



SPORTS NUTRITION

Whether you train intensely for fitness or competition, good nutrition is essential to perform your best.

Learn to fuel your body for exercise; and how to eat for good recovery.

EAT RIGHT TO FUEL YOUR BODY!

Do you have enough energy to perform well in workouts or competition? Do you recover between workouts or events - and still have lots of energy during the day? Whether you exercise for fitness, or train to compete, good nutrition is essential.

This resource is designed to help you learn the best way to fuel activity, then plan your food choices for peak performance. Complete the Food & Training Record below to help you evaluate your food & fluid intake, and make a "Plan to Eat for Performance" (on page 6).

Step 1. Review the information in 'blue boxes' on pages 2 and 3 to become familiar with sources of carbohydrate (CHO), protein and fluid.

Step 2. Choose a day where you had a workout or event lasting longer than one hour.

Step 3. Record everything you ate and drank that day (including water) in My Food & Training Record below. Enter your workout/event and the time it took place. Record food or drink consumed during activity and the length of time you were active. See "Example".

Step 4. Find each food you ate (or a similar food) in the Food & Drinks chart on the right - note which performance and recovery nutrients (CHO, protein and fluid) are in each food you ate and place a check in corresponding column. See "Example".

MY FOOD & TRAINING RECORD		CHO	PROTEIN	FLUID
EXAMPLE: mid-day	12:00 ham sandwich: tomatoes, ham (Protein), bread (CHO), chocolate milk (CHO, Protein, Fluid)	✓	✓	
	4p.m. soccer game (90 minutes) orange sections, water	✓		✓
	5:30 chicken sub: bun, chicken, vegetables	✓	✓	

FOOD & DRINKS	CHO	PROTEIN	FLUID
VEGETABLES & FRUIT			
Any fruit (e.g. apple, orange, grapes), dried/canned fruit, applesauce, fruit bar	✓		
Starchy vegetables (e.g. peas, corn, potatoes, yams, sweet potatoes)	✓		
100% fruit juice, fruit smoothie	✓		✓
GRAIN PRODUCTS			
Bread, bagel, crackers, toast, crispbreads, pita, roti, tortilla	✓		
Cereal, muffin, granola bar, cereal bar, grains (e.g. pasta, quinoa, rice, oats)	✓		
MILK & ALTERNATIVES			
Milk, chocolate milk, fortified soy beverage, kefir, yogurt drink	✓	✓	✓
Yogurt, milk pudding	✓	✓	
Cheese (e.g. cheddar, swiss), cottage cheese		✓	
MEAT & ALTERNATIVES			
Peanuts/nuts, soy nuts, peanut/nut butter, seeds (e.g. sunflower/pumpkin seeds)		✓	
Lentils/beans (e.g. hummus), edamame	✓	✓	
Meat (e.g. roast beef, ham, chicken), fish eggs, tofu, tempeh		✓	
MIXED FOODS			
Cereal with milk	✓	✓	✓
Smoothie made with fruit/vegetable & milk/yogurt/soy beverage	✓	✓	✓
Smoothie made with fruit & almond/rice/coconut/hemp beverage	✓		✓
Sushi roll (rice, fish, vegetables)	✓	✓	
Trail mix (nuts, peanuts, dried fruit, cereal)	✓	✓	
Sandwich/wrap/tortilla with: cheese, egg, deli meat, canned tuna/salmon, chicken, or peanut/nut butter	✓	✓	
Pita and hummus	✓	✓	
OTHER			
Water, tea, coffee			✓

Adapted with permission, BC Dairy Association.

HOW FIT IS YOUR DAILY EATING PATTERN? Check your Food & Training Record and respond to these statements:

- a) I ate within 2 hours of waking up. Yes No
- b) I ate every 3 to 4 hours during the day (a meal or snack). Yes No
- c) I ate supper. Yes No
- d) I included CHO, protein and fluid at most meals and snacks. Yes No

If you answered "No" to any of these questions, you are not eating for peak performance.

CARBOHYDRATE: ONE SIZE DOES NOT FIT ALL!

Carbohydrate (CHO) is fuel for the brain and active muscles. Exercise can deplete the body's CHO stores; consuming CHO is the *only* way to maintain and replenish stores.

How much is enough?

Very active people must eat more food to meet high energy demands—and be sure to consume enough CHO to fuel muscles. The amount of CHO needed each day depends on the length and intensity of exercise. When intense activity is longer than 60 minutes, the body uses more energy; and muscles use more CHO.

