

Fluids and Foods *BEFORE* Training/Competition



Pre-exercise nutrition provides:

- Energy
- Physical comfort
- Mental alertness

Targets:

- Optimal fluid intake
- High carbohydrate, moderate protein, and low fat

Why?

- To start exercise with optimal fluid levels.
- To prevent dehydration.
- To supply food that is quickly and easily digested.
- To ensure energy to train or compete.
- To prevent hunger before and during exercise.

Timing and meal/snack size are related.

Generally allow:

- 3–4 hours for a large meal to digest
- 2–3 hours for a smaller meal
- 1–2 hours for a small snack or blender/liquid meal or, whatever your own tolerance indicates

CAUTION: Spicy, gas producing, fatty, and/or fibre-rich foods may cause bloating or discomfort. Products containing caffeine have a laxative effect.

BEFORE exercise:

- Drink 5–7 mL of fluid per kg body weight (about 300–500 mL) 4 hours prior.
- Drink 3–5 mL of fluid per kg body weight (about 150–350 mL) fluid about 2 hours before exercise, if you have not produced any urine or if your urine is still bright yellow.
- Eat a meal or snack, high in carbohydrate, 2 to 4 hours prior. Ideal carbohydrate foods include vegetables, fruit, juices, whole grains, milk, yogurt, soy drinks, and legumes. Legumes are fibre-rich and can be gas-producing.

- Include foods that contain some salt or choose a beverage with 0.5–0.7 g/L to help promote thirst and to retain the fluid.

- If you have a “nervous stomach” before events, choose juice, pureed foods (e.g. applesauce, mashed potatoes), lower-fibre grain products (cereal bar), or a meal replacement beverage.

Experiment with fluids and foods in training to find out what, and how much, is comfortable for you.

Never try new foods or drinks before or during competition.

CONVERSION: 250 mL = 1 cup = 8 oz.

BEFORE – Focus on Fluid and Carbohydrate

Meal ideas – from home or on the go:

The amount and type of food will vary according to the amount of time available between the meal/snack and the start of training or competition. Allow time for digestion.

- Toast/bagel with jam, peanut butter, juice, yogurt
- Oatmeal/cereal, milk, raisins, juice
- Pancakes with a little syrup/spread, ham, juice
- Grilled chicken sandwich, juice
- Lean meat sandwich, carrots, milk, oatmeal raisin cookie, fruit
- Minestrone soup, cheese, crackers, vegetable juice
- Chili, bagel, milk
- Pasta with tomato/lean meat sauce, applesauce, chocolate milk
- Lentil soup, crusty roll, salad with a little dressing, soy beverage

SNAC Sport Nutrition Advisory Committee
Comité consultatif sur la nutrition sportive

Coaching Association of Canada
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Snack ideas:

- Fruit (fresh, canned, or juice)
- Fruit yogurt
- Low-fat muffin, juice, or applesauce
- Yogurt, social tea biscuits, juice
- Pita with hummus, vegetable juice
- Fig or oatmeal cookies, fruit, milk

Snacks for backpack or car:

- Dried fruit
- Juice boxes or fruit cup
- Dry cereal
- Cereal, sport, or energy bars
- Crackers
- Trail mix with added raisins or cereal

From these guidelines, make a list of the drinks and foods that work for you.

- Plan ahead and be prepared.
- Carry pre-exercise food.

Avoid bacterial contamination of meals and snacks. Keep cold foods cold and hot foods hot. Bacteria reproduce quickly at room temperature.

Before exercise, choose foods which are higher in carbohydrate and lower in protein and fat. This will allow quick absorption of carbohydrate energy from the food into the body. Include protein and fat sources during meals and snacks at other times during the day.

For information on planning your meals and snacks, see these CAC resources:

- For an overview of your nutrition needs during training, refer to [Training Diet: Everyday Eating](#).
- For a list of examples of high carbohydrate foods, refer to [Energize with Carbohydrate!](#)
- To learn how to meet your fluid needs during exercise, review [Fluids for Athletes](#).
- To create a meal plan for your training needs, see [From Training Diet to Meal Plans](#).

For help with planning your snacks before exercise, contact the dietitian at your [Canadian Sport Centre](#) or someone listed under the [Sport Nutrition Registry](#) on the CAC website. If there is no dietitian with expertise in sport listed in your area, [Dietitians of Canada](#) may list a dietitian near where you live.

