

# CREATINE MONOHYDRATE PERFORMANCE CAPACITY



## WHAT IS CREATINE?

Creatine is a naturally occurring compound found primarily in the muscles and brain, where it plays a vital role in energy transport and storage within every cell of the human body. In adults, the body typically contains around 80 to 130 grams of creatine.

Most dietary creatine comes from seafood and red meat, but these sources generally provide far less than the recommended daily intake of 3–5 grams. Note, the body's liver, pancreas, and kidneys can produce only about 1 gram of creatine per day.



## CREATINE MONOHYDRATE VS OTHER FORM

Creatine monohydrate is a specific form of creatine that is excellently suited for use as a dietary supplement. It is stable, effective, safe and easily absorbed by the body.

Creatine monohydrate is by far the best and most extensively studied supplement. It is also the type most commonly accepted by food authorities worldwide.

### KEY BENEFITS

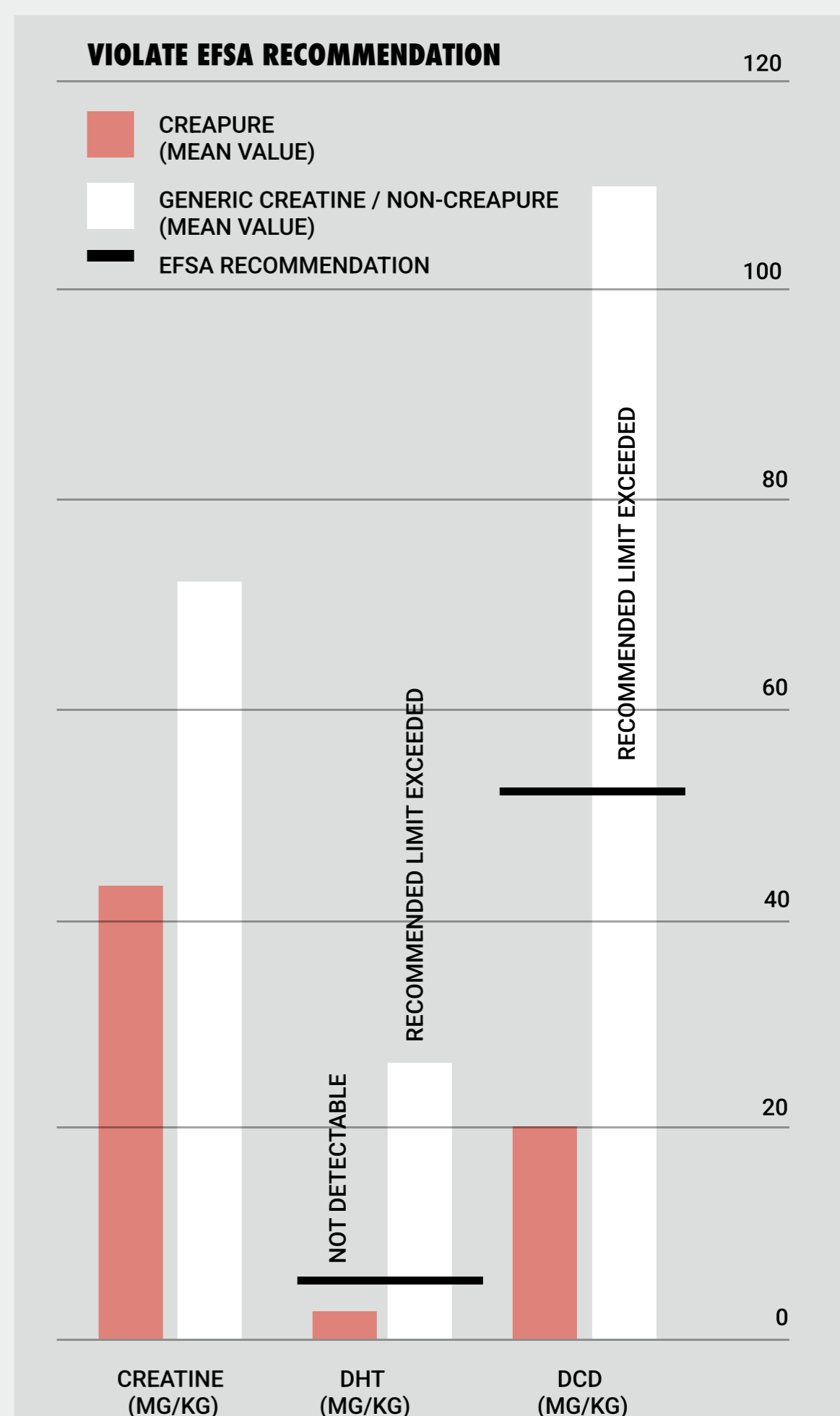
- ✓ Helps improve muscular endurance and recovery
- ✓ Provides nutrients your body needs to support optimal muscle function
- ✓ Supports increased strength and power
- ✓ Boosts energy levels
- ✓ Enhanced High-Intensity Exercise Capacity