Tired all the time?

Consistently low muscle CHO stores lead to fatigue as well as poor training, performance and recovery. Low CHO stores can happen with long, steady, intense exercise (e.g. distance running, cycling, cross-country skiing) as well as strenuous interval training and stop-start sports (e.g. hockey, volleyball, basketball, soccer). Several days of training camps, tournaments, or repeated endurance training with low CHO intake can also deplete CHO stores.

NOTE: CHO stores can take 24 to 48 hours to refill. Plan rest days and CHO intake after hard training or when preparing for competition (often called “tapering”).

CHO-RICH FOODS

Choose *high quality* CHO-rich foods most of the time. e.g.: potatoes, sweet potatoes, 100% fruit juice, fruit, dried fruit, whole grain bread, pasta, rice, quinoa, cereal, milk (regular, chocolate or flavoured) fruit-flavoured yogurt, and legumes.

Use serving sizes in Canada's Food Guide as a reference for your portions or 'helpings'.*

Remember, very active people need more servings to meet energy needs.

HOW'S YOUR CHO INTAKE? Check your *Food & Training Record* and respond to these statements:

- a) I included CHO at each meal & snack (see CHO-RICH FOODS). Yes No
- b) I ate a high CHO meal or snack before my workout/event. Yes No
- c) I consumed CHO after exercise to refill muscle stores. Yes No

If you answered “No” to any of these questions, your CHO stores might be low.

PROTEIN: IS MORE REALLY BETTER?

Protein is used to maintain, build and repair muscle tissue in response to strenuous training. Protein is also essential to support the immune system.

How much is enough?

Most Canadians get enough protein to support vigorous exercise. Experts suggest spreading protein intake evenly throughout the day—rather than eating most of the day's protein at the evening meal. Consuming quality protein at meals and snacks throughout the day meets the needs of both strength and endurance training. Excess protein does not improve performance or recovery.

PROTEIN-RICH FOODS

Choose high quality protein foods. e.g. meat, fish & poultry; eggs; cottage cheese; milk (plain & flavoured); hard cheese; Greek yogurt; tofu and soy beverage. Legumes, nuts, seeds and nut butters are also protein sources.

NOTE: Almond, rice, coconut, hemp and other plant beverages contain very little protein—which is low quality.

Use serving sizes in Canada's Food Guide as a reference for your portions or 'helpings'.*

HOW'S YOUR PROTEIN INTAKE? Check your *Food & Training Record* and respond to these statements:

- a) I included protein at each meal & snack (see PROTEIN-RICH FOODS). Yes No
- b) I consumed protein after exercise to help repair muscle tissue. Yes No
- c) I spread protein consumption throughout the day. Yes No

If you answered “No” to any of these questions, you may not be eating enough protein—or not spreading intake through the day.

FLUID: A CONSTANT NEED

Active muscles generate heat which *must* be removed. Fluid's most important role during exercise is regulating body temperature through evaporation of sweat. It is easy to become dehydrated if fluid lost through sweating is not replaced. Dehydration can cause both physical and mental fatigue; as well as increased risk of heat exhaustion, cramps and life threatening heat stroke. Dehydration can happen anywhere—whether exercise takes place in hot or cold conditions, indoors or outside. Dehydration also delays recovery.

NOTE: The “training environment” (i.e. humidity, wearing a lot of equipment) can reduce the body's ability to cool itself.

How much is enough?

Most people should consume 2-3 litres of fluid each day. Normally, drinking when thirsty will meet the body's fluid needs.

- Fluid needs vary greatly with exercise—some people sweat a *lot* and need more fluid than others.
- If you exercise strenuously, especially in hot or humid conditions—or wear heavy sports gear—schedule fluid intake to avoid dehydration.
- Monitor urine colour and amount. Pale urine during the day is a sign of adequate fluid intake. A small amount of dark urine is a sign of dehydration.
- Monitor how you feel—fatigue, headaches and lethargy are signs of dehydration.

NOTE: “Fluid” isn't just water. Soup, juice, milk, smoothies, tea & coffee as well as vegetables and fruit like melon and cucumber help keep the body well-hydrated.

FLUID TO PERFORM AND RECOVER

BEFORE EXERCISE: Consume fluid throughout the day—every day, to ensure you are always well-hydrated.

- About 2 hours before starting exercise, aim to consume 250-500mL/1-2 c. of fluid.

