

Singapore Sport Institute

And

National Youth Sports Institute

**Joint Consensus Statement on
Supplement Intake**



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1. Purpose of the Joint Consensus Statement on Supplement Intake

The decision to use dietary supplements and sports food by athletes at all levels of sport involves a balance between the potential benefits and potential risks. The purpose of the Singapore Sport Institute (SSI) – National Youth Sport Institute (NYSI) Joint Consensus Statement on Supplement Intake is to provide guidelines on supplements use to support athletes, coaches, and sport support staff to make decisions that:

- Are supported by scientific evidence
- Are appropriate to the athlete's age and maturation in their sport
- Minimise health risk
- Minimise risk of anti-doping rule violations
- Protect the integrity of sport in Singapore

2. A “Food-First” Approach

The SSI-NYSI Joint Consensus Statement recommends the following when contemplating supplement use by athletes:

1. A **food-first approach** to the nutrition plan should be prioritised to achieve nutrient needs.
2. Supplements **are not recommended for youth athletes under the age of 18**, unless there is an underlying medical condition as described in #3.
3. Supplements may be required to **prevent or manage a nutrient deficiency**. A medical evaluation is recommended to identify such nutritional deficiencies before considering the use of supplements.
4. If the use of supplements is justified by strong evidence to achieve sport nutrition goals, it should be undertaken with the **advice of a qualified sport dietitian or a medical practitioner with appropriate experience in sport nutrition**.
5. Should an athlete decide to use supplements, supplements that are **batch-tested for substances prohibited by the World Anti-Doping Agency (WADA)** by reputable third-party quality assurance programmes are strongly recommended (Refer to programmes listed in Section 8). Do note that the List of Prohibited Substances and Methods by WADA changes on the 1st of January every year.
6. **Do not assume** that a supplement available for purchase in Singapore or online is safe and free of WADA-prohibited substances or ingredients with harmful health effects, even if the ingredients on the product list may look safe. This includes products that may look the same, but have an ingredients list in a foreign language.
7. Herbal products (e.g., traditional Chinese medicine, Jamu, Ayurveda) are not screened for WADA-prohibited substances. The use of such products is discouraged.
8. Athletes are to be **fully responsible** for the supplements they consume.
9. Anti-Doping Singapore, SSI and NYSI take a **zero-tolerance stance** on doping.

3. Definition of Supplements

SSI-NYSI endorses the 2018 International Olympic Committee (IOC) consensus statement on Dietary Supplements and the High Performance Athlete, and the Australian Institute of Sport (AIS) Sports Supplement Framework 2019.

The IOC expert group considers “supplements to encompass a wide range of products, including essential nutrients (vitamins, minerals, proteins, amino acids), herbals and botanicals, and specific products [marketed] with potential for maintenance or improvement of health and the optimization of sport performance”.

In practical terms, supplements can be classified into 3 categories described below:

1. **Sports food** - provide nutrients in a practical form for use around sport or exercise, especially when there are challenges such as gut issues, food accessibility and safety issues
2. **Medical supplements** - address specific nutrient deficiencies common in athletes
3. **Performance supplements** - products claiming to directly improve sport performance or achieve outcomes that will indirectly enhance performance

This Joint Consensus Statement focuses on sports food and individual ingredients, rather than specific supplement products and brands.

4. Regulation of Supplements in Singapore

The Singapore Food Agency (SFA) and the Health Science Authority (HSA) are the main regulatory bodies of supplements, packaged foods and health-related products sold in Singapore (Table 1).

Table 1: Differences between the product jurisdictions of SFA and HSA

SFA	HSA
<p>Products are under the jurisdiction of SFA if:</p> <ul style="list-style-type: none"> • it is intended to be sold as food • it does not require a prescription by a medical professional • it does not have a recommended dosage for consumption 	<p>Products are under the jurisdiction of HSA if:</p> <ul style="list-style-type: none"> • they are registered as a Therapeutic Product and can be identified by licence number (eg. SIN99999P) • it needs a prescription by a medical professional • it has a recommended dosage for consumption

SFA and HSA impose safety and quality limits for heavy metal content, microbial count, vitamin and mineral content, and water activity, depending on the product type. Product checks are **random**. WADA-prohibited substances are **not** screened. The onus is on the dealers (importers, manufacturers, wholesale dealers) and sellers to ensure that their products are not harmful or unsafe. Therefore, not all products are tested before they are put on sale.