## WHY CREAPURE® CREATINE MONOHYDRATE

Creapure® is the brand name for pure creatine monohydrate produced by Alzchem Labs in Germany, the only creatine produced in the western hemisphere.

Alzchem proprietary production process, minimising chance of contamination with the harmful DHT (Dihydrotriazine).

## CREAPURE® ANALYTICAL RESULTS



The analysis\* of all the samples showed that Creapure® is the purest source of creatine. The average amounts of DCD and DHT found in generic creatine products significantly exceeded the levels recommended by the EFSA. DHT-related compounds are suspected to cause cancer.



## WHY IS CREATINE IMPORTANT FOR ATHLETES?

In order for our body to find the energy to 'go', athletes need adenosine triphosphate (ATP). Mechanistically, creatine supplementation saturates the intramuscular phosphocreatine stores and free-creatine levels, facilitating a greater capacity to rapidly resynthesize ATP and buffer hydrogen ion accumulation. Creatine therefore provides an additional energy reservoir and aids in maintaining optimal energy levels during intense physical activity.

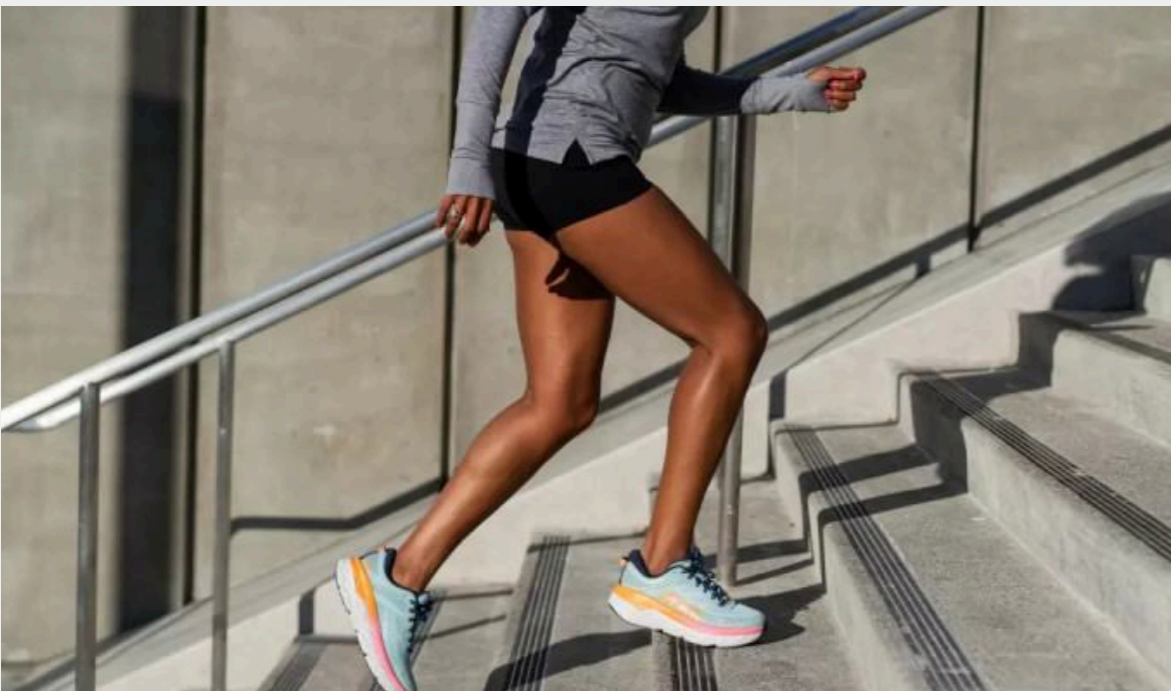
## BENEFITS OF CREATINE FOR ENDURANCE ATHLETES.

