BONE & MUSCULOSKELETAL HEALTH

Creatine

SUPPORTS MUSCLE STRENGTH, PERFORMANCE AND RECOVERY‡



Creatine monohydrate is among the **most extensively studied** and **effective nutritional supplements for promoting exercise capacity and lean body mass gains during resistance or high intensity training programs**.[1-13] When used in conjunction with resistance training, creatine has been shown to increase body strength, build muscle mass and support recovery from strenuous exercise. Research shows that creatine supplementation leads to greater increases in fat-free mass compared to resistance training alone. It also supports muscular adaptations to high-intensity sprints or dynamic movements for improved performance.[1-8] Since creatine plays other vital roles within the musculoskeletal and nervous systems, it is essential for many aspects of health.‡

- Helps reduce recovery time‡
- Promotes growth factor signaling and glycogen storage to support gains in muscle strength‡
- Supports quick conversion of ADP to ATP energy‡
- Supports muscle strength, performance and recovery‡

WHO IS THIS SUPPLEMENT FOR?

- Active adults engaged in strength training programs or regular sessions of high intensity exercise
- Athletes participating in sports requiring repeated bursts of speed, power or strength

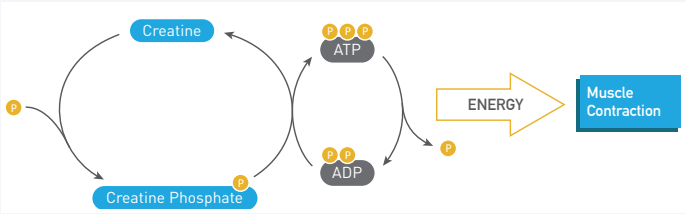

Image created with BioRender.com

Figure 1. Creatine regenerates ATP to provide energy for muscle contraction. This pathway, known as the ATP-PC or phosphagen system, is a crucial source of energy for high-intensity, short-duration activities lasting approximately 8-30 seconds

MECHANISMS OF ACTION‡

Energy production. Creatine is an energy carrier that is naturally present in muscles, brain and other organs. In muscles, creatine (in the form of creatine phosphate) acts as a reserve of high-energy phosphate to regenerate ADP to ATP, sustaining energy availability for muscle contraction during anaerobic exercise (Figure 1).

Lactate lowering. Creatine reduces lactate mainly by supplying ATP through the phosphocreatine system, which bypasses glycolysis and therefore avoids formation of lactate. By meeting more of the energy demand without relying heavily on glycolysis, creatine lowers pyruvate production and its subsequent conversion to lactate.

Protein synthesis. Creatine promotes growth factor signaling and glycogen storage to support protein synthesis, which mediates gains in muscle strength, size and other adaptive responses to training (Figure 2).

‡This statement has not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Pure Encapsulations is a registered trademark.

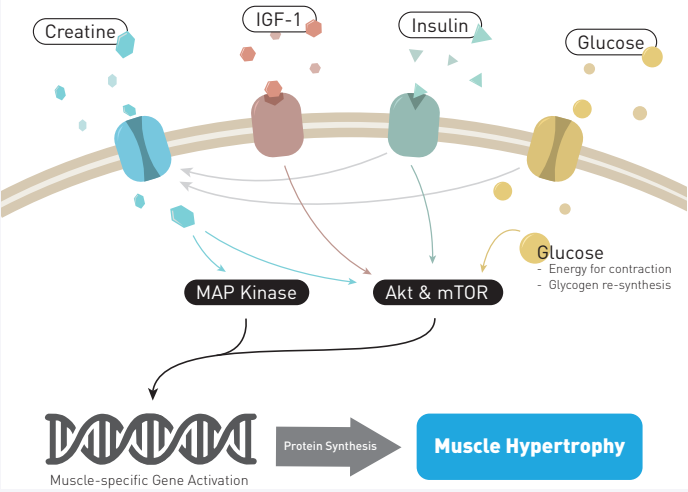

Image created with BioRender.com

Figure 2. At the cellular level, creatine cooperates with anabolic signals, such as insulin-like growth factor 1 (IGF-1), insulin and glucose to support signaling pathways that stimulate protein synthesis and muscle hypertrophy.