Herbal Products

Research^{8,9} has shown that many WADA-prohibited substances (e.g. ephedrine and higenamine) are commonly found in herbal products. Herbal products (e.g., traditional Chinese medicine, Jamu, Ayurveda) that are not of finished dosage forms (e.g. capsules, tablets, granules) are not subjected to pre-market approval and licensing for their import and sale in Singapore. WADA-prohibited substances **DO NOT** fall under the purview of either SFA or HSA, and are not regulated by either regulatory body.

5. Do Athletes Need Supplements?

Supplements are not necessary for athletes to excel in sport. Many athletes successfully train and compete with a food-only approach, refusing to use dietary supplements because of the potential risks they pose.

It is important to evaluate the need, evidence, benefits and risks before considering the use of supplements. Supplement use by athletes should only take place under the advice of an accredited sport dietitian or medical practitioner with appropriate experience in sport nutrition.

6. Guidelines to Decide When and What to Use

Supplement use must be in support of a nutrition programme that emphasises the inclusion of high-quality whole foods, with appropriate timings and quantities. If an athlete is found to have violated the anti-doping rules, they will be sanctioned accordingly. The following guidelines or checkpoints are recommended before and during supplementation (Figure 1):

1. Assessment completed by a qualified sport dietitian or a medical practitioner with appropriate experience in sport nutrition
2. Consider the pros and cons associated with supplement use (including anti-doping risk, health risks, evidence for use and cost)
3. Decision has been discussed with the coaches
4. Protocol outlined with a qualified sport dietitian and supported by an individualised and periodised nutrition plan that accounts for the needs and goals of daily training sessions
5. Use of low-risk products or those certified free of WADA-prohibited substances (refer to next section for classification)
6. Trial supplements in training before use in competitions
7. Keep diligent records of supplements consumed (including source of purchase, batch numbers, start date of consumption, end date of consumption)
8. Keep a small amount of each supplement in case of a positive doping test to allow for tracing. This may help an athlete demonstrate “no significant fault or negligence” as per the World Anti-doping Code. However, appropriate sanctions will still be imposed if the athlete is found guilty

Unregulated supplement use can displace key nutrients, and can result in toxicity or deficiency, which will compromise health and/or performance. Considerations of the risk of any inadvertent doping offence as a result of using the supplement must be made before use. Athletes need to be vigilant to avoid falling victim to unregulated marketing claims.

Studies evaluating the benefits of supplements and ergogenic aids are often only conducted on individuals above the age of 18 years old. Due to the lack of studies and evidence, the safety and effects on growth and maturation in youth athletes cannot be ascertained. Therefore, the use of supplements is **not recommended in youth athletes**, unless there is an underlying medical condition..

