the risk of dehydration. This is one factor that may contribute to arm pump for motocross.

High doses of creatine could potentially injure the kidneys, liver and heart. Theoretically, creatine may cause kidney damage because its by-product, creatinine, is filtered through the kidneys into urine. Although studies haven't found adverse events in recommended doses, there have been a couple of case reports of people who have experienced kidney collapse and three deaths in people taking creatine, but there is no definitive evidence that creatine was the cause. People with kidney disease or liver disease should avoid creatine.

Creatine supplements may cause asthmatic symptoms, such as wheezing and coughing, in some people.

People with McArdle's disease shouldn't use high doses of creatine because it has been found to increase muscle pain.

There is some concern that oral creatine supplements are metabolized in the body to a toxic waste product formaldehyde, which could potentially damage cells, DNA molecules and blood vessels.

Pregnant or nursing women or children should not use creatine supplements.

One of the main safety concerns is that individuals using creatine to enhance athletic performance or muscle mass, particularly adolescents, may exceed recommended dosages and take it without supervision.

### **Possible Drug and Supplement Interactions**

Because creatine could theoretically affect kidney function, it should not be taken with prescription drugs that could also potentially affect the kidneys, such as aminoglycoside antibiotics (Amikacin, tobramycin, Nebcin), immunosuppressant drugs such as cyclosporine and non-steroidal anti-inflammatory drugs such as aspirin, ibuprofen (Motrin, Advil), naproxen (Naprosyn, Aleve).

Creatine supplements should not be taken with the herb ephedra because of increased risk of side effects. There was one case of stroke in a person taking creatine and ephedra. Although there was no definite link between the combination of herbs and the stroke, it is best to avoid the combination.



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