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**SUPPLEMENTATION BACKGROUND
AND SAFETY**

Supplementation Background and Safety

Adapted from the Canadian Sport Institute Pacific Health and Performance Handbook, 2013

Authors: Dr. Trent Stellingwerff PhD., Dr. Janet MacKeown MD, Susan Boegman RD, Ashley Armstrong MS., RD, Emma McCrudden RD

Supplementation Recommendations

The majority of training load and competition success are achieved through proper diet and recovery practices. These can include such things as recovery nutrition immediately post-training, quality sleep, low surrounding external stresses and paramedical support (see other chapters). To aid in this process, athletes have looked towards supplements as ways to further increase training load and/or performance. However, only a hand-full of supplements have been shown to possibly aid in this process during very intense training and competition schedules. The majority of touted supplements have no scientific support, and just result in added and unwarranted expenses to an athlete, and even worse, the possibility of supplement contamination and a positive doping test. Nevertheless, there are a few supplements that do have scientific support, which can be utilized by an athlete already following good general nutrition and recovery practices. A poor diet and recovery practices cannot be compensated for by a supplementation regime. Further, regular blood analysis should be completed to check for any abnormalities.

Supplement Strategy

There is always a risk of supplements being contaminated with substances that can cause a failed anti-doping test. However, a sound supplement strategy and advice can help athletes and coaches make balanced decisions about which, if any, supplements they should take. Advice around supplement strategies is based on the most recent evidence about which supplements can safely, ethically, and legally support health and performance. Advice should also help athletes avoid accidental positive testing through taking high-risk supplements. The following guidelines or check points are recommended for athletes and coaches to consider prior to supplementation:

- Nutrition assessment completed by performance dietitian
- Lifestyle and recovery protocol assessment completed by IST expert
- Consider the pros and cons associated with supplement use
- Consult your team physician to ensure the desired supplement does not interfere with current medications and has no negative effect on current health conditions

- Approval by coach
- Protocol outlined with physiologist and/or performance dietitian before taking supplements
- Supplements MUST be trialed in training and several competitions before use in a major competition. This requires a proactive approach and a needs assessment
- **As athletes under 18 years of age with not have reached their genetic potential it is recommended they avoid all supplements except for sport drinks/food**

Avoiding the Use of Banned Substance

WADA

Each year there are changes to the WADA Banned Substance List. It is very important that athletes check one of the following online references with any new medication taken (prescription or not) to make sure the medication contains no prohibited/banned substance.

Resources to fined Banned Medications and Supplements

2018 WADA Prohibited List

<https://www.wada-ama.org/en/content/what-is-prohibited>

Global Drug Reference Online www.globaldro.com

Canadian Centre for Ethics in Sport www.cces.ca

Toll-free Info Line: 1-800-627-7775 (in North America, business hours, Mon-Fri, 09:00-17:00)

Email substances@cces.ca



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The CCES Substance Classification Handbook applies the WADA list to the Canadian market, and can be downloaded at: <http://www.cces.ca/files/pdfs/CCES-PUB-SubstanceClassification-E.pdf>

When purchasing supplements it is imperative that the athlete be extremely cautious regarding potential inadvertent doping. Supplements safe to use in sport are those that have been batch-tested through the Canadian Sport Institute have NSF, Informed Choice or Cologne List certification on the bottle. Look for batch tested supplements from reputable companies that are on the below safe choices list:

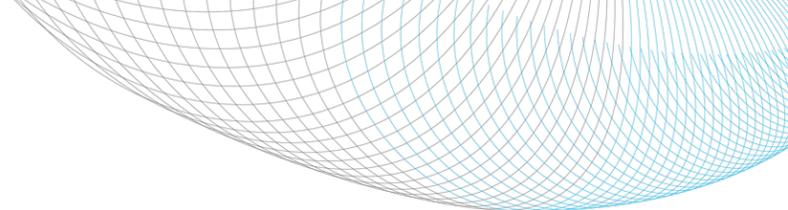
NSF Certified for Sport: www.nsf-sport.com

InterActive & INFINIT Custom Fuel Program: www.fuelingcanada.com

HFL Sport Testing Program: www.informed-choice.org

Koelner: <http://www.koelnerliste.com/en/cologne-list.html>

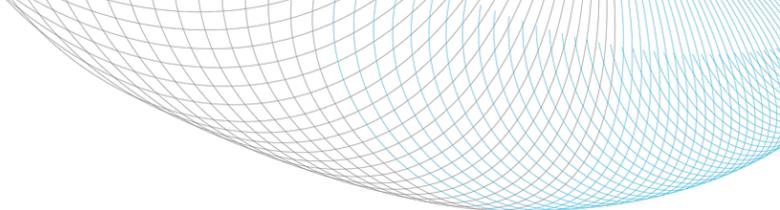




Supplements/Ergogenic Aids

The following guide has been adapted from the APRID Classification Framework of Sports Supplements¹ and the Australian Institute of Sport Supplement Classification System². APRID stands for: Acceptable, Physiological, Research, Ineffective and Disallowed, and examines all aspects of supplement use, risk and reward. This list assumes that all supplements/ergogenic aids are being used with the correct dosing protocol, in the correct manor by otherwise healthy athletes/sports for optimal effects. Always consult with your performance dietitian/physician/physiologist and coach prior to supplementing. It is imperative to ensure that all supplement/ergogenic aids are tested, and be aware that not all supplements listed below will be tested and offered in Canada. Finally, always check the WADA list or contact a performance dietitian/physician/physiologist or coach for more information.