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Fluids and Foods *DURING* Training/Competition



During exercise, nutrition provides:

- Energy
- Physical comfort; absence of hunger
- Mental focus for best technique and skill execution

Targets:

- Optimal fluid and electrolyte intake
- Carbohydrate to maintain blood glucose

Why?

- To prevent excessive dehydration.
- To prevent excessive changes in electrolyte balance.
- To avoid drinking more fluid than needed to replace sweat loss.
- To ensure energy to train or compete.

Fluid needs vary with your sweat rate, sport, and environment (temperature, humidity, altitude). Monitor your body weight changes during training and competition sessions to estimate sweat loss.

To find out how much is optimal and comfortable, test the amount and type of fluid and food in training – never during competition!

DURING exercise:

- Drink freely from 0.4–0.8 Litres per hour.
- Drink more on days when you train harder.
- Drink more during hot, humid weather.
- Drink some fluid when training in cold weather.
- When training or competing for more than an hour, consume some carbohydrate (e.g. a sport drink or snacks).

Carbohydrate beverages: For sessions longer than an hour, carbohydrate helps maintain focus, technique, and energy. Aim for 0.7 g carbohydrate per kg body weight per hour (about 30–60 g carbohydrate per hour), taken at 15–20 minute intervals.

The recommended beverage for optimal fluid absorption during exercise has 40–80 g carbohydrate/L and 0.5–0.7 g sodium/L.

- Sport drinks provide water, carbohydrates, (40–80 g/L) and electrolytes (e.g. sodium, potassium).
- Fruit juice (100–160 g/L carbohydrate) needs to be diluted by half for rapid absorption and sufficient hydration during exercise.
- Energy drinks and soft drinks are too concentrated for rapid absorption and will slow rehydration during exercise.

You can make your own sport drink by mixing:

- 500 mL unsweetened orange juice
- 500 mL water
- 1.5 mL salt

One litre = 54 g (5.4%) carbohydrate and 0.5–0.7 g sodium.

Salt: Sport drinks contain salt (sodium), which is helpful for athletes training or competing for several hours and consuming large amounts of fluid.

CONVERSION: 250 mL = 1 cup = 8 oz.

DURING EXERCISE – Focus on Fluid and Carbohydrate

Water is an effective fluid replacement drink for short (less than one hour) exercise sessions.

Athletes consume more when the fluid:

- Is easy to access (right beside them).
- Is a flavour they like.
- Is chilled (about 10 degrees C).
- Has sodium added (0.5–0.7 g/L enhances flavour and thirst).

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Fluids and Foods *DURING* Training/Competition



Snack ideas *DURING* prolonged exercise:

For training sessions lasting several hours and during competition, emphasize fluid and carbohydrate-rich snacks during rest breaks.

The amount you consume will vary according to the amount of time available between the snack and the next bout of exercise. Allow time for digestion.

During exercise or for short exercise breaks (less than 1 hour):

- Diluted fruit juice or a sport drink
- Fruit (dried, fresh, canned, or pureed)
- Bread, pretzels, or crackers and vegetable juice
- Cereal, sport, or energy bars
- Arrowroot, fig, oatmeal, or similar low-fat cookies
- Plain or chocolate milk or meal replacement beverage
- Fruit yogurt or fruit smoothie

For a longer break in exercise (1 to 2 hours):

- Juice and a bagel with peanut butter
- Yogurt, fruit, and water
- vegetable juice and a lean meat sandwich
- Fruit, cookies, and chocolate milk

For a small meal between practices or events (about 3 hour break):

- Fruit, cereal, and milk
- Fruit, vegetable soup, lean meat sandwich and milk
- Steamed vegetables, juice, rice, chicken or fish, yogurt

Avoid bacterial contamination of meals and snacks. Keep cold foods cold and hot foods hot. Bacteria reproduce quickly at room temperature.

During short breaks between exercise sessions, choose foods that are higher in carbohydrate and lower in protein, fibre and fat. This will allow for quick digestion and absorption of fluid and carbohydrate into the body, helping prepare you for the next bout of exercise.

- Plan ahead and be prepared.
- Carry snack items, or know where you can buy them.