By supplementing with creatine monohydrate, endurance athletes can enhance ATP production and improve exercise performance. When co-ingested with carbohydrates, creatine enhances glycogen resynthesis and content, an important fuel to support high-intensity aerobic exercise. In addition, creatine lowers inflammation and oxidative stress and has the potential to increase mitochondrial biogenesis.

See Research: Forbes SC et al 2023

## CREATINE FOR VEGETARIANS AND VEGANS.

Many athletes are adopting plant-based diets, consuming little to no fish or red meat. As a result, creatine can serve as a valuable dietary supplement, particularly for vegans and vegetarians, who often have lower creatine levels compared to individuals following carnivorous diets.



## EXPECTED RESULTS

Individual results may vary, but you can anticipate improvements in physical performance, enhanced lean muscle growth, and increased strength and power.

Additionally, you may notice cognitive benefits, such as improved memory and reduced mental fatigue. Consistent use of creatine supports increased muscle and brain creatine levels, promoting better mental and physical performance.

## ON SET TIME

Expected to see measurable results of strength and power after an estimated 2-4 weeks of supplementation. Long-term benefits are best achieved with regular daily supplementation of 3 - 5g.

To speed up the process, a common 'loading period' is 20g per day for 5 days.

## HOW TO TAKE

Take 1 x scoop (3.5 g or 5 g) daily.

Cycling creatine in a loading, maintenance, and rest phase is not recommended, nor required.



# CLINICAL RESEARCH

## INTERNATIONAL SOCIETY OF SPORTS NUTRITION POSITION STAND: SAFETY AND EFFICACY OF CREATINE SUPPLEMENTATION IN EXERCISE, SPORT, AND MEDICINE

This research demonstrates that creatine not only enhances exercise performance but also helps prevent or reduce injury severity, supports injury rehabilitation, and aids athletes in managing intense training loads.

Additionally, studies have uncovered various potential clinical applications for creatine supplementation. Research confirms that both short- and long-term use (up to 30 g/day for five years) is safe and well-tolerated in healthy individuals and across diverse patient populations, from infants to older adults.

