AIS SPORTS SUPPLEMENT FRAMEWORK

VITAMIN D GROUP A

Vitamin D also known as the 'sunshine vitamin', is produced naturally in the body when the skin is exposed to sunlight. Vitamin D is a fat soluble vitamin that is absorbed with fats in the body. It is important for calcium absorption for strong bones, muscle, immune function and overall health. Emerging evidence suggests vitamin D supplementation in athletes with sub-optimal levels may have beneficial effects on athletic performance, especially in relation to strength, power, reaction time and balance.





There are two forms of vitamin D; D2 from plants and D3 from animals

Vitamin D3 is the preferred form for increasing vitamin D levels and is well tolerated



Supplements provide various amounts of vitamin D. The most common amount is 1000 IU (25 µg)



radiation from the sun on the skin

The main source of Sev vitamin D is via exposure to UVB have



Several recent studies have shown low levels of vitamin D among athletes

HEALTH EFFECTS OF VITAMIN D DEFICIENCY

> Vitamin D deficiency can lead to several health issues including increased risk of:





CHRONIC MUSCULOSKELETAL PAIN VIRAL RESPIRATORY

> Vitamin D must go through several processes before the body can use it. In the liver, vitamin D is converted to an active form, which is measured in the blood via a vitamin D test (25-hydroxyvitamin D). There is still some debate whether the values below are an accurate measure of vitamin D status (particularly for those with dark skin) vs the free form of vitamin D (which there is no readily available test for).

Deficiency	Insufficiency	Sufficiency	Ideal Vitamin D range
< 20 ng/ml (< 50 nmol/L)	< 30 ng/ml (< 75 nmol/L)	> 30 ng/ml (> 75 nmol/L)	(75 - 120 nmol/L)
Serum 25-hydroxyvitamin D			Toxicity > 375 nmol/L

- > Athletes at risk of vitamin D deficiency include those who:
 - Have low exposure to the sun in their training environment (e.g. training indoors or in the early morning and late afternoon)
 - Have dark skin pigmentation (the melanin in the skin reduces absorption of sunlight)
 - Live at latitudes > 35 degrees north or south of the equator with a short daylight period during the Winter e.g. Hobart = 42 degrees, Melbourne = 38 degrees, Adelaide and Canberra = 35 degrees vs Sydney = 34 degrees, Perth = 32 degrees, Brisbane = 27 degrees
 - ☑ Wear clothing that covers most or all of their body
 - 🗹 Regularly use sunscreen or consciously avoid the sun
 - 🗹 Are missing limbs e.g. disability
 - 🗹 Have medical conditions influencing gut function e.g. coeliac disease
 - Have a family history of bone injury/ disorders or vitamin D deficiency

Vitamin D status usually increases by the end of the summer season and decreases over the winter season.

HOW TO USE IT

> Vitamin D supplementation should only be considered under the guidance of a sports physician and sports dietitian. Athletes with compromised vitamin D status confirmed via a blood test may be prescribed a supplement to restore vitamin D status:

2000 IU per day for 1 - 2 months

After 1 - 2 months of supplementation, Vitamin D status should again be confirmed with your sports physician via a follow up blood test











VITAMIN D



FOOD FIRST PHILOSOPHY

> Few foods naturally contain vitamin D, and it can be challenging to meet daily vitamin D requirements through diet alone. The recommended amount of vitamin D from food only (assuming no exposure to sunlight) is estimated to be 5µg per day (200 IU) for Australians, but many other countries have targets 3 x higher.

> Oily fish (e.g. salmon and barramundi) are rich sources of vitamin D3, and mushrooms are a good source of D2. Manufacturers in Australia must fortify margarines with vitamin D, and may fortify breakfast cereals, milk or juice, although amounts are small (30 - 150 IU).





 $100g = 5\mu g (200 IU)$







Exposing mushrooms (especially sliced) to midday sun for 15-60 mins can increase the vitamin D to ~10µg (400 IU) per 100g

35% of your skin should be exposed to sunlight e.g. arms and legs uncovered

SENSIBLE SUN EXPOSURE

> Sensible sun exposure is a primary source of vitamin D. Regional recommendations for sun exposure times for individuals with moderately fair skin:
It is safest to go out in

Region	Summer	Winter	Winter
-	10am or 2pm	10am or 2pm	12 noon
Northern Australia (e.g. Cairns)	6 - 7 min	9 - 12 min	7 min
	6 - 7 min	15 - 19 min	11 min
Southern Australia			
Sydney	6 - 8 min	26 - 28 min	16 min
Melbourne	6 - 8 min	32 - 52 min	25 min
Hobart	7 - 9 min	40 - 47 min	29 min

NB: Times for people with darker skin may be 3–6 times longer

CONCERNS & CONSIDERATIONS



Extending sun exposure beyond guidance above does little to further vitamin D production, but will increase sun cancer risk.

The standard vitamin D blood test may not be accurate for athletes with dark skin.



Measurement of vitamin D status is expensive, and screening via Medicare is not supported unless clinically indicated e.g. low bone density, bone pain/ fractures, malnutrition or recurrent illness.



The level of vitamin D supplementation that is considered excessive and associated with symptoms of toxicity has not been defined.

the sun when the UV Index is below 3



Sensible sun exposure throughout the summer months may maintain adequate vitamin D over the winter months.



The time of year will impact vitamin D test results. E.g. Vitamin D is usually highest at the end of summer and lowest at the end of winter.

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.









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