

# AISS SPORTS SUPPLEMENT FRAMEWORK

## CARNITINE GROUP B



As a group B supplement, this supplement should only be used under the close supervision of your sports dietitian

Carnitine is an amino acid (protein) that the body produces, but can also be ingested in small amounts from animal foods. While carnitine has many roles, it may be best known for its role in transporting fat into the engine room of body cells (mitochondria) to be used as a fuel source. Thus the premise that by increasing the carnitine content of cells, fat burning may be increased. While in theory this sounds logical, there is only preliminary research to support this.



Over 90% of the body's carnitine is in muscle



Supplement form is generally powdered or capsules. Most common variant used for athletes is L-carnitine L-tartrate. Liquid forms have not been well researched.



Carnitine is often included in multi-ingredient fat loss supplements because of its role in fat metabolism. These supplements have a high risk of contamination with banned substances and should be avoided.

## BENEFITS OF CARNITINE SUPPLEMENTATION



FAT METABOLISM



BUFFER

[reduce lactate accumulation during exercise]



ANTIOXIDANT

[to assist muscle recovery and breakdown]



ENDURANCE PERFORMANCE

## WHEN TO CONSIDER SUPPLEMENTATION



Endurance training and competition events (> 30 mins duration)



Prolonged high intensity exercise (such as team sports)



Aiding recovery during heavy training loads or resistance exercise (benefits may be evident in a few weeks of supplementation)



Vegetarians may be particularly responsive to carnitine supplementation, presumably because of lower dietary intake

## HOW TO USE IT

Long-term supplementation (> 12 weeks) is required to facilitate a sufficient increase in muscle carnitine levels



1.4 - 3 g L-carnitine  
[2 - 4 g L-carnitine L-tartrate]



daily for at least  
12 weeks \*



Consume as a split dose with two higher carbohydrate containing meals each day  
[1.5 g at breakfast, 1.5 g at dinner]

\*Benefits from a recovery perspective may be evident in a few weeks

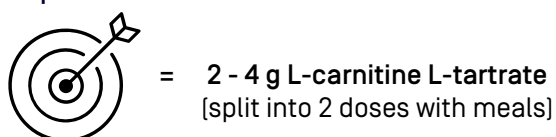


# CARNITINE

## FOOD FIRST?

- > 'Animals products including meat, fish, poultry and milk are the best sources of carnitine in the diet. Vegan athletes, therefore get less dietary carnitine, however deficiency is rare.
- > For ease and practicality in meeting the amounts recommended for targeted benefits to performance, supplementation is likely preferred.
- > Very few studies have shown an uptake of supplemental carnitine into muscle, but the limited evidence suggests co-ingestion with a large amount of carbohydrate is required for an extended period of time (i.e. upwards of 12 weeks). To facilitate this, carnitine supplementation may be best co-ingested with two higher carbohydrate containing meals each day.

### E.g. Supplementation plan:



#### Breakfast:

Eggs on 2 x toast and fruit juice



2 g L-carnitine L-tartrate

#### Dinner:

Spaghetti bolognese and side salad



2 g L-carnitine L-tartrate

## CONCERNS & CONSIDERATIONS



Supplementation may be necessary for extended periods of time to truly influence muscle carnitine levels.



Some reports of nausea, vomiting, stomach cramps and diarrhoea have been reported during supplementation. Co-ingestion with meals may assist with side-effects.



Failing to co-ingest with sufficient carbohydrate intake may limit uptake into the muscles.



May increase risk of plaque formation and a higher risk of cardiovascular events.



Consuming more than 3g / day may result in a 'fishy' body odour.



Very few studies in elite athletes, as such the applicability of the research is uncertain.



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](http://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](http://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.