



# AIS SPORTS SUPPLEMENT FRAMEWORK

## MULTIVITAMIN SUPPLEMENTS

### What is it?

- > Vitamins and minerals are necessary for a broad range of essential chemical reactions in the body, including those involved in energy metabolism, cell growth and repair, protection from free radical damage, and nerve and muscle function. Inadequate intake of vitamins and minerals leading to a body or tissue deficiency, will impair the athlete's health and performance.
- > Athletes who restrict their total energy intake or lack dietary variety are at risk of an inadequate intake of vitamins and minerals.
- > There is no evidence that supplementation with vitamins and minerals enhances performance except in cases where a pre-existing deficiency exists.

### What does it look like?

Many different products providing combinations of vitamins and minerals are available. Supplements promoted as a daily replacement for adequate dietary intake typically contain a broad range of vitamins and mineral in doses within the range of population NRVs (nutrient reference values).

### How and when do I use it?

- > Supplementation of inadequate vitamin and mineral intake from food sources may be justified when there is an unavoidable reduction in energy intake or the nutrient density of dietary intake.
  - A prolonged period of travel, particularly to countries with an inadequate or otherwise limited food supply.
  - A prolonged period of energy restriction needed to manage weight or body composition goals.
  - Restricted dietary intake in fussy eaters or athletes with significant food intolerances who are unable/unwilling to increase food range.
  - Heavy competition schedule, involving disruption to normal eating patterns and reliance on a narrow range of foods and sports foods.
- > The selection of a suitable product should be based on its composition (preferably containing a broad range of vitamins and minerals in doses that mimic population NRVs and avoiding the presence of unnecessary herbal ingredients) and its origin (preferably manufactured by a pharmaceutical company or large and well-known supplement company where Good Manufacturing Practices are in place).

### Are there any concerns or considerations?

#### Poor replacement of nutrient-dense foods

- > May provide a false sense of security to athletes who are otherwise eating poorly.
- > Vitamin and mineral supplements are often considered a replacement for a poor intake of fruits and vegetables. However, they do not contain the huge variety of phytochemicals found in fruits, vegetables, herbs, and spices that promote health-related effects.

#### Poor replacement of targeted micronutrient therapy

Multivitamin mineral supplements do not replace the potential need for the supervised treatment or prevention of deficiencies of key micronutrients (e.g. iron deficiency). Athletes who are at high risk of such a deficiency should seek the advice of a Medical Practitioner or Accredited Sports Dietitian rather than self-medicate.

#### Megadose products may be counterproductive

Large doses of antioxidant vitamin supplements (e.g. Vitamins C and E) may be counterproductive if they upset the balance of the body's complex antioxidant system. In some cases, such supplementation has been shown to impair the effectiveness of training by dampening the oxidative pathways that are needed to signal the adaptive response to an exercise session.<sup>1</sup>



## Accumulation of excessive and unnecessary doses

Many athletes consider vitamins and minerals to be a “pick me up” in times of heavy training or fatigue. They may add a multivitamin mineral supplement (or two) to their existing use of supplements and sports foods, some of which are already fortified with the same ingredients. The combination of many different sources can lead to unnecessarily high intakes of some micronutrients with unwanted side effects including toxicity or competition for absorption between nutrients.

## Inadvertent ingestion of banned or harmful substances

Although all sports foods and supplements can be a source of contaminants or undeclared ingredients, the current positioning of vitamin and mineral supplements as a “pick me up” or lifestyle tonic merits particular caution. We note that some products contain herbal ingredients or other forms of stimulants that are included to give a sense of “energy” - these may lead to health concerns or an inadvertent Anti-Doping Rule Violation.

## Where can I find more information?

Sports Dietitians Australia

[www.sportsdietitians.com.au/factsheets](http://www.sportsdietitians.com.au/factsheets)

Supplement safety information

[www.sportintegrity.gov.au/what-we-do/anti-doping/supplements-sport](http://www.sportintegrity.gov.au/what-we-do/anti-doping/supplements-sport)

## References

1. Merry TL, Ristow M. (2016). Do antioxidant supplements interfere with skeletal muscle adaptation to exercise training? J Physiol. 594(18), 5135-47.

The Australian Institute of Sport (AIS) Supplement Framework is an initiative of the Australian High Performance Sport System. The AIS acknowledges the support of members of the National Institute Network (NIN) and National Sporting Organisations (NSO) and their staff in delivering content expertise. This information is intended to help athletes, coaches and scientists make evidence-based decisions about the use of supplements and sports foods. Before engaging in supplement use, we recommend that each individual refer to the specific supplement policies of their sporting organisation, sports institute or parent body, and seek appropriate professional advice from an accredited sports dietitian ([www.sportsdietitians.com.au](http://www.sportsdietitians.com.au)).

Athletes should be aware that the use of supplements may have doping implications. 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. Some supplements are riskier than others. The Sport Integrity Australia (SIA) app is a useful resource to help mitigate the risk of inadvertent doping by helping to identify supplements that have been batch-tested. The SIA App provides a list of more than 11,000 batch-tested products. We recommend that all athletes consult the educational resources of SIA regarding the risks associated with supplements and sports foods. While batch-tested products have the lowest risk of a product containing prohibited substances, they cannot offer you a guarantee that they are not contaminated ([www.sportintegrity.gov.au/what-we-do/supplements-sport](http://www.sportintegrity.gov.au/what-we-do/supplements-sport)).

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