

CREATINE

Creatine is an organic compound that can be obtained from diet (Ex. meat, chicken, fish) or supplementation (Ex. Creatine monohydrate (CrM)). Creatine is important in the metabolism processes of tissues with high energy demands such as the brain and muscle.^{1,2} Supplementing creatine, usually as CrM, can increase the capacity for energy resynthesis during repeated high-intensity exercise tasks and stimulate cell growth leading to increased lean mass through a number of processes.^{2,3} Various dosing strategies can be effective including loading (3g of creatine/kg body weight split into four doses for 4-7 days), maintenance (0.3g of creatine/kg of body weight), or a combination of both starting with loading before maintenance, but no dosing regimen will be effective without resistance, strength or power training.^{1,2}



from RECENT ARTICLES

“Effects of dietary supplements on athletic performance in elite soccer players: a systematic review” *Abreu et al, 2023.*

Creatine can improve athletic performance in several ways because of creatine’s role in adenosine triphosphate (ATP) regeneration. In soccer players, creatine may improve sprint and agility performance and may minimize decreases in athletic performance during matches. Specific to female players, creatine may also improve jump performance. Of note, a loading dose (>0.03g/kg of body weight) may cause weight gain due to water retention as compared to a protocol with a lower dose (5g/day). Athletic trainers can discuss the potential performance benefits of creatine with soccer players and make appropriate recommendations for a protocol when considering patient sensitivity to weight gain.

“Creatine supplementation in the pediatric and adolescent athlete—a literature review” *Metzger et al, 2023.* Limited research is available regarding the use of creatine supplementation in pediatric and adolescent patients. Furthermore, the overall quality of the existing literature is poor and there are no consistent findings. Athletic trainers can participate in future research to further the knowledge of safety and efficacy of creatine supplementation in the developing athlete and counsel pediatric and adolescent patients and parents on the current limitations of the literature when assessing risks and benefits of supplementation.

“Creatine supplementation and endurance performance: surges and sprints to win the race” *Forbes et al, 2023.* Supplementing creatine may have many effects that are advantageous for endurance athletes. These mechanisms might improve time to exhaustion and support events where an end-spurt or “kick” improves performance (Ex. swimming) or multiple surges occur throughout the event (Ex. cross-country skiing, mountain biking). Athletic Trainers can consider the growing body of literature when discussing creatine supplementation in the endurance athlete and support future research on varied endurance modalities and effects of creatine and high volume endurance training on muscle morphology and physiology.

Fueling the firefighter and tactical athlete with creatine: a narrative review of a key nutrient for public safety” *Gonzalez et al, 2024.* CrM may bolster the health and occupational performance of firefighters by increasing anaerobic exercise capacity and muscular performance and aiding thermoregulation, decision-making, and sleep. Furthermore, there is an increasing interest in CrM and its role in brain health which may aid recovery from traumatic brain injuries and improve mental health. ATs working in the tactical setting may consider recommending CrM supplementation for the positive effects across several domains relevant to the field.

Creatine o'clock: does timing of ingestion really influence muscle mass and performance?” *Candow et al, 2022.* Different mechanisms suggest creatine may be most beneficial when taken around training and/or when co-ingested with carbohydrates or carbohydrates and protein. While the research suggests that both pre- and post-activity ingestion produce similar benefits, there is a limited number of studies available and potential methodological limitations within them. ATs can properly counsel athletes about the limited research when asked about the timing of creatine consumption.

RESOURCES

- [What Do Athletes Need To Know About Creatine? \(USADA\)](#)
- [Creatine Infographic \(Australian Institute of Sport\)](#)
- [Creatine: Just The Facts Handout \(Operation Supplement Safety\)](#)
- [Why You Should Be Taking Creatine \(Podcast\)](#)
- [Creatine Benefits & Why It’s A Must-Have For Women And Men \(Podcast\)](#)

References

1. Machado, M. (2022). A narrative review on athletic performance and safety of creatine supplementation for adolescents. *Open Access Journal of Biomedical Sciences*, 2022-4(2). DOI: [10.38125/OAJBS.000419](https://doi.org/10.38125/OAJBS.000419)
2. Wu, S. H., Chen, K. L., Hsu, C., Chen, H. C., Chen, J. Y., Yu, S. Y., & Shiu, Y. J. (2022). Creatine supplementation for muscle growth: a scoping review of randomized clinical trials from 2012 to 2021. *Nutrients*, 14(6), 1255. <https://doi.org/10.3390/nu14061255>
3. Candow, D. G., Forbes, S. C., Roberts, M. D., Roy, B. D., Antonio, J., Smith-Ryan, A. E., Rawson, E.S., Gualano, B., & Roschel, H. (2022). Creatine o'clock: does timing of ingestion really influence muscle mass and performance?. *Frontiers in sports and active living*, 4, 893714. DOI: [10.3389/fspor.2022.893714](https://doi.org/10.3389/fspor.2022.893714)

