

Sports Nutrition for Youth: Nutrition Supplements and Sports Performance Module

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Introduction

The information contained in this module has been adapted from [Sports Nutrition for Youth: A Handbook for Coaches](http://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-sports-nutrition-for-youth.pdf), www.albertahealthservices.ca/assets/info/nutrition/if-nfs-sports-nutrition-for-youth.pdf. The information in the handbook is based on current research and best practice in sports nutrition at the time of publication. These modules aim to support coaches who work with recreational athletes, rather than elite athletes. Coaches should always consult a sports dietitian for young athletes who compete at an elite level or who need special nutrition advice.

The purpose of the sport nutrition modules is to share key sport nutrition information packaged into shorter learning modules to assist coaches in educating their athletes and parents. These modules can be delivered in the dressing room, on the bench or in a classroom style setting. No technology is required. There are a total of six sport nutrition modules available and they include:

- What to Eat Before During and After Activity
- What to Drink Before During and After Activity
- Choosing Healthy Drinks
- Planning for Tournaments, Competitions and Travel
- Nutrition Supplements and Sports Performance
- Alcohol and Sports Performance

How to use this module

Key teaching points: These spotlight the main nutrition messages from the module to share with athletes and parents.

Background information: provides more detail and research about the topic of each module. This section explains the ‘what’ and ‘why’ behind the key messages.

Materials for athletes: These tools and resources include websites and handouts that can be passed along to your athletes and parents to provide extra ideas to support healthy eating for athletes.

Time to deliver the module: The module could be delivered in 5–15 minutes depending on how much time you have with your athletes and how much detail you want to go into with them. If you only have a few minutes, the key teaching points could be delivered in about 5 minutes and then you could provide your athletes and parents with the handouts for further information. If you were to go through the teaching points as well as the background information it could take about 10–15 minutes.

Nutrition supplements and sports

Note: For more detailed information on supplements and sports, please refer to pages 64–78 of *Sports Nutrition for Youth: A Handbook for Coaches*, www.albertahealthservices.ca/assets/info/nutrition/if-nfs-sports-nutrition-for-youth.pdf

Key teaching points

1. Other than vitamin D, all athletes can meet their vitamin and mineral needs through food alone so long as they eat a wide range of foods from all four food groups.
2. All healthy Albertans aged 0–70 years old should take a 400 IU Vitamin D supplement each day.
3. An athlete's best sport performance depends on a healthy and well-planned diet, regular training, good sleep habits and genetics rather than a mix of special supplements.
4. All athletes can meet their protein needs through high quality food sources such as dairy products, soy, eggs, fish, beef, poultry, pork and other lean meats. To get the best results for muscle growth, young athletes simply need to eat slightly larger amounts of high quality protein rather than take protein or amino acid supplements.
5. Any athlete who uses supplements should always consult a health professional first.
6. Nutrition supplements that are deemed safe for adults could still contain ingredients that are banned within the sports community.
7. It can be unsafe and toxic if growing athletes take high doses of certain supplements, especially if they have health issues such as anxiety, diabetes, poor sleeping patterns, or heart, liver or kidney problems.

Background information

Are nutrition supplements safe for teen athletes?

There is not enough research about the safety of most nutrition supplements for young athletes, so health and sport experts do not advise the use of these products with this age group.

- Nutrition supplements could have very different effects on teen athletes compared to adult athletes. Growing bodies break down, absorb and excrete supplements much differently than fully grown adult bodies.
- Even supplements that are proven safe and helpful in adults could still have adverse effects in younger growing teens.
- It is very hard to predict how supplements will impact the physical and mental health of teen athletes because their bodies face complex changes and rapid growth during puberty.

When should an athlete take vitamin and mineral supplements?

Athletes should first speak with a doctor or dietitian to find out which supplements are safe and helpful. Athletes may need to take a vitamin and mineral supplement when they:

- need to treat or prevent a health problem caused by a lack of a nutrient (eg. taking iron for anemia)
- are ill for a long time and cannot eat enough from all four food groups
- recover from a serious injury that requires extra vitamins and minerals (eg. wound healing)
- avoid certain foods and need help to balance their intake of key nutrients (eg. vegetarians, vegans, athletes who have a milk allergy)
- reduce their intake for weight loss with support from a dietitian and a doctor

What do athletes need to know about protein?

- For muscle growth and physical strength, teen athletes need to eat slightly larger portions of high quality protein foods when they are training.
- Teens only need to consume an extra 10–20 grams of high quality protein after training or competing to fuel muscle repair and growth.

- Some examples of food choices that provide 10 or more grams of protein include:

2-3 boiled eggs	85 gram (3 oz) can of flavoured light tuna
175 grams (³ / ₄ cup) low fat Greek style yogurt	60 grams (2 oz) part-skim mozzarella or low fat cheese (≤ 20% milk fat)
100 grams (3 ½ oz) extra firm tofu	

- Protein bars, powders and drinks do not offer any extra benefit over real food and many are high in sugar.
- Athletes have better muscle repair and growth when they eat a high quality protein food within the first 2–3 hours after weight lifting or sports training.
- If an athlete chooses to use a protein powder, it is important to ask a dietitian for advice and to read the ingredient list to look for banned substances.

What do young athletes need to know about creatine?

Creatine is a natural substance that the human body makes in the liver, kidneys and pancreas and then stores in muscle cells. Creatine helps supply energy to the muscles, heart, lungs and other key organs during physical activity.

- The human body makes at least half of the creatine it needs each day and protein-rich animal foods such as lean meats, poultry and fish provide the other half.
- Athletes will have enough creatine if they are eating enough foods from the Meat and Alternatives food group.
- It is important for young athletes to talk to a doctor or dietitian *before* they use creatine powders to make sure it is safe.