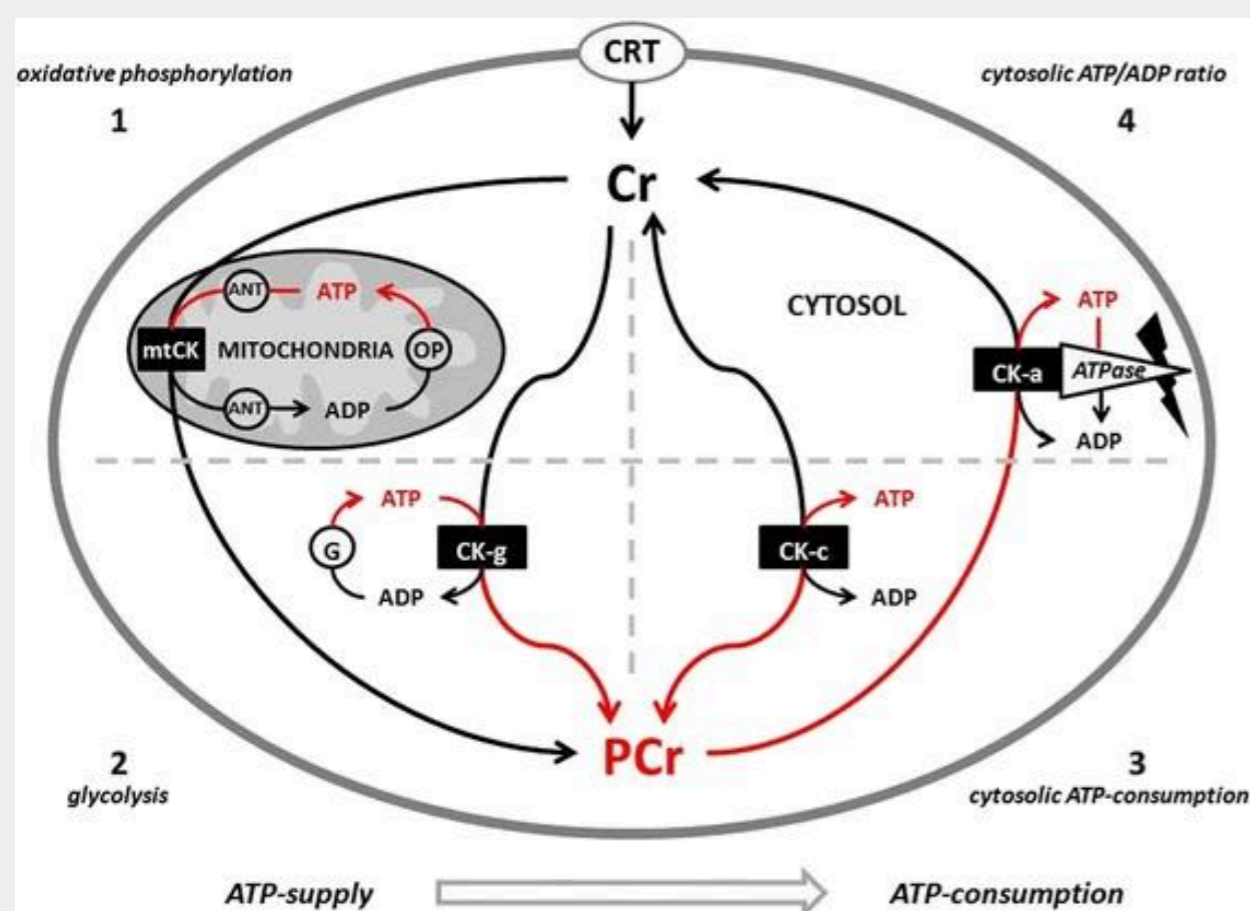


Figure 1: Proposed creatine kinase/phosphocreatine (CK/PCr) energy shuttle.

