CREATINE MONOHYDRATE

What is creatine?

Creatine is a protein, manufactured in the body from the amino acids (building blocks of proteins) methionine, arginine and glycine.

Daily requirements and sources

Creatine may come from a number of different sources
- Dietary: sources include red meat and fish (but creatine in these sources can be destroyed by cooking at high temperatures)
- Endogenous production: the liver and kidneys produce approximately 2g per day
- Supplementation: taking a creatine supplement

How does creatine work?

1. Creatine is transported through the blood and taken up by the brain and skeletal muscle where it is stored as phosphocreatine (PCr).
2. During times of increased energy demand such as high intensity exercise, the ATP/Phosphocreatine (PCr) system is an immediate energy source that rapidly resynthesizes ATP (energy) from ADP with the use of PCr.

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\text{Creatine phosphokinase} \\
\text{Creatine phosphate + ADP + H}^+ \quad \rightleftharpoons \quad \text{ATP} + \text{creatine}
\]

3. Using an oral creatine supplement has the ability to increase muscle stores of PCr enhancing the muscle’s ability to resynthesize ATP so more energy is available for repeated bouts of muscle contraction during brief high-intensity activity.

Potential performance benefits

1. Sustained power output, particularly in high intensity efforts, where power drops off with repeated efforts.
2. By increasing an athlete’s work capacity during strength training, creatine can assist with strength, and possibly muscle mass, increases.
3. Faster recovery of PCr stores with sufficient rest between repeated efforts.
4. Intracellular buffering. When PCr donates its high energy phosphate to convert ADP to ATP (energy) it uses hydrogen (acid) therefore acting as a buffer within the exercising muscle.
How do I take creatine?

There are different ways to take creatine.

- Some athletes prefer to “load” with 5g x 4 times per day for 5 days followed by a maintenance dose of 3 grams per day. However, for some individuals, this can result in weight gain of 1 – 3% as a result of water retention.
- An alternative method is to take 3g per day for a minimum of 28 days continuously. Most creatine supplements should come with a measuring scoop, but ½ teaspoon is approximately 3g. Water retention is not commonly seen with the slow load protocol.

It is important to:
1. Take daily not just on training days
2. Do not add to hot food or drinks and add to cold liquids just before consumption

Taking creatine with carbohydrates can promote uptake into the muscle e.g. add it to a recovery drink/meal OR on a rest day have it with a drink that contains carbohydrates.

Creatine’s ‘wash-out’ rate from muscle is rather quick, with about 50% lost 2 weeks after discontinuing so plan accordingly.

Are there any side effects of health risks?

There are currently no known health risks as long as creatine is used as directed in healthy individuals. You may produce less urine in the first few days as some water may be stored along with creatine so it is important to drink an extra 250 - 500mls of fluid when starting creatine supplementation. If you notice that significant water retention occurs as a side effect of taking creatine, you may wish to stop supplementing 2 to 3 days prior to any major competition. This will eliminate water retention issues, while still providing the positive benefits of increased muscle creatine.

**After you have spoken to your Sports Dietitian you may purchase Precision Creatine from University Pharmacy which has been tested by LCG.**