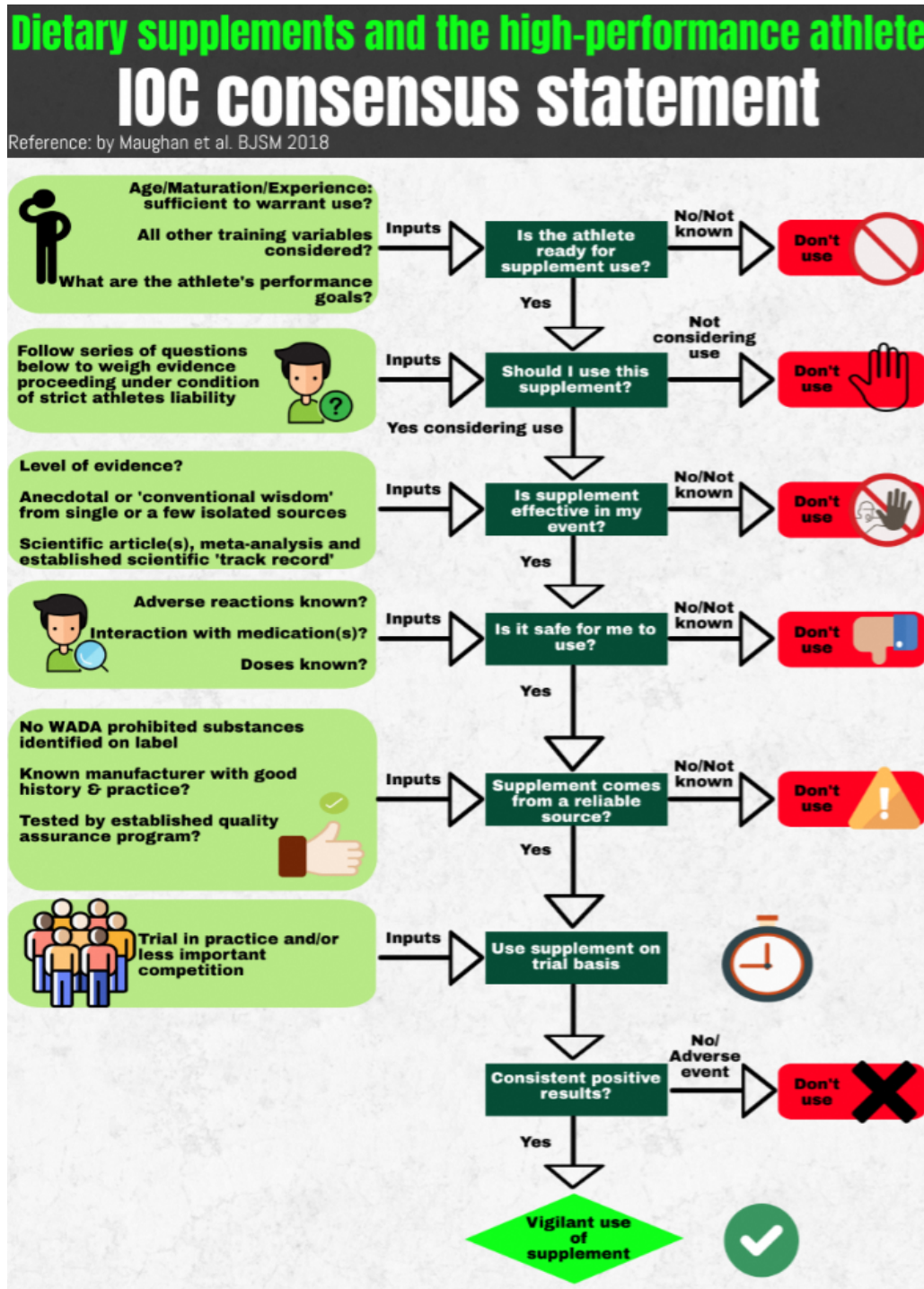


Figure 1. Supplement use decision flow chart. This flowchart is recommended to guide individuals to make informed use of supplements and reduce the risk of anti-doping rule violations.

7. What are Supplements with Strong Evidence and Low-risk?

SSI and NYSI support and adopt the Australian Institute of Sport (AIS) Supplementation Group ABCD Classification System. The ABCD Classification system “ranks sports food and supplement ingredients in 4 groups according to scientific evidence and other practical considerations that determine whether a product is safe, legal and effective in improving sport performance”.

The classification system focuses on **sports food** and **individual ingredients**, rather than specific supplement brands and products. The overview is shown below (Table 2), while the extensive list is shown in Appendix A. The information presented is accurate as of the last reviewed date of this document. For the most updated information, please refer to: <https://ais.gov.au/nutrition/supplements>.

Table 2. Overview of AIS ABCD Supplement Classification System

Category	Evidence Level	Use within Supplement Program
Group A	Strong scientific evidence for use in specific situations in sport using evidence-based protocols.	Permitted for use by identified athletes according to Best Practice Protocols .
Group B	Emerging scientific support, deserving of further research. Considered for use by athletes under a research protocol or case-managed monitoring situation.	Considered for use by identified individual athletes within research or clinical monitoring situations.
Group C	Scientific evidence not supportive of benefit amongst athletes OR no research undertaken to guide an informed opinion.	Not advocated for use by athletes within Supplement Programs. Anything not covered in Group A, B or D.
Group D	Banned or at high risk of contamination with substances that could lead to a positive doping test.	Not be used by athletes under any circumstances.