CLINICAL RESEARCH HIGHLIGHTS‡

Numerous randomized controlled trials and meta-analyses have consistently shown that supplementation with creatine monohydrate, in conjunction with resistance training, supports significant enhancements in muscle strength, fat-free mass and functional performance across various subject groups including athletes, older adults and clinical patient populations. Several studies have shown improvements in maximal strength and power output ranging from 5% to 15%.[1,13] Significant benefits include increased one-repetition maximum (1RM) strength, improved fat-free mass and enhanced muscular performance in both functional and sport-specific activities.

- A review analyzing 22 studies concluded that on average, creatine increased muscle strength by 8% and weight lifting performance by 14% more than placebo, with improvements seen in both genders and across various training methods.[10]
- In a randomized, double-blind, controlled trial involving 28 adults over 65 years of age, creatine supplementation (5 g/day) over 14 weeks of resistance training resulted in significantly greater increases in fat-free mass and isometric strength compared to placebo. Knee extensor strength increased (46.2%) compared placebo (22.5%) for both genders, representing an additional 23.7% increase in the creatine group over placebo. Fat-free mass increased by 1.7 ± 1.2 kg in the creatine group, while the placebo group experienced an increase of 0.4 ± 0.5 kg.[9]
- In a 10-week randomized trial of 16 collegiate football players, 5 g/day creatine (with no loading phase) in conjunction with resistance training produced significant gains in strength (bench press, squat, power clean) and body mass, while the placebo group did not experience improvements.[11]
- A systematic review and meta-analysis of 23 studies (mostly randomized controlled trials) in adults under 50 years of age concluded that creatine supplementation (varied doses, typically 3–20 g/day) with resistance training significantly increased upper- and lower-body strength.[12]

In studies, dosing regimens typically include an initial loading phase (e.g., 20 g/day for 5–7 days) followed by a maintenance dose (e.g., 3–5 g/day). Some research indicates that effective results can also be achieved with lower daily doses and without a preceding loading phase. At a dose of 3-5 grams per day, creatine levels in the body will typically rise for three or four weeks before reaching a steady-state maximum level. With this approach, a loading phase is not needed.[14,15,16]

Supplement Facts

Take this product with an adequate daily fluid intake. Mix 1.5 teaspoons daily with 8 oz of water or beverage of choice. For best results, take this product with a carbohydrate-containing beverage or food 30 minutes before exercise, or immediately following exercise. On rest days, take 1 serving daily with a meal or as directed.

Serving size: 1.5 teaspoons (5 g)
Servings per container: approximately 60

1.5 teaspoons (5 g) contains:

Creatine monohydrate	5 g

WARNING: Consult your healthcare practitioner before use if pregnant, lactating, on medication or have any health condition, including kidney disease. Discontinue use and seek medical advice if adverse reactions occur. Not intended for use by persons under the age of 18.

NON GMO · V · VEG

Creatine	Quantity	Order Code
	11.1 oz (315 g)	CRM6

REFERENCES

1. Buford et al. Scand J Med Sci Sports. 2007;4(6).
2. Skare et al. Scand J Med Sci Sports. 2001;11(2).
3. Cooper R, et al. J Int Soc Sports Nutr. 2012; 9: 33.
4. Becque MD, et al. Med Sci Sports Exerc. 2000 Mar;32(3):654-8.
5. Aaserud R, et al. Scand J Med Sci Sports. 1998 Oct;8(5 Pt 1):247-51.
6. Izquierdo M, et al. Med Sci Sports Exerc. 2002 Feb;34(2):33
7. McConell GK, et al. Med Sci Sports Exerc. 2005;37(12), 2054.
8. Hespel P, Derave W. Subcell Biochem. 2007;46:245-59.
9. Brose A, et al. Biol Sci Med Sci. 58(1):11-9 .
10. Rawson E, Volek, J. (2003). J Strength Cond Res. 2023;17(4):822-31.
11. Pearson D et al. J Strength Cond Res. 1999;13:187-92.
12. Wang Z, et al. Nutrients. 2024 Oct 28;16(21):3665.
13. Kreider RB. Mol Cell Biochem. 2003;244:89–94.
14. Eghbali E, Arazi H, Suzuki K. Physiological Res 2024;73;5:739-53.
15. Wax B, Kerksick CM, Jagim AR, et al. Nutrients. 2021 Jun 2;13(6):1915.
16. Cooper R, Naclerio F, Allgrove J, et al. J Int Soc Sports Nutr. 2012 Jul 20;9(1):33.

Visit PureEncapsulationsPro.com/quality for more information on our GMO policy.

‡This statement has not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

800.753.2277 | PureEncapsulationsPro.com

Pure Encapsulations is a registered trademark.