

clips on sugars

FOR UP-TO-DATE INFORMATION ON SUGARS IN HEALTHY EATING

Fuel for your activity

Many elite athletes follow strict nutrition programs to guarantee their best performance. But what about the rest of us – the house league hockey player, the Sunday hiker, or the after-work runner? For all recreational athletes, good nutrition plays an important role in helping us improve our performance and in meeting the added energy demands of physical activity.

Premium Fuel

A nutritious, well-balanced diet every day is important for good health and energy. But when it comes to the best choice for fuelling your physical activity, carbohydrate plays a starring role.

When carbohydrate is eaten as starches (in cereal, bread, noodles, etc.) or sugars (from fruit, milk, table sugar, honey, etc.) your body changes them to glucose - the only form of carbohydrate used directly by your muscles for energy. No matter where it comes from, carbohydrate is digested and ultimately changed into small sugars such as glucose.

Your body uses this glucose in the blood for energy. Extra glucose is stored as glycogen in both your muscles and your liver. When your muscles are exercising, they can use both fat and carbohydrate as fuel. As the intensity of your workout increases, your muscles depend more and more on carbohydrate from glycogen stored in the muscle and glucose delivered by the blood.

For most of us, our glycogen stores are enough to keep us going during exercise. But if your activities last longer than an hour, you may use up your glycogen stores, so you need carbohydrate to keep you going.

Filling your fuel tank

For recreational athletes, getting the right amount of carbohydrate means following Eating Well with Canada's Food Guide. This means enjoying a variety of foods every day, emphasizing vegetables and fruit, grain products, lower fat milk products, and leaner meats. Of course, it is always important to drink plenty of fluids, especially water, to avoid becoming dehydrated.

The best way to make sure you have plenty of energy for all your physical activity is to eat a nutritious, well-balanced diet, not just when you exercise, but every day!



DIGESTING CARBOHYDRATES

Mouth

- Receives carbohydrate in the form of sugars and starches.
- Starches begin to break down using saliva.
- Swallowed food goes down esophagus into the stomach.

Stomach

- Chewed carbohydrate is mixed with stomach juices.
- Empties into small intestine, where the nutrients become available to the body.

Small Intestine

- Enzymes complete the breakdown of starches into sugars.
- Sugars (glucose, fructose) are absorbed into the bloodstream and used for energy or transported to the liver.
- Waste moves to the large intestine.

Liver

- Receives sugars.
- Sugars may be used to provide immediate energy.
- Sugars may be stored for future use:
 - 1) usually as glycogen, in liver or muscle;
 - 2) sometimes as fat, as a secondary fuel source.

Large Intestine

- Receives waste.
- Absorbs water and minerals.
- Excretes waste.

TIPS FOR BEFORE, DURING AND AFTER ACTIVITY

BEFORE

- Eat a medium-sized, high carbohydrate meal, including foods like fruit, bread, cereal, or juice, one to four hours before activity. Drink plenty of water.

DURING

- Drink plenty of water.
- If activity is longer than 1 hour, enjoy carbohydrate-rich snacks or drinks every hour (see snack ideas on reverse).

AFTER

- For a few hours after your activity, choose foods and beverages high in carbohydrates, particularly if your activity was strenuous or lasted a long time.

CARBOHYDRATE-RICH, LOWER-FAT SNACK IDEAS*

Snack Idea	Serving Size	Amount of Carbohydrate
Apple	1 medium	19 g
Apple Sauce, Unsweetened	125 mL (1/2 cup)	15 g
Banana	1 medium	27 g
Bite-sized cereals	200-250 mL (3/4-1 cup)	26-37 g
Carrot sticks	2 large carrots	14 g
1% Chocolate milk	250 mL (1 cup)	28 g
Fig bars	2	23 g
Graham crackers	4	21 g
Grape juice	125 mL (1/2 cup)	20 g
Kiwi	1	14 g
Muffins, home made, plain	1 medium	24 g
Oatmeal and raisin cookies	2	20 g
Orange juice	125 mL (1/2 cup)	13 g
Orange sherbert	125 mL (1/2 cup)	31 g
Pretzel sticks	5	11 g
Pudding, fat-free	125 mL (1/2 cup)	30 g
Raisins	50 mL (1/4 cup)	29 g
Tomato juice	250 mL (1 cup)	11 g
Vegetable cocktail	250 mL (1 cup)	12 g
Yogurts, lower-fat	125 mL (1/2 cup)	17-23 g

*Each snack idea listed has more than 10 grams of carbohydrate per serving and less than 3 grams of fat per serving.

Source: Canadian Nutrient File, 2007, Health Canada.

NUTRITION FOCUS

Sports drinks are popular these days, even among children. But are they worth the money? If your workout is less than an hour, water is still the best fluid. But if you exercise longer than that, or on days that are particularly hot or humid, you may benefit from using a sports drink, whether you buy it or make it yourself (see Consumer smarts section for recipe).

As well as replacing fluids, sports drinks supply you with energy from carbohydrate (usually sugars). They can also help replace minerals, such as sodium, that you lose through sweat during your workout. Remember to drink plenty of fluids throughout your activity. Don't wait until you are thirsty – when you are active, your body needs fluids before you feel thirsty.

Check out the chart below for a comparison of a variety of sports drinks.

Nutrient Content of Sample Sports Drinks (per 250 mL/cup)

	Calories (kcal)	Carbohydrate (g)	Sodium (mg)
Water	0	0	0
Orange Juice	116	26	3
Commercial Sports Drink*	64-92	16-24	26-115
Homemade Sports Drink**	59	14	118

Source: Canadian Nutrient File, 2007, Health Canada.

*Range for four brands and several flavours of sports drinks available in the Toronto-area, 2008.

** Made from the recipe below with orange juice.



MINI-QUIZ

Good nutrition can play an important role in your physical performance. Test your nutrition know-how with the following quiz (check the bottom right corner for answers):

1. Sugars and starches provide Calories per gram.
2. The only form of carbohydrate used directly by the muscles for energy.
3. Fat has Calories per gram.
4. The nutrient that needs to be replenished most often during activity.
5. Glucose is stored in the liver and muscles in this form.
6. Breaks down carbohydrates during digestion.
7. Breads and cereals are good sources of this type of carbohydrate.

- A. water
- B. nine
- C. starches
- D. enzymes
- E. four
- F. glycogen
- G. glucose

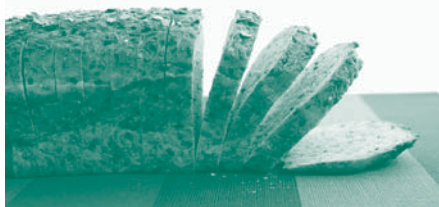
Mini-Quiz answers: 1-E; 2-G; 3-B; 4-A; 5-F; 6-D; 7-C.

CONSUMER SMARTS

There are a lot of different sports drinks on the market, but you can make your own inexpensive homemade sports drink by mixing:

- 125 mL (1/2 c) orange juice (or other sugar-containing beverage)
- 125 mL (1/2 c) water
- 0.25 mL (pinch) salt

This homemade drink will provide you with 59 Calories, 14 grams of carbohydrates and 118 mg of sodium per 250 mL/1 cup serving.



This fact sheet, developed with the collaboration of Registered Dietitians and Nutrition Researchers, is published by the Canadian Sugar Institute. If you have any questions about sugar and its relation to nutrition and health, feel free to contact:

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