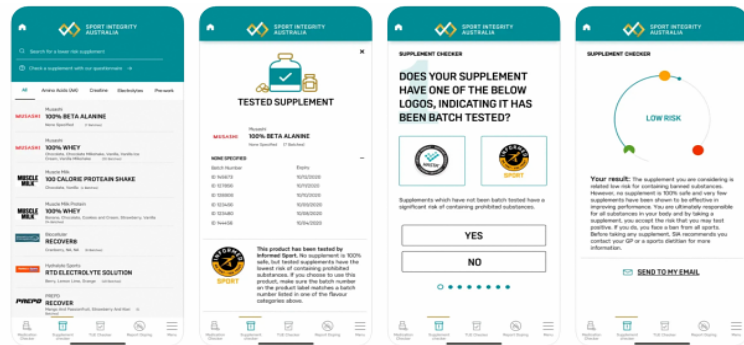
8. How to Ensure that a Supplement Carries Minimal Risk?

If an athlete decides to use supplements, or if there is a medical need to do so, additional steps should be taken to ensure that the supplements contain minimal risk. Red flags that highlight issues with supplement safety are outlined in Section 9.

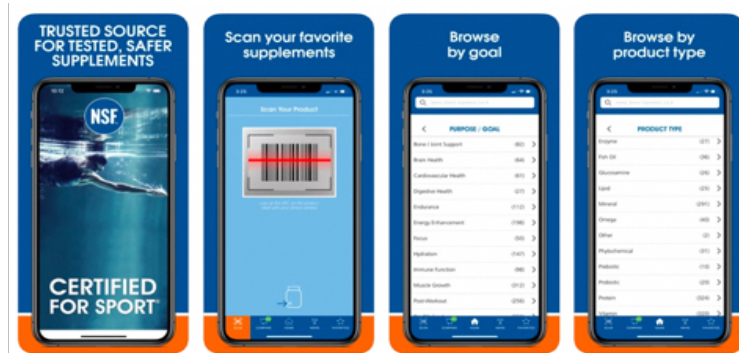
A qualified sport dietitian or a medical practitioner with appropriate experience in sport nutrition should be informed.

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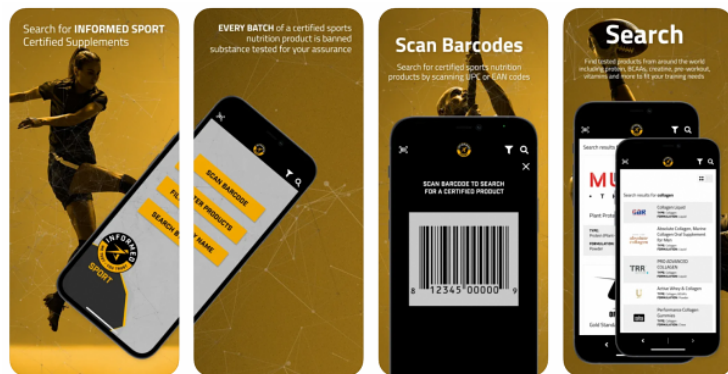
- 1) Check if your supplements are certified by third-party labs for WADA-prohibited substances using these apps. Available on both iPhone and Android phones.



www.sportintegrity.gov.au/



<https://www.nsf sport.com/news-resources/certified-for-sport-app.php>



<https://sport.wetestyourtrust.com/mobile-app>

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- 2) Look out for these logos on a product to certify that it has been tested for WADA-prohibited substances under a **third-party screening programme**.

Note: List of third-party screening programmes is not exhaustive.



<https://sport.wetestyoutrust.com/>



<https://www.nsf sport.com/index.php>



<https://hasta.org.au/>



<https://choice.wetestyoutrust.com/>



<https://www.bscg.org/>



<https://www.koelnerliste.com/>

9. What are the Supplement Safety Red Flags to Look Out For?

If an athlete decides to use supplements, it is important to do the necessary research to minimise risk. The following are some supplement safety red flags to look out for before consuming any supplements (refer to Figure 5 to 8 for more details):

- Manufacturer or company has received warning letters or has been subject to other enforcement from SFA, HSA, or other overseas regulatory bodies like United States of America Food and Drug Administration (commonly known as FDA).
- Product has:
 - Claims to be “HSA approved”, “SFA approved”, “FDA Approved”, “WADA Approved” or “USADA Approved”. None of these organisations give approval for supplements
 - Claims that are too good to be true. E.g. promises to increase muscle mass, reduce body fat, induce weight loss and enhance energy
 - Multiple ingredients, particularly proprietary blends
 - Many chemical names and/or herbal substances

Participation in a sport supplementation programme is strictly voluntary. Athletes are **strictly liable** (see information from WADA website: <http://www.wada-ama.org>) even when a positive analytical finding is due to an inadvertent contamination. The athlete is ultimately responsible for any substance they put into their body. **If in doubt, do not take any supplements.**

SUPPLEMENT RED FLAGS

Researching your supplements and recognizing red flags is one way to reduce your risk if you decide to use supplements.