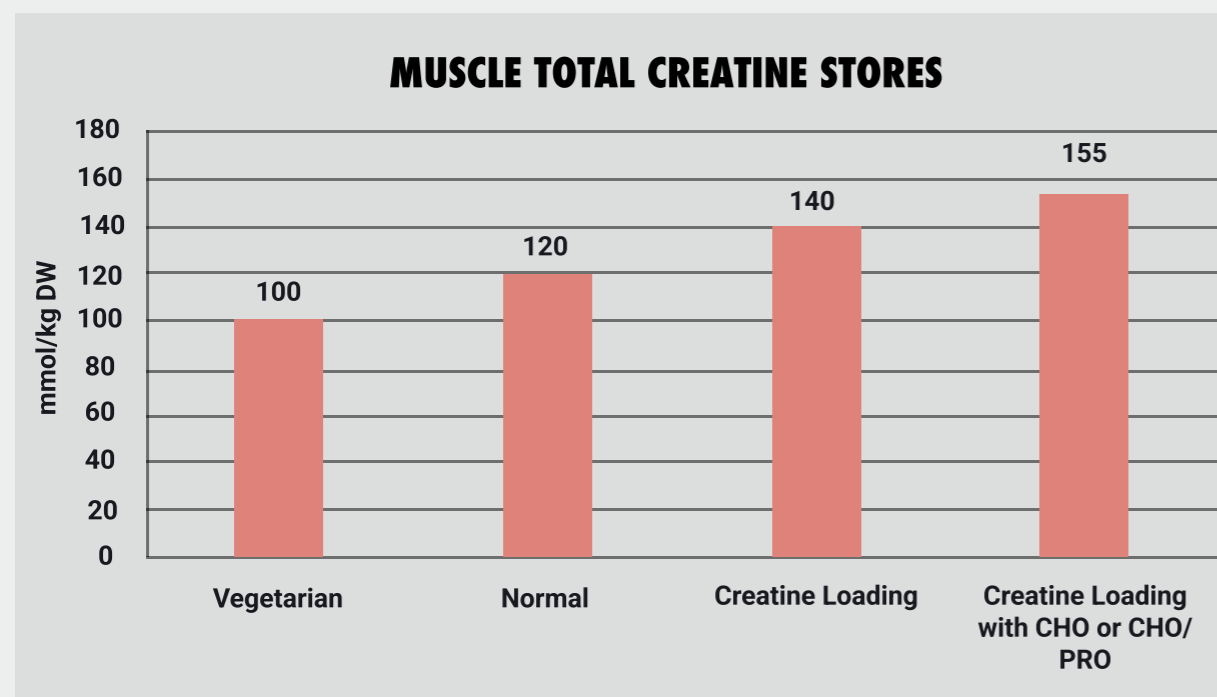


Figure 2: Approximate muscle total creatine levels

# CREATINE SUPPLEMENTATION AND ENDURANCE PERFORMANCE: SURGES AND SPRINTS TO WIN THE RACE

Creatine supplementation is an effective ergogenic aid to augment resistance training and improve intense, short duration, intermittent performance. The effects on endurance performance are less known. The purpose of this brief narrative review is to discuss the potential mechanisms of how creatine can affect endurance performance.

This review showed creatine supplementation increases time to exhaustion during high-intensity endurance activities, likely due to increasing anaerobic work capacity. Given creatine's ability to enhance anaerobic work capacity and performance through repeated surges in intensity, creatine supplementation may be beneficial for sports, such as cross-country skiing, mountain biking, cycling, triathlon,

Forbes SC, Candow DG, Neto JHF, Kennedy MD, Forbes JL, Machado M, Bustillo E, Gomez-Lopez J, Zapata A, Antonio J. Creatine supplementation and endurance performance: surges and sprints to win the race. *J Int Soc Sports Nutr.* 2023 Dec;20(1):2204071. doi: 10.1080/15502783.2023.2204071. PMID: 37096381; PMCID: PMC10132248.