DURING EXERCISE: Drink during exercise to help manage body temperature and prevent dehydration.

- Plain, cool water is sufficient for events or workouts lasting one hour or less.
- Keep a refillable water bottle handy for water or sport drink.
- Drink to satisfy thirst during exercise. Most people can tolerate 400-1000 mL/2-4 c. of fluid per hour during training to help maintain hydration.
- When strenuous exercise lasts longer than one hour, beverages containing CHO and sodium can help maintain both mental and physical performance. Check sport drink labels; aim to consume 30-60 g CHO per hour. (Make your own sport drink: mix equal parts fruit juice and water; add a small “pinch” of salt.)
- Be sure to consume fluid with concentrated CHO sources like sport gels and gummies.

NOTE! Practice your hydration plan in training before you compete.

AFTER EXERCISE: Drinking to rehydrate is an essential part of recovery.

- It can take 24 to 48 hours to replace fluid lost during long, strenuous exercise.
- Monitor weight loss after exercise. Drink 1.5 L/kg of fluid or 3c/pound of weight lost.

HYDRATE with water, sport drinks, 100% juice or milk. In addition to fluid—sport drinks, juice & flavoured milk offer CHO to help refill muscle stores. Milk also offers protein to help repair and build muscle.

HOW'S YOUR FLUID INTAKE? Check your *Food & Training Record* and respond to these statements:

- a) I drank at least 2L/8c of fluid during the day (see beverages listed in “How Much...”). Yes No
- b) I drank before, during & after my workout/event. Yes No
- c) I produced pale-coloured urine during the day. Yes No

If you answered “No” to any of these questions, you could be dehydrated.

FUEL TO PERFORM AND RECOVER

BEFORE EXERCISE: It's important to eat well every day (not just the pre-exercise meal) because refilling energy stores and repairing muscle are ongoing processes.

A meal before competition or intense training should be high in CHO, moderate in protein, lower in fat and consumed 3-4 hours before activity. Eat smaller amounts of similar foods if there is *less than 2 hours* before the event. Protein takes longer to digest—eat less close to strenuous exercise. Drink fluid with the meal.

Examples of food choices for a pre-exercise/pre-event meal or snack:

- Breakfast cereal with milk & fresh/frozen fruit
- Toast and eggs with milk
- Rice/quinoa/couscous, lean meat and vegetable stir-fry
- Soup, meat sandwich, milk
- Baked or sweet potato with chili
- Fruit salad with yogurt
- Pasta with tomato sauce

DURING EXERCISE: To help keep muscles fueled, consume CHO when intense training/competition is 60 minutes or longer; and during stop-start sports. Sport drinks can deliver extra CHO to muscles along with hydration. Concentrated CHO “energizers” (e.g. dried fruit, 100% fruit juice, honey, jam, gummies, gels, Sport Beans and flavoured milk/yogurt) offer higher energy CHO for lengthy exercise. Athletes with a nervous stomach should know what they are able to tolerate during competition (even if it's just soup, milk, sport drinks or juice) and ensure the foods are available. Meal replacement beverages (i.e. Boost™, Ensure™) can be useful.

NOTE: Timing of a meal and types of food tolerated before and during training/competition vary greatly from person to person. Try new foods during training before eating them at competition time.

AFTER EXERCISE: In addition to rehydrating after intense exercise, it is important to refill energy stores and repair and build muscle tissue. It's easy to do both with a little planning:

- Eat high CHO snacks with a moderate amount of protein right after training/competition because filling CHO stores and repairing/building muscle tissue are most effective in the 60 minutes right after intense exercise.
NOTE: Even if you're not hungry, it's important to eat; beverages like chocolate/flavoured milk, smoothies or meal replacement drinks may be an easier way to consume CHO, protein and other nutrients.
- Eat after a hard workout or competition, even if it's late and you're tired. This helps the body recover for the next bout of exercise.

FOOD... OR SUPPLEMENTS?

Despite claims, few sport supplement/ergogenic aids are backed by credible science. Eating food as close to its natural form as possible is by far the best way to support performance and recovery (as well as stay healthy!). Eat a combination of vegetables, fruit, whole grains, milk products, lean meat, nuts and legumes each day to provide the CHO, protein, vitamins & minerals necessary to support regular intense exercise.

NOTE: Portable, non-perishable, commercial products like sport bars and meal replacement beverages can be handy after training and convenient around competition time.

A BUSY SCHEDULE?