*Before using any supplement, check to see if the product or manufacturer is on USADA's High Risk List (Supplement411.org/hrl) or the FDA Tainted Supplements list (http://bit.ly/FDA_Tainted_Products_CDERR). While these lists **are not all inclusive**, they do identify many supplements and manufacturers that are known to be risky for athletes and consumers.*

You should also consider these red flags while evaluating and researching any supplement you might use.

HIGH RISK COMPANIES



The manufacturer or company has received FDA warning letters or has been subject to other enforcement actions. Search for the company or product name on FDA.gov or FTC.gov.



Products sold exclusively on the internet may raise a red flag. While there are some legitimate dietary supplement companies that only have an online presence, some companies deliberately avoid regulatory agencies by opening and closing websites quickly, or selling products online to the U.S. from other countries.

Figure 5. Supplement Red Flags. Source: United States Anti-Doping Agency. (2018). USADA's dietary supplement safety education and awareness resource – Supplement 411.

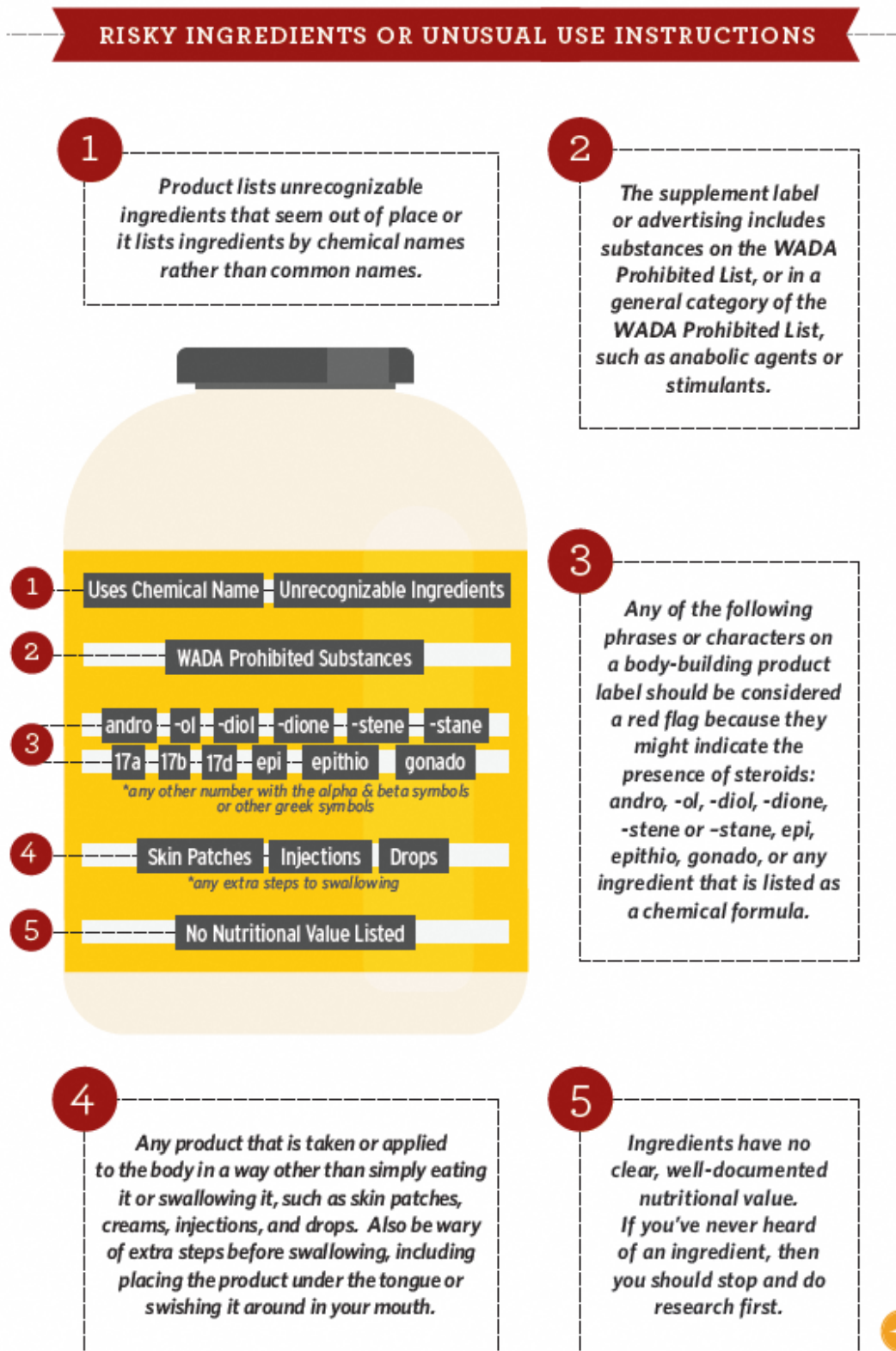


Figure 6. Supplement Red Flags. Source: United States Anti-Doping Agency. (2018). USADA’s dietary supplement safety education and awareness resource – Supplement 411.



Figure 7. Supplement Red Flags. Source: United States Anti-Doping Agency. (2018). USADA's dietary supplement safety education and awareness resource – Supplement 411.