For information on planning your meals and snacks, see these CAC resources:

- For an overview of your nutrition needs during training, refer to [Training Diet: Everyday Eating](#).
- For a list of examples of high carbohydrate foods, refer to [Energize with Carbohydrate!](#)
- To learn how to meet your fluid needs during exercise, review [Fluids for Athletes](#).
- To create a meal plan for your training needs, see [From Training Diet to Meal Plans](#).

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Fluids and Foods *AFTER* Training/Competition



Post-exercise, nutrition provides:

- Energy and nutrients to replenish fuel stores
- Rehydration for faster recovery
- Building blocks for muscle building

Targets:

- Optimal fluid and electrolyte levels
- Carbohydrate to restore muscle glycogen
- Protein to repair muscle damage
- Nutrients to support health and a strong immune system

Why?

- To replace lost fluid
- To replenish fuel stores
- To boost immune system
- To improve strength and endurance at the next event.

For rapid glycogen replacement, consume fluid and carbohydrate-rich foods as soon as possible after exercise, preferably within 30 minutes. Carbohydrate consumed in the hours after exercise moves readily into muscles to replace glycogen. Eating carbohydrate immediately after exercise also helps the body's immune system recover faster.

AFTER exercise:

- Drink 1 ½ L of fluid for every kg of body weight lost.
- Consume some salty fluids and food for electrolyte (sodium) replacement and better fluid retention.
- Aim for 1.5 g carbohydrate/kg body weight within 2 hours after exercise.
- Choose a carbohydrate food that has a high glycemic index*.
- Have some lean protein food.
- Avoid skipping meals. Be sure to eat your next regular meal (breakfast, lunch, or dinner) within 2 hours.

* For information about the glycemic index of food, refer to **Training Diet: Carbohydrate – Go Food**.

The amount of food you consume immediately after exercise will vary according to the amount of time between your training or competition and your next scheduled meal or snack.

Late night RECOVERY nutrition:

It is never too late to eat your recovery meal. After an evening training session or competition, have a carbohydrate-based meal such as cereal with milk and fruit or a lean meat sandwich with juice.

CONVERSION: 250 mL = 1 cup = 8 oz.

AFTER EXERCISE – Focus on Fluid, Carbohydrate, and Protein

After exercise, eat a snack immediately, followed by a balanced meal within 2 hours. Choose from all four food groups:

Vegetables and fruit	Grain products
Milk and alternatives	Meat and alternatives

Meal ideas – at home or on the go:

Plan foods to carry with you or food outlets where you can buy part or all of a meal.

- Fruit juice, bagel (with jam), yogurt
- Banana, juice, hot or cold cereal, milk
- Juice, english muffin with an egg and ham
- Carrot sticks, fruit, lean meat sandwich or sub, milk, oatmeal cookie,
- Minestrone soup, vegetable juice, bagel, cheese
- Baked potato, chili, milk
- Applesauce, juice, pasta, vegetables and meat sauce, bread roll
- Bean burrito with vegetables, chocolate milk
- Fruit, vegetarian pizza, milk



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Snack ideas: Pack snack items to have on hand. Some snacks can be part of your next meal.

- Fruit, cereal/cereal bar, milk/yogurt
- Tomato or fruit juice, pretzels
- Bagel, peanut butter, jam, chocolate milk
- Juice, yogurt, crackers or cookies
- Raw vegetables with hummus, milk
- Vegetable juice, canned beans and pita
- Fruit smoothie (fruit, milk, yogurt) and toast
- Fruit, sport or energy bar, chocolate milk

Snacks for backpack or car:

- Juice boxes or fruit cups
- Dried fruit, puree fruit cups
- Dry cereal
- Cereal, sport, or energy bars
- Crackers
- Tuna or beans in cans with pull-off tops
- Trail mix with cereal

Avoid bacterial contamination of meals and snacks. Keep cold foods cold and hot foods hot. Bacteria reproduce quickly at room temperature.

Try recovery fluid and food in training to find out what is comfortable for you. Never try new food or drinks if you will be competing within the next 48 hours.

For information on planning your meals and snacks, see these CAC resources:

- For an overview of your nutrition needs during training, refer to [Training Diet: Everyday Eating](#).
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