Young athletes should not take creatine supplements until their bodies are fully grown and can break down and excrete any extra creatine they do not need.

Creatine is never safe for athletes who have health problems such as:

- diabetes
- high blood pressure
- kidney problems
- stomach ulcers
- liver problems
- gout (pain and swelling in the joints)

There is a high risk of severe dehydration or kidney damage when mixing creatine with certain foods and products, such as:

- caffeine supplements
- foods and drinks that are high in caffeine
- diuretics (water pills)
- anti-inflammatory medications such as ibuprofen

The most common side effects of creatine supplements include:

- diarrhea
- fluid gain (getting puffy)
- muscle cramps
- increased blood pressure from the extra fluid
- upset stomach or nausea
- dehydration
- allergic reaction
- muscles injury from training too much or too hard

More is NOT better – the risk of harming the body is quite high for any athlete who exceeds the advised dose.

What do young athletes need to know about caffeine?

Growing teen bodies are less developed and often smaller than adult bodies, so young athletes have lower limits for safe caffeine intake. Health experts stress the need to limit how much caffeine teens consume – *even when they are the same size as an adult* – for many key reasons:

- there is not enough research to know the effects and risks of caffeine for youth
- caffeine may make it harder to cope with the demands of growth
- youth often have too little blood volume to handle the same amount of caffeine as adults
- caffeine impairs the body's ability to absorb calcium from food to build healthy bones
- young people are less likely to consume enough healthy foods and sources of calcium (such as milk) if they fill up on caffeine drinks

The most common harmful effects of excess caffeine include:

- faster heart rate
- feeling more anxious or nervous
- getting angry or annoyed very quickly
- getting an upset stomach
- getting headaches
- causing an irregular heart beat
- feeling restless
- having trouble sleeping or staying asleep
- throwing up
- trembling hands or body

Table 1 Health Canada’s guidelines on daily caffeine limits

Age Range	Daily Caffeine Limit
Children 4–6 years old	45 mg caffeine per day
Children 7–9 years old	62.5 mg caffeine per day
Children 10–12 years old	85 mg caffeine per day
Teenagers 13–19 years old <ul style="list-style-type: none"> • 120 pounds/54 kg • 130 pounds/58 kg • 140 pounds/63 kg • 150 pounds/68 kg • 160 pounds/72 kg • 170 pounds/77 kg • 180 pounds/81 kg 	2.5 mg caffeine per kg body weight <ul style="list-style-type: none"> • 135 mg caffeine per day • 145 mg caffeine per day • 160 mg caffeine per day • 170 mg caffeine per day • 180 mg caffeine per day • 195 mg caffeine per day • 205 mg caffeine per day
Adults 20 years +	≤ 400 mg caffeine per day
Women who are pregnant, breast feeding or planning to become pregnant	≤ 300 mg caffeine per day

Adapted from Healthy Canadians

Table 2. Caffeine content of common foods

Food or Beverage	Average caffeine content
Coffee	120–180 mg caffeine per small 8 oz cup (237 mL)
Instant coffee	75– 05 mg caffeine per small 8 oz cup (237 mL)
Energy drink	80–125 mg caffeine per 8 oz cup (237 mL)
Energy shot	80–500 mg caffeine per 2 oz bottle (60 mL)
Regular or diet cola drink	35–50 mg caffeine per 12 oz can (355 mL)
Tea (black, green, white)	30–50 mg caffeine per small 8 oz cup (237 mL)
Iced tea, sweetened	10–46 mg per 8 oz cup (237 mL)
Chocolate cake	40 mg caffeine per 3 oz slice (84 g)
Dark chocolate	19 mg caffeine per 1 oz (28 g)
Chocolate milk	8 mg caffeine per 8 oz cup (237 mL)
Milk chocolate	7 mg caffeine per 1 oz (28 g)

From Health Canada Caffeine in Food.

What do young athletes need to know about natural health products?

Natural health products can be made from plants, animals or other life forms such as bacteria. Some people believe these products can help improve well-being, reduce the symptoms of illness, or enhance sports performance. Natural health products come in many forms such as tablets, capsules, tinctures, solutions, creams, ointments, powders and drops. Common examples include herbal remedies, probiotics and homeopathic or naturopathic medicines.

- Growing athletes are at higher risk for side effects from natural health products because their bodies are often too small or may not absorb, break down and excrete natural health products as well as a fully grown adult.
- There are many risks and side effects to consider before taking a natural health product:
 - May contain banned or harmful substances
 - May not even support its health claims
 - Could be the wrong product to help with a certain issue
 - May mask symptoms or signs of a serious illness which could prevent or delay important medical help
 - May not have a warning on the label for those people who should not use the product
 - Could react badly with medications
 - Could react badly with other nutrition supplements
 - May not mix well with alcohol
 - Could cause an allergic response

Materials for athletes

- [Vitamins & Minerals for Athletes](http://www.dietitians.ca/Downloads/Factsheets/Vitamins-and-Minerals-for-Athletes.aspx)
Dietitians of Canada has created a Fact Sheet to explain the vitamin and mineral needs of athletes and active people.
www.dietitians.ca/Downloads/Factsheets/Vitamins-and-Minerals-for-Athletes.aspx
- [How to Choose a Multivitamin](http://www.dietitians.ca/Downloads/Factsheets/How-to-choose-a-multivitamin.aspx)
Dietitians of Canada provides information on how to safely choose a multivitamin for specific age groups when necessary.
www.dietitians.ca/Downloads/Factsheets/How-to-choose-a-multivitamin.aspx