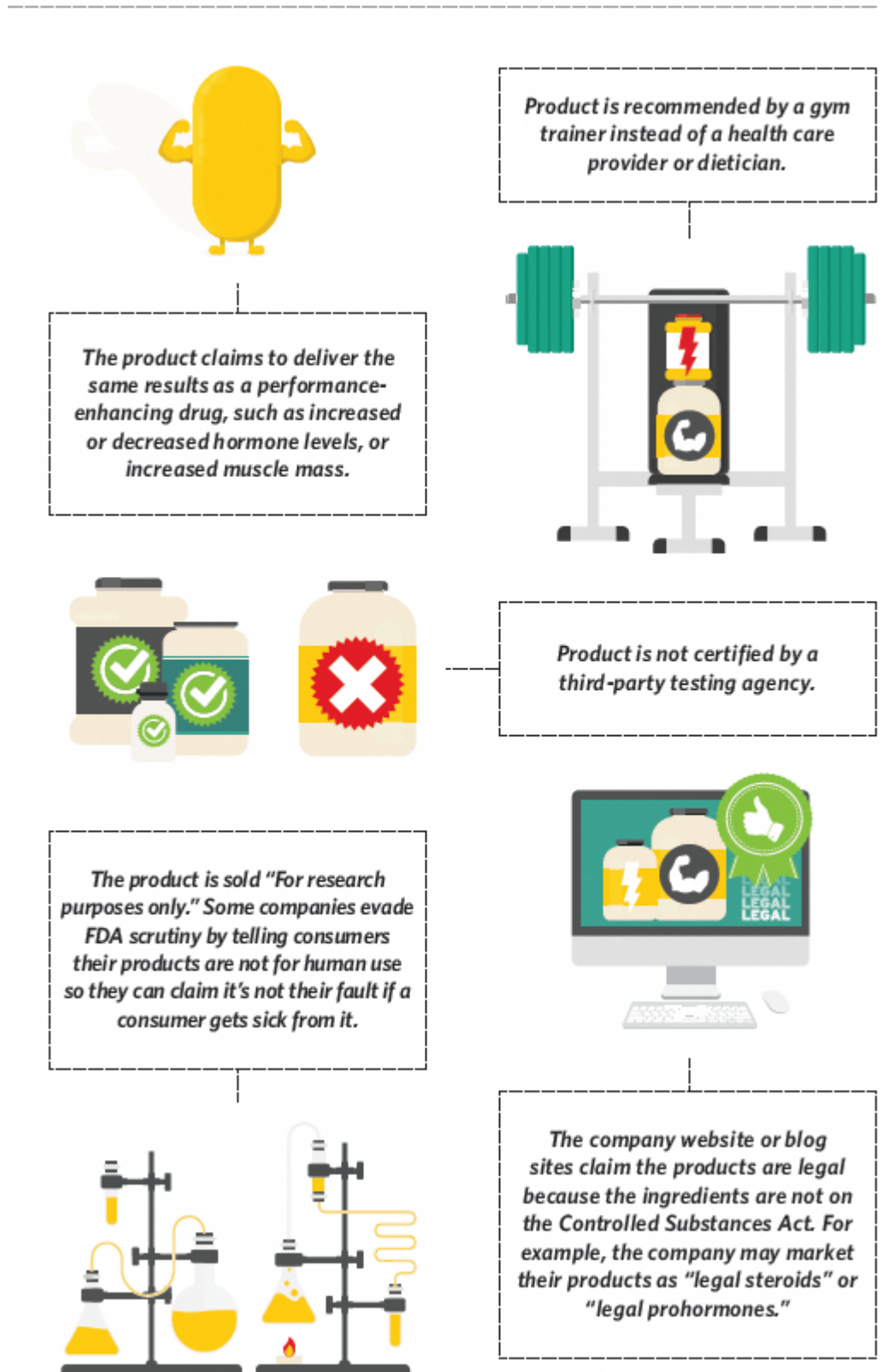


Figure 8. Supplement Red Flags. Source: United States Anti-Doping Agency. (2018). USADA's dietary supplement safety education and awareness resource – Supplement 411.

10. References

1. Australasian College of Sport & Exercise Physicians. (2017). Australasian College of Sport & Exercise Physicians Position Statement – Supplements. Retrieved 23 Oct 2019 from <http://www.acsep.org.au/content/Document/ACSEP%20Supplement%20Position%20Statement%20final%20171117.pdf>
2. Canadian Sport Centre Atlantic. (2018). Canadian Sport Centre Atlantic (CSCA) Sport Supplement Policy 2018 Operational Guide. Retrieved 23 Oct 2019 from <https://cscatlantic.ca/sites/default/files/CSCA%20Sport%20Supplement%20Policy%202018%20Final.pdf>
3. Kerksick CM, Wilborn CD, Roberts MD, et al. (2018). ISSN exercise & sports nutrition review update: research & recommendations. *Journal of the International Society of Sports Nutrition*. 15:38.
4. Maughan RJ, Burke LM, Dvorak J, et al. (2018). IOC Policy: dietary supplements and the high-performance athlete. *International Journal of Sport Nutrition and Exercise Metabolism*. 28:104-125.
5. Sport Australia. (2019). The AIS Sports Supplement Framework. Retrieved 23 Oct 2019 from https://www.sportaus.gov.au/__data/assets/pdf_file/0004/698557/AIS_Sports_Supplement_Framework_2019.pdf.
