

# AIS SPORTS SUPPLEMENT FRAMEWORK

## VITAMIN C GROUP B



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

Vit. C is a water soluble vitamin, that is not stored in the body and must be consumed each day. Vit. C deficiency is rare given the low Recommended Dietary Intake (RDI) and wide availability in fresh fruit and vegetables. As an antioxidant, Vit. C reacts with potentially damaging compounds which are produced during exercise and may protect cells against the damaging effects of high intensity exercise. The most common use for Vit. C supplementation in athletes is for management of common cold symptoms, however, research shows only a mild reduction in cold duration (8%), and some reduction in severity. Vit. C does not reduce the risk of catching a cold.



Found in a wide range of fruits and vegetables such as broccoli, potatoes, capsicum, kiwi fruit, berries and most commonly associated with Vit. C - oranges



Ascorbic acid and/ or sodium ascorbate is the supplemental form of Vit. C, available as capsules, tablets, powders or drops in the range of 200 - 2000 mg per serve



Australians consume approximately 110 mg of Vit. C per day which surpasses the RDI (50 mg/ day), but is less than the amount recommended for reducing disease risk (190 mg/ day)

## BENEFITS OF VITAMIN C

> Vit. C plays an important role in many biochemical reactions and pathways in the body including:



IMMUNE HEALTH



ENERGY METABOLISM



COLLAGEN SYNTHESIS



PROTECTION FROM CELL DAMAGE

## FOOD FIRST PRINCIPLES

- > The integration of Vit. C rich foods into daily meal choices is key to not only achieving dietary targets, but also the provision of beneficial fibre and phytochemicals.
- > The recommended dietary intake for Vit. C is relatively easy to meet through wholefood sources, and for this reason, 'food first' should be a priority over supplementation. Hit your 2 & 5 fruit and vegetable intake target daily, and you'll easily meet Vit. C targets.
- > Vit. C is very unstable, so the amount in food varies according to season, transport, storage length and chlorination of water. Vit. C can be destroyed by high-heat and light, or long cooking times. Quick cooking methods, such as steaming, blanching, or stir frying can preserve more Vit. C than boiling; where Vit. C can be lost into the water.

## Dietary sources of Vitamin C



Strawberries  
[1 cup]  
= 95 mg



Orange  
[1 medium]  
= 70 mg



Capsicum  
[1/2 cup]  
= 65 mg



Rockmelon  
[1/4 medium]  
= 60 mg



Brussels sprouts  
[1/2 cup cooked]  
= 50 mg



Grapefruit  
[1/2 fruit]  
= 40 mg



Potato/ sweet potato,  
baked [1 med]  
= 25 mg



Cabbage  
[1/2 cup cooked]  
= 15 mg



Kiwi fruit  
[1 medium]  
= 70 mg



Paw Paw  
[100g]  
= 65 mg



Broccoli  
[1/2 cup cooked]  
= 60 mg



Orange juice  
[1/2 cup]  
= 50 mg



Mango  
[1 medium]  
= 45 mg



Snow peas, fresh  
[1/2 cup cooked]  
= 40 mg



Cauliflower  
[1/2 cup cooked]  
= 25 mg







Tomato, raw  
[1/2 cup]  
= 15 mg



# VITAMIN C



## HOW AND WHEN TO USE VITAMIN C SUPPLEMENTS

-  Only when directed by a sports dietitian should an athlete consider acute Vit. C supplementation. There is usually no need to supplement long term, unless vegetable and fruit intake is severely lacking.
-  There is some evidence to support a daily total dose between 500 - 1000 mg supplemental Vit. C for short term use (e.g. up to 7 days) during illness to support immune health for athletes undertaking intense exercise.
-  More research is needed to investigate whether Vit. C supplementation can assist in the prevention of exercise induced bronchoconstriction [asthma], and recovery of muscle function following intense fatiguing exercise.
-  The upper limit for Vit. C is unclear, but 1000 mg per day has been suggested by many international groups based on common side effects at larger doses.

## CONCERNS & CONSIDERATIONS



The most common side effects of high doses of Vit. C (2600 mg) given over a short period of time are bloating and diarrhoea.



There may be a trade off between possible acute immune-related benefits of Vit. C supplementation vs. possible impairments in training-induced adaptations.



Vit. C supplementation in individuals with genetic iron-overload disorder (e.g. haemochromatosis) and those prone to kidney stones could be problematic.



Some research suggests high dose Vit. C supplementation (1000mg day for 8 weeks) may impede training adaptations, but when provided by real food, may improve performance.



Zinc and Vit. C supplementation is often combined to assist with treatment of the common cold. Recent research suggests the benefit is most likely from zinc alone.



Supplementation can be an unnecessary expense when Vit. C is readily available in fresh fruits and vegetables.



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.