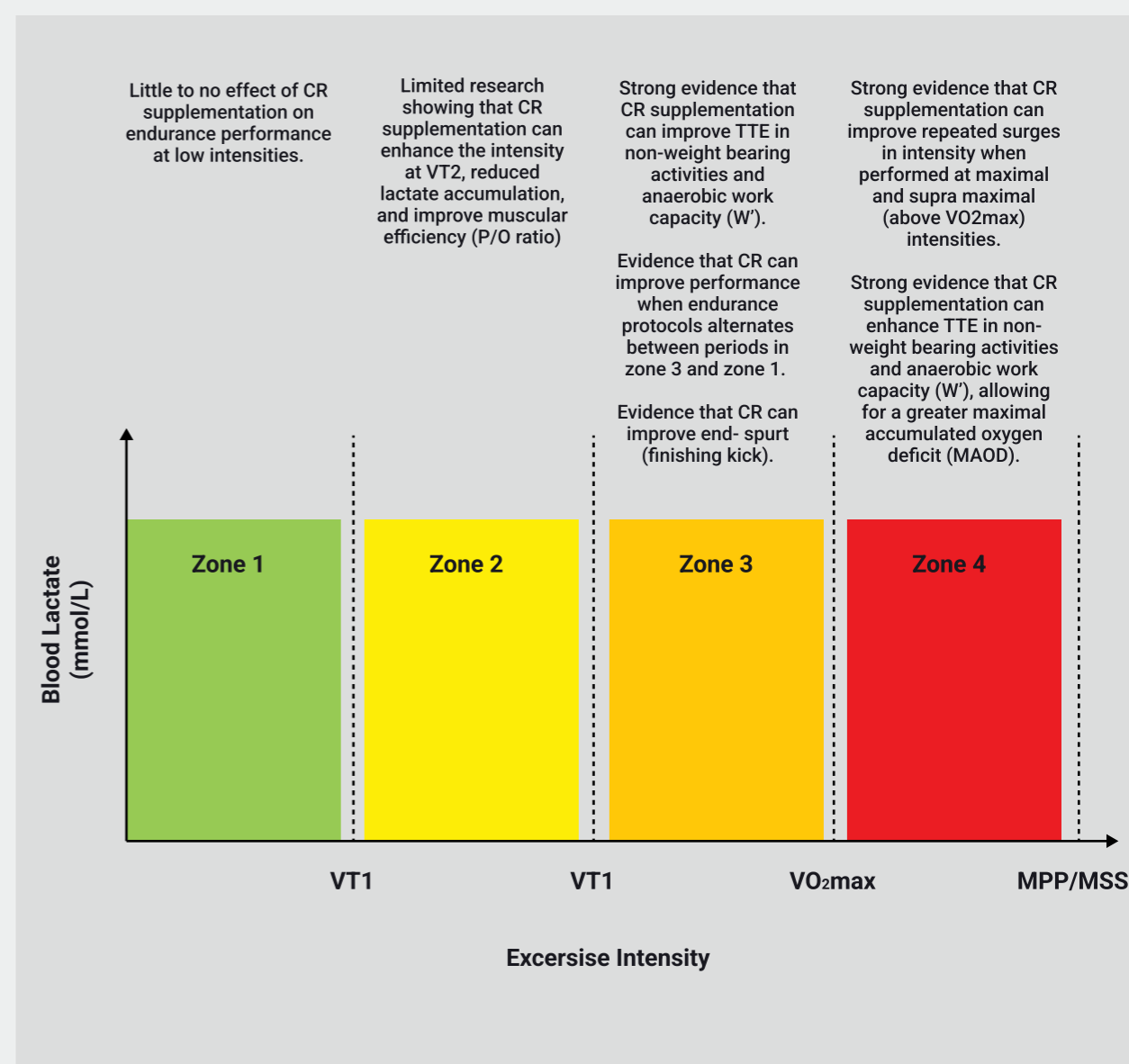


Figure 1: The effects of creatine supplementation to enhance different exercise intensities.

## EFFECTS OF 4-WEEK CREATINE SUPPLEMENTATION COMBINED WITH COMPLEX TRAINING ON MUSCLE DAMAGE AND SPORT PERFORMANCE

The study aimed to evaluate the effects of 4-week complex training combined with creatine supplementation on sport performances and muscle damage biomarkers. Thirty explosive athletes were assigned to the creatine or placebo group, which consumed 20 g of creatine or carboxymethyl cellulose, respectively, per day for 6 days followed by 2 g of the supplements until the end of the study.

This study concluded that creatine supplementation combined with complex training improved maximal muscular strength and reduced muscle damage during training.

Wang CC, Fang CC, Lee YH, Yang MT, Chan KH. Effects of 4-Week Creatine Supplementation Combined with Complex Training on Muscle Damage and Sport Performance. *Nutrients*. 2018 Nov 2;10(11):1640. doi: 10.3390/nu10111640. PMID: 30400221; PMCID: PMC6265971.

## BEYOND MUSCLE: THE EFFECTS OF CREATINE SUPPLEMENTATION ON BRAIN CREATINE, COGNITIVE PROCESSING AND TRAUMATIC BRAIN INJURY

This study showed the ergogenic and therapeutic effects of increasing muscle creatine by supplementation are well-recognized. It appears that similar benefits to brain function and cognitive processing may also be achieved with creatine supplementation.

Dolan E, Gualano B, Rawson ES. Beyond muscle: the effects of creatine supplementation on brain creatine, cognitive processing, and traumatic brain injury. *Eur J Sport Sci*. 2019 Feb;19(1):1-14. doi: 10.1080/17461391.2018.1500644. Epub 2018 Aug 7. PMID: 30086660.

**IF YOU HAVE FURTHER QUESTIONS OR WOULD LIKE TO ARRANGE A PRODUCT TRAINING SESSION FOR YOURSELF AND RETAIL TEAM PLEASE REACH OUT TO:**

[Sales@pillarperformance.com](mailto:Sales@pillarperformance.com)

## TIMING OF CREATINE SUPPLEMENTATION AROUND EXERCISE: A REAL CONCERN?

Emerging evidence suggests greater benefits when creatine is consumed after exercise compared to pre-exercise, although methodological limitations currently preclude solid conclusions.