6. Thomas DT, Erdman KA, Burke LM. (2016). Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: nutrition and athletic performance. *Journal of the Academy of Nutrition and Dietetics*. 116:501-528.
7. United States Anti-Doping Agency. (2018). USADA's dietary supplement safety education and awareness resource – Supplement 411. Retrieved 23 Oct 2019 from <https://www.usada.org/athletes/substances/supplement-411/>
8. Van Thuyne, W., Van Eenoo, P., & Delbeke, F. T. (2006). Nutritional supplements: prevalence of use and contamination with doping agents. *Nutrition Research Reviews*, 19(1), 147-158.
9. Yen CC, Tung CW, Chang CW, Tsai CC, Hsu MC, & Wu YT. (2020). Potential risk of higenamine misuse in sports: Evaluation of lotus plumule extract products and a human study. *Nutrients*, 12:2, 285.
10. YLMSportScience. (2018). Infographic on the IOC policy statement: dietary supplements and the high-performance athlete [Online Image]. Retrieved 23 Oct 2019 from <https://ylmsportscience.com/2018/04/22/ioc-consensus-statement-dietary-supplements-and-the-high-performance-athlete/>

Appendix A. SportAUS Australian Institute of Sport Supplementation Group ABCD Classification System (updated March 2021)

More information can be found on the SportAUS website: <https://ais.gov.au/nutrition/supplements>

