Carbs & Protein for Athletes

Student Wellness Centre

student.wellness@usask.ca
wellness.usask.ca
306-966-5768

University of Saskatchewan

Why Eat Carbohydrates

It is an important goal for all athletes to provide their bodies with appropriate fuels to maintain and enhance their performance. **Carbohydrates are a major source for the athlete.**

Most athletes need to consider the amount of time between eating and performance when choosing foods. Carbohydrate feedings before exercise can help to restore glycogen stores, which may be called upon during prolonged training and in high-intensity competition.

Carbohydrate meals should be low fat, easily digested, and tolerated by the athlete. Fat intake should be limited because it delays stomach emptying time and takes longer to digest.

For athletes who have a moderate exercise (approximately, an 1-hour of moderate training each day) 5-7g/kg BW/d. for example for an athlete with 70kg body weight preferred.

Carbohydrate for daily consumption is between 350g-500g each day. For high exercise (approximate, 1-3hours high-intensity training each day) suggested that 6-10g/kg BW/d. the amount of Carbohydrates needed for a 70kg weight is 420gr-700gr per day. This

regulator helps athletes not to exceed their carbohydrates use every day.

Before Exercise

3-4 hours before competition
(~700 kcal or 150 grams of carbs)

- 2 servings of fruits and vegetables, 2 servings of grain products, 1 serving of a lower fat milk product, and 1 serving of a lean meat product.

Ideas to build your meal: fresh fruit, fruit or vegetable juice, baked potatoes, cereal with low-fat milk, low-fat yogurt, bread or bagel with peanut butter, lean meat, low-fat cheese, or spaghetti with tomato sauce.

2-3 hours before competition
(~300-400 kcal or 90 grams of carbs)

- 1 serving fruit and vegetables and 2 servings of grain product.

Ideas to build your meal: fresh fruit, fruit or vegetable juice and bread, bagel, English muffin (with limited amounts of margarine, butter, or cream cheese), oatmeal, or pancakes.

1 hour or less before competition
(~100 kcal or 30 grams of carbs)

- 1 serving of fresh fruit or juice or 1½ cup of a sports drink.

Note: protein plays a minor role in providing energy for the body during exercise.

The Pre-exercise Meal

The pre-exercise meal provides two main purposes:

1. It keeps the athlete from feeling hungry before and during exercise and
2. It maintains optimal levels of blood glucose for the exercising muscles.

The pre-exercise meal should be eaten 1 to 4 hours before exercising to allow time for digestion and absorption and complete emptying of the stomach.

Consuming Carbohydrates During Exercise

Carbohydrate intake during exercise improves performance when the exercise lasts longer than one hour. **If exercise is less than one hour, ingesting carbohydrates during exercise appears to have no benefits in most individuals.**

If carbohydrate feeding starts during exercise, it should be continued

Homemade Sports Drink

- 3½ cups water,
- ½ cup orange juice,
- 2½ tablespoons honey or other sugar, and
- ¼ teaspoon salt.

throughout the exercise. Discontinuing partway through can result in fatigue or decreased performance. More carbohydrates are not better. Nausea, abdominal cramps, and diarrhea may occur if large amounts of carbohydrate are consumed.

Here are some ideas:

- **Fluids:** the rate of ingestion should be about ½-1 cup every 15-20 minutes (26-30 g every 30 minutes). Drinks include sport drinks, diluted juice, decarbonized regular pop, and sweetened herbal tea.
- **Gels:** the rate of ingestion should be 30-40 g every 30 minutes (one gel pack every 30 minutes)
- **Solids:** about 30-40 g, such as ¼ bagel, every 30 minutes **and** drink plain water.

Carbohydrate feeding does not prevent fatigue, it simply delays it.

Consuming Carbohydrates after Exercise

Appetite is usually suppressed after exercise. Fluids, such as a yogurt smoothie or a sports drink, are an option for those who cannot consume solid carbohydrates. Include some protein as well.

Energy is stored as glycogen in muscles. It takes at least 20 hours to restore muscle glycogen after intense exercise. Restoration is enhanced by consuming carbohydrates in the first 15-30 minutes immediately after exercise. Delaying carbohydrate intake after exercise will reduce glycogen restoration.

At least 60-90 g of carbohydrates should be consumed within 15-30 minutes after exercise to maximize muscle glycogen stores. Ideal foods include pasta, sandwiches, yogurt, crackers, bagels, granola bars, or, if preferred, a sports drink. The addition of a small amount of protein will further enhance glycogen restoration.

Athletes should not consume any alcohol during the recovery period.

Alcohol will delay the restoration of glycogen.

Definitions

Athletes: for this purpose an athlete is defined as one who participates in sport activity, with emphasis on cardio-respiratory endurance training (highly aerobic).

Exercise: endurance, strength, and flexibility activities are all components of exercise that keep a person fit and healthy.