Acceptable	Physiological
<p>Scientific research has shown a clear performance, recovery or health benefit to the supplements use</p> <p>Performance Carbohydrate drinks, powders, gels and bars Carbohydrate-electrolyte 'sports' drinks and powders Electrolyte replacements Caffeine Creatine Sodium Bicarbonate or Citrate</p> <p>Recovery Carbohydrate & protein 'recovery' drinks, powders and bars Protein powders, drinks and bars Liquid Meal Supplements</p> <p>Health Fish Oils (Omega-3 fatty acids) Iron (recommended doses, only when medically indicated) Calcium (recommended doses) Vitamin D (recommended doses) Multivitamin/mineral (at doses no greater than 100% RDA))</p>	<p>There is a clear physiological rationale for using the supplement. However, the performance or health outcome research is still emerging and unclear</p> <p>Performance Cardiovascular Effects Arginine/Citrulline Beetroot juice/Nitrate Buffer capacity Beta-Alanine</p> <p>Recovery Branched Chain Amino Acids Essential Amino Acids (EAA) Hydroxy methylbutyrate (HMB) Leucine</p> <p>Health Colostrum* Glucosamine Glutamine Individual minerals Individual vitamins Probiotics</p> <p>*Although not prohibited, it may contain IGF's which are prohibited and can influence the outcome of an anti-doping test</p>



Research	Ineffective
<p>Physiological and performance/health outcome are unclear. However, there is practitioner based evidence that there may be a benefit to using the supplement in elite sport. Evidence must be gathered by the practitioner for its use</p> <p>Performance Cardiovascular Effects Carnitine/Glycine Propionyl-L-Carnitine (GPLC) Polyphenols (Pycnogenol, Green tea) Central Nervous System Effects Phospholipids [Phosphatidylcholine – lecithin (PC)/ Choline, Phosphatidylserine (PS)] Tyrosine Branched Chain Amino Acids</p> <p>Health Echinacea Melatonin Prebiotics</p> <p>Other CLA Flavones Medium-chain triglycerides (MCT) Cysteine Green Tea extract/Epigallocatechin gallate (EGCG) Quercetin Resveratrol/Grape seed extract Vitamin C (maximum of 1000mg per day) - for cold prevention/duration Vitamin E (maximum 400IU per day) – only when used for short-term recovery</p>	<p>There is no clear physiological, performance or health benefit to using the supplement</p> <p>Examples of Ineffective High doses of single-sourced antioxidant supplements exceeding recommendations (>1000mg/day) Bee pollen Chromium picolinate Coenzyme Q10 Cordyceps Cytochrome C Dihydroxyacetone Gamma-oryzanol & ferulic acid Inosine Lecithin Pangamic acid (B₁₅) Phosphate Salts Polytactate Pyruvate Ribose Wheat germ oil Wobenzym & Phlogenzym Yohimbine</p>



Disallowed

These dietary supplements are either directly banned and on the WADA Prohibited Substances list, or are deemed to be a high risk for a positive doping case, and therefore should not be used by athletes. Refer to the WADA banned substance list for a complete list. If any of these substances are required for medical reasons, complete the Therapeutic Use Exception (TUE) form downloaded from CCES. <http://www.cces.ca/en/page-109>

Prohibited Supplements

Beta Blockers*

Diuretics** & other Masking Agents

Glycerol***

*Beta blockers and diuretics are commonly used to treat high blood pressure; TUE required is using these medications

**Diuretics are used in some medication for menstrual cramps eg. Midol; TUE required is using this medication

***The amount of glycerol found in gum, candies, cough/cold medication and other food groups is safe to use

Stimulants*

Ephedrine

Strychnine

Sibutramine

Methylhexanamine

Other herbal stimulants

Prohormones and Hormone Boosters

Dehydroepiandrosterone (DHEA)

Androstenedione

19-norandrostenedione/ol

Other prohormones

Tribulus terrestris & other herbal testosterone supplements

Anti-estrogenic Agents

*Stimulants are commonly used to treat Attention Deficit Disorder (ADD); TUE required if using this medication

Substances Banned in Competition only

Alcohol & Beta Blockers - Prohibited in certain sports

Cannabinoids

Corticosteroids

Narcotics

Stimulants*

*A select few stimulants found in cold medications, including Pseudoephedrine, Ephedrine and Methylephedrine are permitted out of competition but doses used may be banned in competition. Always check ingredients of your cold medications prior to taking or consult your team MD for advice.

Prohibited Methods

Enhancement of oxygen transfer

Chemical & Physical Manipulation

¹Hans Braun, Kevin Currell and Samantha J Stear (2011) Supplements and Ergogenic Aids in Sport and Exercise Nutrition Susan Lanham-New, Samantha Stear, Susan Shirreffs, Adam Collins, 89 – 120, Wiley-Blackwell

² AIS Supplement Classification System. Retrieved June 2013 from: http://www.ausport.gov.au/ais/nutrition/supplements/classification_test

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