Creatine

A white, tasteless powder (also capsules and gummies) made from amino acids. The body makes some, and meat and fish supply a little more. Monohydrate is the form with the most research.

The gold standard in ergogenic aids, backed by thousands of human trials confirming efficacy in cellular energy production, strength, and cognitive performance.

Key compounds: Creatine monohydrate; stored in muscle as phosphocreatine, which helps regenerate cellular energy (ATP) during short, intense effort.

Research summary: S*trong evidence* for supporting strength, power and lean mass alongside resistance training. *Emerging* for cognitive support, particularly in vegetarians, older adults and during sleep loss, and for healthy metabolic aging.

Creatine monohydrate is one of the most thoroughly researched and safest ergogenic aids in sports nutrition and clinical health. While historically viewed strictly as a workout supplement for powerlifters, recent research highlights its expanded benefits across healthy aging, cognitive support, and metabolic body composition [2,5,6].

The International Society of Sports Nutrition has published a position reviewing its safety and efficacy.[1] A meta-analysis of 22 randomized trials in older adults (721 participants) found creatine plus resistance training increased lean tissue mass by about 1.4 kg more than placebo, with greater chest-press and leg-press strength [3]. An earlier meta-analysis in older adults found greater gains in fat-free mass and better 30-second chair-stand performance.[4]

Key Benefits:

Muscle Strength & Hypertrophy

Intracellular ATP Resynthesis: Creatine increases intramuscular phosphocreatine (PCr) stores, enabling faster regeneration of adenosine triphosphate (ATP) during short-burst, high-intensity exertion.

Lean Mass & Weight Loss: Clinical trials demonstrate that adding creatine to resistance training and diet-induced weight loss preserves lean mass while producing greater reductions in body-fat percentage compared to diet and exercise alone.

Muscle Maintenance in Midlife & Older Age

Healthy Aging & Sarcopenia: In one 12-week randomized trial of 64 adults aged 45–65, creatine (10 g/day) improved lean mass and strength without a structured exercise program (Kreider et al., 2026) 6. Benefits are generally larger when creatine is combined with resistance training (Candow et al., 2025) 5.

Brain Health & Cognition

Neuroenergetics under Fatigue: While baseline cognitive benefits in fully rested, healthy young adults are modest, higher-dose creatine supplementation enhances cognitive processing, memory, and executive function during periods of sleep deprivation, acute stress, or mental fatigue.

Who Should Take Creatine?

- Athletes & Weightlifters: To maximize power output, explosive sprint capacity, and muscle hypertrophy.
- Vegetarians & Vegans: Plant-based eaters have significantly lower baseline tissue creatine stores (since dietary creatine comes primarily from meat and fish) and experience greater proportional physical and cognitive gains from supplementation.
- Middle-Aged & Older Adults (45+): To combat age-related sarcopenia, maintain functional mobility, and prevent muscle loss during caloric restriction.
- Individuals Experiencing Chronic Sleep Deprivation: To maintain cognitive performance and working memory during high fatigue.

How Much Should You Take?

A consistent daily dose of 3–5 grams is fully supported by long-term data, with or without a loading phase.

Standard Maintenance Dose: 3 – 5 grams per day taken daily. This saturates muscle stores within 3 to 4 weeks with minimal digestive disruption.

Optional Loading Phase: 20 grams per day (divided into four 5g doses) for 5 to 7 days, followed by 3–5g daily. This achieves full tissue saturation within a single week but may cause minor, temporary water weight gain or transient stomach upset.

Cognitive/Neurological Dosing: Studies investigating brain saturation often utilize higher ongoing doses of 5 – 10 grams per day.[2]

Cautions: Check with a clinician first if there is kidney disease, or if pregnant or breastfeeding. Creatine can raise the blood marker creatinine without harming the kidneys, which can confuse lab tests, so customers should tell their doctor they use it. Drink plenty of water. Not recommended for under 18s without clinician guidance.

References

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