

EATING FOR ENDURANCE – Making Sense of Sport Drinks, Bars, and Gels



Are you planning to participate in a long hike, bike ride, swim meet or soccer tournament? These types of long duration events and multi-event competitions require careful consideration of dietary strategies so that you are as energized at the end of your event as you were at the beginning.

A number of factors can cause athletes to experience fatigue from participating in endurance events, and most of these factors can be related to nutrition. Dehydration from sweat losses, hypoglycemia (low glucose energy levels in the blood), and lack of physical energy (depleted muscle glycogen-energy stores) are three common reasons why athletes feel fatigued throughout endurance events. Specific nutrition strategies practiced before and during physical activities may help reduce exercise fatigue.

Nutrition Before Exercise

Plan to consume a low-fat meal plus at least 500 ml of fluid, 2 to 3 hours before your event begins. A light, carbohydrate-rich snack with 250-500 ml of fluid consumed 1 to 1 ½ hrs before an event will help to top up energy (blood glucose) and help with hydration.

Pre-Event Snacks:

Fresh fruit, low-fat muffin, toast, bagel, cereal, yogurt, high carbohydrate sports bar, unsweetened juice, sport drink, water.

For more information, check out the following tip sheets:

- [Fluids for Athletes](#) (2008)
- [Fluids and Foods BEFORE Training/Competition](#) (2008)

Throughout Endurance Events and Multi-event Competitions

Athletes whose physical activities take 60 minutes or longer to complete will benefit from consuming between 30 to 60 grams of carbohydrates for every hour of sustained activity to maintain energy levels.

Each of the following foods provide 30 grams of

carbohydrate: 1 banana, 3 Fig Newtons, 1 small bagel, 1 piece of fruit, 4-6 crackers, 1 high carbohydrate sport bar, 500 ml of sport drink, 1 sport gel

It's best to consume some of this food every 15 to 20 minutes. For example, eat 1/3 of a banana every 20 minutes, or eat small amounts when there's a break in the action, such as during the half-time of a soccer game.

Athletes also require fluids throughout endurance events to avoid dehydration. Sweat rates can be highly variable ranging from 0.3 to 2.4 litres lost during an hour of activity. High intensity exercise, hot and/or humid conditions will cause greater sweat losses. As a starting point an athlete should consume at least 400 to 800 ml of fluid for every hour of activity, best consumed in small amounts every 15 to 20 minutes. It is important to note that prepubescent children rarely exceed 400 ml of sweat lost per hour of activity.

For more information, check out the following tip sheets:

- [Fluids for Athletes](#) (2008)
- [Fluids and Foods DURING Training/Competition](#) (2008)

Sport Drinks – Where do they fit?

A sport drink is much more than a sugary beverage – technically it's a carbohydrate-rich electrolyte (i.e., sodium, potassium) solution designed to supply energy, electrolytes, and fluids lost from physical activity. Sport drinks can be consumed **before** activities to "top up" energy levels, **during** sustained activities to maintain energy and hydration, as well as **after** exercise to rehydrate and re-energize. If an athlete prefers sport drinks over water, this may lead to greater fluid consumption.

Sport Drinks – What to look for?

Ideally, a sport drink should range from 6 to 8% carbohydrate (i.e., 6 to 8 grams of carbohydrate in every 100 ml of beverage); drinks containing greater than 8% carbohydrate may lead to stomach upset. The primary form of the carbohydrate should be glucose, sucrose, or maltodextrin with some fructose. Since sodium is the main electrolyte lost in sweat, replacing high levels of sweat loss with only water can lead to a severe condition called hyponatremia (low sodium levels), with symptoms of muscle cramps, nausea, vomiting, confusion, disorientation, and possibly bloating (fluid retention). Every litre of a sport drink should contain between 500-700 mg of sodium and 80-200 mg of potassium. There is insufficient evidence to recommend sport drinks containing protein or amino acids. Furthermore, it is not uncommon for athletes to experience stomach upset from such products.

SNAC Sport Nutrition Advisory Committee
Comité consultatif sur la nutrition sportive



EATING FOR ENDURANCE – Making Sense of Sport Drinks, Bars, and Gels – page 2

Sport Gels – Are they Suitable?

Some endurance athletes may choose to consume a sport gel for energy rather than a sport drink or other food during activities. However, it's important to drink ample **plain** water with a sport gel to avoid stomach upset. Most sport gels contain 25 to 30 grams of carbohydrates, but lack sufficient electrolytes to match sweat losses. Some gels may also contain additional ingredients such as caffeine, vitamins, etc., that serve little purpose and may not be desirable for all athletes.

Sport Bars – So Many Options

The multitude of available sport bars can be divided into three categories: (1) high carbohydrate with low protein, (2) lower carbohydrate with moderate protein, and (3) high carbohydrate with high protein (refer to box). Throughout endurance events or during multi-event competitions, sport bars with high carbohydrate and low protein content are best suited since the carbohydrates are needed for energy and the lower protein content makes these bars easy to digest.

Sport Bar Classifications

High Carbs, Low Protein	Low Carbs, Moderate Protein	High Carbs, High Protein
> 25 grams Carbohydrates	< 25 grams Carbohydrates	> 25 grams Carbohydrates
< 14 grams Protein	14-21 grams Protein	> 21 grams Protein

Through careful planning athletes can limit their exercise fatigue by eating well before their physical event(s), and by consuming ample fluids, carbohydrates, and electrolytes during or in-between their activities. Some initial “trial and error” dietary strategies would be advised in low-key competitions or during training to determine the optimal food and fluid choices best tolerated for each athlete.

References:

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