Fatigue: the body's energy reserves are exhausted and waste products, such as lactic acid, have increased. The athlete will not be able to continue activity at the same intensity or rate.

Glycogen: a stored form of glucose in the liver and muscle.

Daily Protein Recommendation

Curious about how many grams of protein you need in an average day? Most of us need about **0.8 grams per kilogram of body weight**. Let's break that down.

For example, someone who weighs 170 lbs. (77 kg) would need 62 grams protein/day.

Note: If you consistently do intense, long workouts, resistance training, or weight-bearing activity, you may need

closer to 1.0 g or possibly up to 1.2-1.8 g per kilogram of body weight.

Alternatives to Protein Supplements

Most protein supplements contain about 10-12 grams per ½ scoop, but this can vary. Aim for 15-25 grams of protein at each snack or meal (or about ¼ of a dinner plate according to Canada's Food Guide) and try to space protein throughout the day. These tasty snack ideas provide about the same amount of protein (10-20 grams), plus other nutrients and flavours:

- small handful of almonds and a piece of fruit
- ¾ cup Greek yogurt and 2 tablespoons granola
- ¾ cup regular yogurt, 1 tablespoons chia seeds, and blackberries
- 2 rice cakes with 2 tablespoons nut butter
- 1 hardboiled egg and 2 thin slices of cheese on a piece of whole grain toast
- ¼ cup cottage cheese and a piece of fruit

- ¼ can of tuna, lemon juice, and a bit of mayo on 4 plain whole grain crackers
- 1 cup shredded wheat (add 1 teaspoon sugar for flavour) with ¾ cup cow / soy milk (rice, oat, hemp, coconut, and almond milk are all low in protein)
- 40 grams roasted chicken (the size of half a deck of cards) in a small whole grain tortilla wrap with lettuce and mustard
- 1 package plain instant oats and 1 tablespoon hemp seed (can add 1 tsp. sugar for flavour)
- ½ cup hummus and sliced veggies

Note: Amounts given are guidelines only. **You do not need to measure your food; estimating is fine**.

Protein Supplement questions to ask

Will it help me gain muscle? Taking protein supplements alone will not build muscle. It is the **resistance activities** (exercise) that will maintain or develop muscles *when* you have an adequate amount of protein and total energy (calories) in your diet.

Protein supplements **do** provide **protein** and **calories**.

Are protein supplements safe? If you decide a protein supplement is something you want to add to your diet, research shows that protein supplements are **generally not harmful when taken at the recommended amount**. Taking more than recommended on the product for an extended period of time can cause strain on your kidneys, especially if you consume a large amount of protein from food and/or already have existing kidney problems.

What if I'm pregnant breast-feeding? there is not enough reliable information about the safety of taking protein supplements if you are pregnant or breast-feeding. Talk with a nurse or doctor if you are considering protein supplements while pregnant or breast-feeding.

Are protein supplements expensive? The price of protein supplements can vary quite a bit. Depending on the food and supplement you are comparing, the cost of one gram of protein from supplements could be more, the same, or less than a given food.

Will a supplement put me over my daily limit? It might. Most of us, even

vegetarians and athletes, get enough protein from food. One risk of taking protein supplements is eating a diet that is too high in one food group and disregarding the importance of nutrients from the others. This can be a potential risk for nutrient deficiency. Food provides other nutrients that you often will not find in protein supplements (e.g., milk has calcium, vitamin D, and riboflavin; nuts and beans contain fibre, iron, and B vitamins).

Anything else to be concerned about? Fibre. Some protein supplements are fortified with dietary fibre, others are not. If yours isn't keep whole grains, vegetables, and fruit a major part of your diet.

Choosing Supplements

Look for a natural health product number (NPN) or a drug identification number (DIN) on products. These numbers certify that the product has been approved in Canada.

Beware of these claims

Product	Claim	Evidence
Caffeine	● Burns fat ● Protects carbohydrate stores ● Energizes	● Does not burn fat ● Does not protect carbohydrate stores ● Increases mental alertness
Carnitine	● Burns fat	● Does not burn fat
Creatine	● Increases lean body mass ● Increases strength	● Increases total body and lean mass ● Increases strength, but is not useful in endurance exercise

Beware: being "natural" or approved for sale does not guarantee it is risk-free!

Quick Facts for Athletes

- Consuming protein with carbohydrates immediately after exercise will increase the restoration rate of muscle glycogen

stores. However, protein does not enhance the restoration rate of muscle glycogen stores when intakes of carbohydrate are insufficient.
- Most athletes' regular diets provide ample protein. Even if there is an increased need for protein in a particular sport, the increases are easily met by their typical diet. Intakes of additional protein beyond the recommended levels for athletes' does not increase strength or enhance performance.
- Protein plays a minor role in providing energy for the body during exercise.

Additional Resources

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