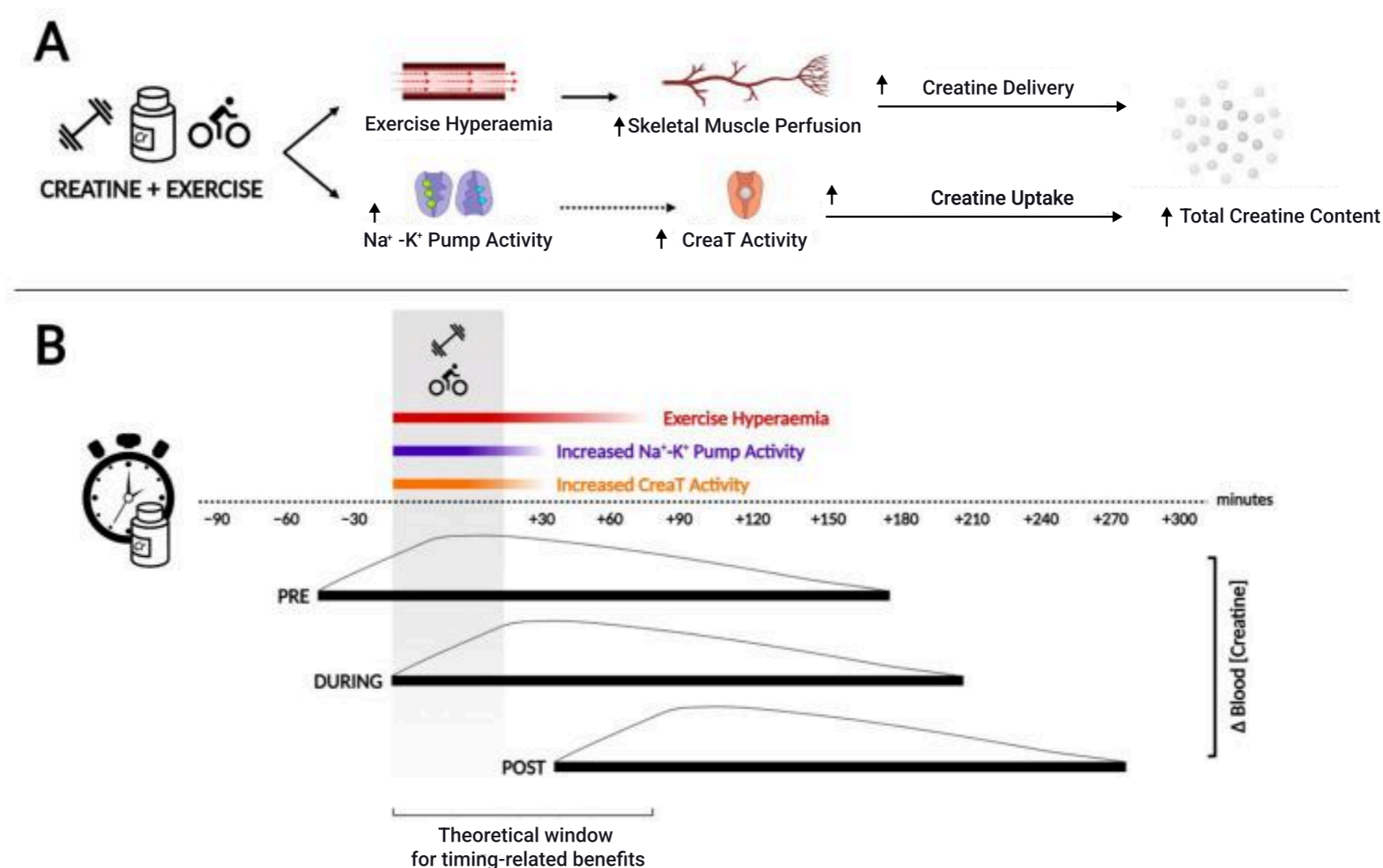


Figure 1: The hypothetical mechanisms behind an exercise-mediated increase in total creatine content with creatine supplementation.

Ribeiro F, Longobardi I, Perim P, Duarte B, Ferreira P, Gualano B, Roschel H, Saunders B. Timing of Creatine Supplementation around Exercise: A Real Concern? *Nutrients*. 2021 Aug 19;13(8):2844. doi: 10.3390/nu13082844. PMID: 34445003; PMCID: PMC8401986.