Creatine

There are 3 basic types of creatine supplements:

**Creatine Monohydrate** - Creatine Monohydrate is a creatine molecule bound with water. 1 gram of creatine monohydrate has 880 milligrams of creatine. Creatine Monohydrate is the most common form for a creatine supplement, and the majority of studies and research have been conducted using creatine monohydrate.

**Creatine Phosphate** - Creatine Phosphate is creatine bound to a phosphate group. This form, creatine phosphate, has not been shown to be more effective than just taking creatine monohydrate.

**Creatine Citrate** - Creatine Citrate is more water soluble than other forms of creatine. Simply put, it dissolves better when you mix it up, but is equally as effective as the other forms.

**Application:**

- Creatine is actually a fuel source stored in the muscle tissue that is derived from the synthesis of amino acids - arginine, glycine, and methionine.

- In humans, approximately half of stored creatine originates from ingesting animal protein. A typical omnivores diet contains 1-2g of creatine per day. Vegetables do not contain creatine, thus vegetarians show lower levels of muscle creatine.

- Creatine enhances physical performance by increasing the amount of free phosphates available for the resynthesis of ATP during maximal exercise lasting 5-10 seconds.

- Research shows that creatine is most effective in strength, speed and explosive activities. This includes weight training and sports that require repeated short bursts of effort.

- There is less support to indicate that creatine improves endurance performance and aerobic-type exercise. Weight gain associated with creatine supplementation may be counter productive in endurance sports and weight dependant sports.

**INFORMATION**

Since its introduction into the modern sports world in 1992, Creatine supplementation has been widely utilized and studied for its benefits to athletic performance by aiding in increases in strength training, improved recovery ability during and between training and competition sessions.

This material was developed by professional sports nutritionists at the United States Olympic Committee. For more information and additional sport performance resources, visit: www.teamusa.org/resources/usoc-sport-performance
Uses and Timing:

Most studies recommend taking creatine before a workout. The timing of when you take creatine may not be critical, but it appears to be most effective taking it before so that there is free phosphates available to your muscles.

Creatine should be ingested in combination with simple carbohydrates. This combination has shown to increase muscle creatine accumulation when compared with the ingestion of creatine alone. It is generally recommended >50g of carbohydrate in combination with creatine dose.

Slow load versus Rapid load- Research has shown as little as 3g/day for three weeks increases muscle creatine levels to the same degree as utilizing a loading dose (approximately 20g/day) for 5 days. Therefore, a loading phase is not mandatory to detect a clear difference in physical performance.

Supplementation of creatine is body mass-dose related.

Studies suggest:

- <175lbs = 3g/day
- 175-220lbs = 4g/day
- 220+lbs = 5g/day

Contraindications:

Due to ethical reasons, no known studies have been done on humans under the age of 18. Because of the side effects are unknown, taking creatine under the age of 18 is not recommended.

Currently, there are no known long or short term adverse side effects of creatine when taking the appropriate dose.

Kidneys and liver may be at risk if you misuse creatine. Any creatine your body does not use is excreted as a waste product called creatinine. If you constantly overdose creatine (>20 g/day) - you will have increased waste of creatinine. This constant excretion of creatinine may put extra stress on your kidneys and liver, as well as lead to gastro-intestinal discomfort.

Creatine is an osmotically active substance, it pulls water into your muscle cells, which can lead to weight gain or occasional dehydration due to increased muscular water uptake from the rest of the body.

References:


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