

AISS SPORTS SUPPLEMENT FRAMEWORK

CREATINE GROUP A



Creatine is a compound naturally found in muscle cells, and also ingested through the diet, primarily from meat & fish. Creatine provides energy to support short, maximal intensity exercise. The rate of energy production from creatine is very high, but the storage capacity in the muscle is limited; enough to perform 8-10 seconds of maximal exercise. Creatine monohydrate is a supplement that can increase creatine stores and subsequently improve high-intensity exercise performance.

Creatine monohydrate



- > White powder
- > Preferred supplement form with significant amount of data
- > Better uptake mixed with a carb containing liquid or food
- > Consume quickly after mixing
- > Synthetic (suitable for vegetarians)

Other forms (e.g. creatine ethyl ester, creatine HCL, creatine nitrate)



- > Limited evidence for claims
- > 99% of research is on creatine monohydrate
- > Additional cost

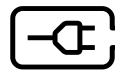
BENEFITS OF SUPPLEMENTATION



MUSCLE QUALITIES
(muscle strength, endurance & size)



MAXIMAL EXERCISE PERFORMANCE



RECOVERY



BRAIN HEALTH

WHEN TO CONSIDER ITS USE



High-intensity single max efforts < 30 secs
e.g. sprint events, resistance training



When high intensity sprint efforts are undertaken within or at the end of endurance exercise



Sports that involve repeated bursts of high-intensity efforts e.g. team sports, racquet sports



To support recovery in periods of loss of muscle from disuse (e.g. injury, immobilisation) where decreases in creatine and muscle qualities are typical



To improve cognitive processing in the brain and potentially reduced damage and enhance recovery from mild traumatic brain injury/ concussion.

HOW TO USE IT

> Studies have consistently shown the following loading protocols will effectively increase muscle creatine. Mix creatine powder with a liquid (e.g. recovery shake) or food (e.g. Greek yoghurt).

Loading dose (short):



5 g creatine, 4 x day



for 5 days

OR 0.3g creatine/ kg body mass per day for 5 days
(in 3 - 4 divided doses at meal times)

OR Loading dose (long) = 3 - 5g creatine for 20 days)

Maintenance dose:



3 - 5 g creatine (single dose)



daily

OR If using body mass to calculate maintenance dose = 0.03g/ kg body mass per day

WASHOUT: Saturated muscle takes approximately 4 weeks to return to baseline levels



CREATINE

FOOD FIRST?

- > 'Food first' principles should apply to all supplements, however diet alone is not enough to increase muscle creatine to supplement levels required for performance benefit.
- > Muscle creatine uptake is maximised by ingestion with carbohydrate due to the effects of insulin. Early recommendations using large amounts of simple sugars has been updated with a protein (50 g) and carb (50 g) rich meal achieving the same result.
- > Consider if this is appropriate for your individual needs and more practically ingest creatine with your recovery/ main meals (that should focus on protein and carbs).

Co-ingestion with post-exercise recovery ideas providing protein + carbs:



1 egg on toast +
Rokeby farms
breakfast smoothie



Salad & chicken (250g)
wrap + 1 apple (medium)



Tofu & vegetable stirfry
with rice



Breakfast cereal & milk
+ yoghurt



Tuna & lettuce sandwich
+ banana smoothie



Steak & salad with
roast potato

CONCERNS & CONSIDERATIONS



Consider impact of potential 1-2kg increase in body mass caused by fluid retention vs. a performance benefit in your sport.



No evidence of adverse effects with long term (4 yrs) creatine supplementation at appropriate dosage in healthy individuals.



Following cessation of creatine supplementation, muscle creatine levels and body mass return to baseline over 4-6 weeks.



Timing of creatine ingestion with post-exercise recovery meal may be more effective and practical than pre-exercise.



Mild, temporary gut upset can be attenuated with split dose, longer loading protocol and avoidance of high fibre foods with ingestion.



Individuals with the lowest muscle creatine (e.g. vegetarians) have the largest potential for increase in response to supplementation.



All supplements have a doping risk of some kind. Some supplements are riskier than others. Athletes should only use batch-tested supplements. The Sport Integrity Australia app provides a list of more than 400 batch-tested products. (www.sportintegrity.gov.au/what-we-do/supplements-sport).

While batch-tested products have the lowest risk of a product containing prohibited substances, they cannot offer you a guarantee. Before engaging in supplement use, you should refer to the specific supplement policies of your sport or institute and seek professional advice from an accredited sports dietitian (www.sportsdietitians.com.au). Athletes are reminded that they are responsible for all substances that enter their body under the 'strict liability' rules of the World Anti-Doping Code.