Think of your body as you do your cell phone—regular use drains energy and you need to re-charge. Or your car—you wouldn't expect it to run well without fuel! Regular meals and snacks are your fuel source as well as an opportunity to re-charge.

MORNING WORKOUTS: Plan ahead to make sure your body and brain are well-fuelled. Eat a CHO-rich dinner the night before; and if there's no time for breakfast, have a snack before you leave for the gym or practice (even if it's a banana or home-made muffin on the way out the door!). Pack the rest of your morning meal to eat after your workout.

NOON HOUR AND EVENING WORKOUTS: Eat regular meals and have a snack before you train. Eat well after exercise to refill energy stores. If you know your meal will be eaten at a cafeteria or restaurant, plan ahead and pack foods you know might be missing (i.e. a piece of fruit or container of yogurt). Eat a CHO-rich meal with protein when you get home in the evening.

Remember to consume fluid throughout the day to ensure you are well hydrated.

EAT FOR SUCCESS AWAY FROM HOME

On the road?

- Take a variety of tasty, healthy foods with you. Pack: vegetable sticks, 100% fruit or vegetable juice, fresh and dried fruit, bagels, buns, plain cookies, cereal bars, milk (plain or flavoured), yogurt, cheese, prepared sandwiches, and crackers & peanut butter. Freeze ice packs for your cooler and carry water.
- Plan stops in advance if meals are to be consumed en route. If possible, order ahead to ensure that the food you want is available and ready to pick up. If available food is not satisfactory, make sure your cooler is well stocked for the trip.
- If travelling by plane, drink plenty of fluid during the flight. Even a few hours in the air can cause significant dehydration. Take a water bottle and pack snacks.

Sport-smart choices when eating out:

- To increase CHO at meals: Order extra bread, rolls, rice, pasta; or a baked potato instead of fries.
- Drink milk or 100% juice rather than pop, fruit drink, iced-tea etc.
- Ask for salad dressing on the side or toast lightly buttered. Go easy on the sauces or mayonnaise when ordering sandwiches or burgers. Avoid battered or deep-fried meat and fish.
- At competitions and training camps, find out in advance what the canteen will sell or if stores and restaurants nearby will be open. You may wish to supplement with your own food items.

IRON AND PERFORMANCE

Low levels of iron in blood can reduce the amount of oxygen blood is able to supply to muscle tissue—making workouts exhausting and delaying recovery. Endurance athletes, vegetarians, adolescent athletes and menstruating females are at greater risk of developing iron-deficiency anemia.

To increase iron intake:

- Consume meat, fish or poultry. The iron in meat is more readily absorbed (40%) than iron from plant sources like legumes, grains, spinach (10%).
- Eat a vitamin C-containing food (e.g., oranges, strawberries, tomatoes) with plant sources of iron to enhance iron absorption.
- Avoid drinking tea or coffee with meals —both decrease the amount of iron the body can absorb from plant sources. If drinking these beverages, have them at least one hour before or after your meal.

NOTE: Very active people should have routine blood work to assess iron levels. Discuss taking a multi-vitamin/mineral pill with iron with your health-care practitioner. Do not take iron tablets without a physician's advice.

MAKE A PLAN TO EAT FOR PERFORMANCE

1. Review your responses to statements in boxes at the end of each topic on pages 1-3.

a) What did you learn about your:

Daily eating pattern: _____

CHO intake: _____

Protein intake: _____

Fluid intake: _____

b) What could you improve? How could you do that?

Your daily eating pattern: _____

CHO intake: _____

Protein intake: _____

Fluid intake: _____

2. Choose **one** meal or snack you feel you can improve. Answer these questions:

Where will I be? _____

What food(s) will I consume? _____ How much will I consume? _____

When will I implement my plan? _____

Consider the time you train or compete each day and choose food you will enjoy eating. Refer to the food lists and information in each section as you develop your plan.

3. Write your plan here:

Example: I will plan the night before to pack a container of Greek yogurt and a bagel with my gym clothes to make sure I eat a CHO and protein rich breakfast after my early morning workout.

4. Many things can prevent a plan for succeeding - they are called "barriers". List two barriers that might prevent your plan from succeeding. How will you solve each? If necessary, revise your plan to include solutions.

BARRIERS	SOLUTIONS
1.	1.
2.	2.

Example: BARRIER: I don't have small tubs of Greek yogurt. SOLUTION: Purchase packs of small tubs of Greek yogurt.



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