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, carbohydrates play a starring role.

Carbohydrates are eaten as starches (in cereal, bread, pasta, etc.) or sugars (from fruit, milk, table sugar, honey, etc.). No matter where they come from, carbohydrates are digested and ultimately changed into small sugars, such as glucose, which your body uses for energy.

Extra glucose is stored as glycogen in both your muscles and liver. When you are exercising, your muscles can use both fat and carbohydrate (glucose or glycogen) 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 to eat carbohydrates to keep you going strong.

Filling your fuel tank

For recreational athletes, getting the right amount of carbohydrate means following 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!

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.

DIGESTING CARBOHYDRATES

Mouth

- Carbohydrates are eaten as sugars and starches.
- Saliva begins to break down starches.
- Food is swallowed and travels down the esophagus into the stomach.

Stomach

- Carbohydrates are mixed with stomach juices.
- This mixture is emptied into the small intestine.

Small Intestine

- Enzymes complete the breakdown of starches into sugars. All sugars break down into 3 simple sugars: glucose, fructose or galactose.
- Simple sugars are absorbed into the blood and carried to the liver.

Liver

- Regulates blood sugar (blood glucose).
- Releases sugars into the blood for energy use and stores excess sugars as glycogen for future use.

Large Intestine

- Receives waste from the small intestine.
- Absorbs water and some vitamins.
- Processes fibre and stores waste before it is excreted.

Use for Energy

- Sugars are used by cells for energy.
- Excess sugars are stored as glycogen in the liver and muscles, but may also be converted to fat.

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CARBOHYDRATE-RICH, LOWER-FAT SNACK IDEAS*

Snack Idea (Serving Size)	Calories (kcal)	Amount of Carbohydrate
Apple (1 medium)	72	19 g
Apple sauce, unsweetened (125 mL)	54	15 g
Banana (1 medium)	105	27 g
Bite-sized cereals (200-250 mL)	130-170	26-37 g
Carrot sticks (2 large)	60	14 g
1% Chocolate milk (250 mL)	166	28 g
Fig bars (2)	111	23 g
Graham crackers (4)	120	21 g
Grape juice (125 mL)	80	20 g
Kiwi (1 medium)	46	11 g
Muffins, home made, plain (1 medium)	169	24 g
Oatmeal and raisin cookies (2 medium)	117	18 g
Orange juice (125 mL)	58	13 g
Orange sherbet (125 mL)	113	24 g
Pretzel sticks, hard (10)	19	4 g
Pudding, fat-free, vanilla (125 mL)	123	28 g
Raisins (50 mL)	92	24 g
Tomato juice (250 mL)	44	11 g
Vegetable cocktail (250 mL)	49	12 g
Yogurts, lower-fat, vanilla (125 mL)	120	20 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, 2011, Health Canada.

NUTRITION FOCUS

Sports drinks are popular, even among children. But are they worth the money? If your workout is less than an hour, water is still the best fluid[1]. But if you exercise longer then that, or on days that are particularly hot or humid, you may benefit from using a sports drink, which you can buy or make 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	129	30	5
Commercial Sports Drink*	64-92	16-24	26-115
Homemade Sports Drink**	64	15	62

Source: Canadian Nutrient File, 2011, Health Canada.
*Range of four brands and several flavours of sports drinks available in the Toronto-area, 2008.
** Made from the Consumer Smarts recipe below using orange juice.

[1]American College of Sports Medicine Position Stand (2007). Exercise and fluid replacement. Medicine and Science in Sports and Exercise 39:377-390.

MINI-QUIZ

Good nutrition plays an important role in your physical performance. Test your nutrition know-how by matching each statement with the correct word in the quiz below:

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

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

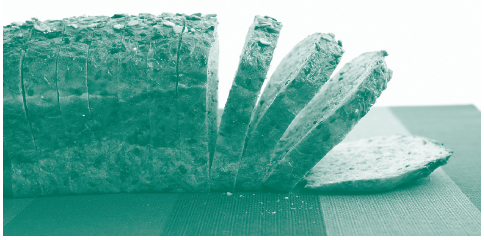
Mini-Quiz answers: 1-E; 2-B; 3-A; 4-F; 5-D; 6-C.

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:

- 250 mL (1 c) juice or other sugar-containing beverage
- 250 mL (1 c) water
- 0.25 mL (pinch) salt

This homemade drink recipe makes two 250 mL (1 cup) servings and will provide you with 64 Calories, 15 grams of carbohydrate and 62 mg of sodium per 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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