

Creatine: What is it & What is it used for?

Creatine:

- Is an amino acid found in the muscle—it is not a steroid, vitamin or mineral.
- The body synthesizes creatine in the kidneys and liver and is carried in the blood to the muscle.
- Approximately 95% of creatine in the body is found in the skeletal muscle.
- Creatine is utilized the most for short, high intensity contractions—like weight lifting or sprinting.
- Creatine can be consumed in the diet from meat and fish.
- On average most adults will consume 1-2 grams of creatine daily.



Supplementation:

- Creatine is usually used by individuals wishing to gain muscle mass
- Can be added to a drink in powder form or taken as a capsule or caplet
- It is proposed that through supplementation creatine phosphate stores are increased; therefore, energy is more accessible in times of high intensity and short duration exercises such as sprinting or lifting
- It is recommended that each dose be taken with plenty of fluid

Effectiveness:

- Some studies have shown that supplementation of 25– 30 grams of creatine per day will increase creatine stores in the muscle by about 20%.
- Most research has used untrained athletes as subjects. Critics have noted in studies where trained athletes were used, muscle creatine stores were not increased with the use of supplements.
- Studies have also noted that a greater amount of creatine was stored within the muscles when supplements were consumed with a carbohydrate solution versus when taken alone.
- Many studies have found that creatine supplementation helped increase the power output with exercises involving many repetitions.

-Additional Facts:

- Creatine can be stored in the body in two forms. The free form of creatine and phosphocreatine
- Phosphocreatine accounts for a majority of the creatine stored in the muscles—it is also considered the “storehouse for high energy phosphate” (the phosphate is needed for the transfer of energy to occur when the muscle exerts energy)
- Phosphocreatine is the most utilized fuel source for sprints or bouts of high-intensity exercise lasting up to 10 seconds.
- **Phosphocreatine & creatine** do not remain at a consistent level within the muscle. After a short period of time the Creatine and phosphocreatine will be transformed into **creatinine** which is then excreted through the urine.



Creatine Continued...

Dosage:

- References have suggested a safe dose of creatine as 20-25 grams per day.
- **Rapid Loading Protocol— used only for short term supplementation (example 1 week)**
 - 20 grams daily, divided into 4 doses, for 5 days
 - Dosage should be taken with a meal or snack containing 50-100 grams of carbohydrate
 - 1-2 pound weight gain should be expected in following this protocol
 - Maintenance dose: 3 grams a day
- **Slow Loading Protocol—used for long term supplementation**
 - 3 gram/day taken with substantial carbohydrate meal or snack
 - Maintenance dose: 3 grams a day



Standardization:

- Standardization is a process that measures the amount of chemicals and ingredients within a product in order to ensure that different preparations are similar.
- Different creatine supplements will contain different forms of creatine in different concentrations - examples include: creatine monohydrate, creatine monophosphate.

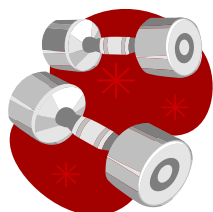


Safety:

- Currently there is no standard of practice for the manufacturing of dietary supplements. Identity, purity, quality, strength and composition of supplements is left in the hands of the manufacturer.
- Always read the product labels. With any medical condition you should always speak with a healthcare provider before beginning supplementation.
- Some supplements can cause harmful side effects when taken with certain prescriptions or over the counter drugs.
- Some individuals can have an asthmatic allergic response to supplementation. Avoid any creatine supplement if you have this allergy.

Side Effects:

- Currently, the long term side effects of supplementation are unknown.
- There is limited research showing side effects of creatine supplementation
 - There have been some individual reports, but no studies indicating that creatine supplementation increases the risk for muscle cramps, strains or tears. However, several studies have shown reduced rates of muscle cramps, strains or tears with supplementation.
 - Some individuals may experience loss of appetite, stomach discomfort, diarrhea or nausea
 - Overuse could potentially have harmful effects on the kidneys or liver. Creatine should not be taken with any underlying kidney or liver disease.
 - Theoretically, creatine may affect insulin levels in the blood. Caution should be taken with individuals who have diabetes or hypoglycemia.
 - Long-term supplementation at a high dosage is associated with an increase in formaldehyde production which has serious health complications.



References:

- www.mayoclinic.com
- www.ais.org.au/nutrition