Group A

Overview of category within AIS Sports Supplement Framework	Sub-categories	Examples
<p>Evidence level: Strong scientific evidence for use in specific situations in sport using evidence-based protocols.</p> <p>Use within Supplement Programs: Permitted for use by identified athletes according to Best Practice Protocols.</p>	<p>Sports foods Specialised products used to provide a convenient source of nutrients when it is impractical to consume everyday foods.</p>	<p>Sports Drinks Sports Gels Sports Confectionary Electrolyte supplements Isolated Protein supplements Mixed Macronutrient Supplement (Bar, Powder, Liquid Meal)</p>
	<p>Medical supplements Supplements used to prevent or treat clinical issues including diagnosed nutrient deficiencies. Should be used within a larger plan under the expert guidance of a Medical Practitioner/Accredited Sports Dietitian.</p>	<p>Iron Calcium Vitamin D Multivitamin Probiotics Zinc</p>
	<p>Performance supplements Supplements/ingredients that can support or enhance sports performance. Best used with an individualised and event-specific protocol, with the expert guidance of an Accredited Sports Dietitian.</p>	<p>Caffeine β-alanine Bicarbonate Beetroot juice/Nitrate Creatine Glycerol</p>

Figure 9. Group A Supplements. Source: Sport Australia. (2021). The AIS Sports Supplement Framework.

Group B

Overview of category within AIS Sports Supplement Framework	Sub-categories	Examples
<p>Evidence level: Emerging scientific support, deserving of further research.</p> <p>Use within Supplement Programs: Considered for use by identified individual athletes within research or clinical monitoring situations.</p>	<p>Food Polyphenols Food compounds which may have bioactivity including antioxidant and anti-inflammatory properties. May be consumed in food forms (whole or concentrate) or as isolated extracts.</p>	<p>Fruit-derived polyphenols</p>
	<p>Antioxidants Compounds often found in foods which protect against oxidative damage from free-radical chemicals.</p>	<p>Vitamin C N-Acetyl Cysteine</p>
	<p>Tastants Food-derived compounds that interact with receptors in the mouth/gut to activate the central nervous system.</p>	<p>Menthol Transient receptor potential channel agonists Quinine</p>
	<p>Other</p>	<p>Collagen supplement Curcumin Ketone supplements Fish oils Carnitine</p>

Figure 10. Group B Supplements. Source: Sport Australia. (2021). The AIS Sports Supplement Framework.

Group C

Overview of category within AIS Sports Supplement Framework	Sub-categories	Examples
<p>Evidence Level: Scientific evidence not supportive of benefit amongst athletes OR no research undertaken to guide an informed opinion.</p>	<p>Category A and B products used outside approved protocols.</p>	<p>Fruit-derived polyphenols</p>
<p>Use within Supplement Programs: Not advocated for use by athletes within Supplement Programs.</p> <p>May be permitted for use by identified athletes where there is specific approval from, or reporting to, a Sports Supplement Panel.</p>	<p>Named Products Attention is drawn to products that have been moved to a new category.</p>	<p>Magnesium Alpha lipoic acid HMB BCAA/Leucine Phosphate Prebiotics Vitamin E Tyrosine</p>
	<p>The rest If you can't find an ingredient/product in Groups A, B or D, it probably deserves to be here.</p>	

Figure 11. Group C Supplements. Source: Sport Australia. (2021). The AIS Sports Supplement Framework.

Group D

Given the WADA list is updated on an annual basis, it should be used as the first point of call for confirmation of the current list of banned substances and practices <https://www.wada-ama.org/>. The list in this group is identified as “examples” only.

Overview of category within AIS Sports Supplement Framework	Sub-categories	Examples
Evidence level: Banned or at high risk of contamination with substances that could lead to a positive doping test. Use within Supplement Programs: Not be used by athletes.	Stimulants	Ephedrine Strychnine Sibutramine Methylhexanamine (DMAA) 1,3-dimethylbutylamine (DMBA) Other herbal stimulants
	Prohormones and hormone boosters	DHEA Androstenedione 19-norandrostenedione/ol Other prohormones Tribulus terrestris and other testosterone boosters* Maca root powder*
	GH releasers and “Peptides”	
	Beta-2 agonists	Higenamine
	Selective Androgen Receptor Modulators (SARMS)	Andarine Ostarine Ligandrol
	Metabolic Modulators	GW1516 (Cardarine)
	Other Consult WADA list for all examples: https://www.wada-ama.org/	Colostrum – not recommended by WADA due to the inclusion of growth factors within its composition

*These products do not appear on the WADA list and are thus not specifically banned. However, they are often found in multi-ingredient products that contain banned ingredients or are at high risk of being contaminated. Therefore, they are not recommended for use.

Figure 12. Group D Supplements. Source: Sport Australia. (2021). The AIS Sports Supplement Framework.