

Protein

For Active Canadians



How much do you need?

Protein 101

Proteins are the main functional and structural building blocks of every cell in your body. Each protein itself is made up of a variety of smaller components called amino acids.¹

- Protein is essential for overall health and provides energy.¹
- You need to get enough protein every day to support body growth and maintenance.¹



How does protein support your workout?

A balanced diet with adequate amounts of protein is important to support physical activity goals.²

Protein helps to:

- Repair muscle damage
- Build muscle
- Provide some amino acids for fuel²

Recommendations for protein (19 years and older)^{*1}

The recommendations for protein are expressed as grams of protein per kilogram of body weight per day (g/kg/day).



Women need 0.8 g/kg/day

Pregnant and lactating women need 1.1 and 1.3 g/kg/day, respectively.

Men need 0.8 g/kg/day

Example: for a 70 kg person: $70 \text{ kg} \times 0.8 \text{ g/kg} = 56 \text{ grams of protein per day}$

*Conversion of pounds (lb) to kilograms (kg):
Body weight in lb \div 2.2 = weight in kg*



Physically active individuals do not require more protein than the RDA.¹

However, very active athletes, such as those who train intensely every day or for several hours a day, do need more protein.²

- Endurance-trained athletes: 1.2–1.4 g/kg/day
- Strength-trained athletes: 1.2–1.7 g/kg/day

*Total calorie intake from fat, carbohydrates and protein must be sufficient to meet energy needs for protein to be used optimally for growth and maintenance.²

Can you get too much protein?

On average, Canadians consume 17% of their total calories from protein but healthy adults can safely consume up to 35% without risk of negative health effects.^{1,2}

When overall energy needs are met, excess calories from protein may be stored as body fat. High-protein diets may also be higher in fat and low in important nutrients such as carbohydrates and fibre.

Those with chronic kidney disease and certain genetic disorders do need to monitor their protein intake and should consult with a Registered Dietitian.¹

Can you have too little protein?

Most Canadians get enough protein.³ However:

- If you are cutting calories to lose weight, are avoiding all foods from a certain food group or are elderly, you may be at risk of not getting enough.^{1,4}
- Not getting enough protein will affect how you perform and recover from physical activity as it negatively impacts the ability to maintain and build muscle.



Is it important to consume protein before, during or after a workout?

- In the two to four hours *before* exercise it is recommended that you have a small meal or snack that is moderate in protein, high in carbohydrates and low in fat to provide energy and prevent hunger.²
- Research is unclear whether the inclusion of protein-containing snacks or beverages *before or during* exercise improves performance.²
- *After* exercise having protein as part of a carbohydrate-based meal or snack will support muscle building and repair.²



Sources of Protein

Is there a difference between animal and plant protein?

There are over 20 amino acids in dietary protein. Nine are “essential” amino acids that our bodies cannot make; we must get these from our diet. Eleven amino acids are called “non-essential” because our bodies are able to make them.¹

Dietary proteins from **animal** sources such as meat, fish and milk products contain all nine essential amino acids and are considered *complete proteins*.¹

Most **plant** sources of protein such as legumes, nuts and grains tend to have poor amounts of one or more essential amino acids and are considered *incomplete proteins* (soy is one exception).¹

Check out the list of good food sources of protein on page 6.

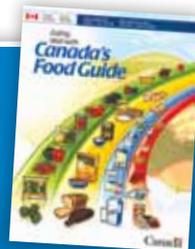
The secret to building muscle

To build muscle you need a balanced diet with enough protein, carbohydrates, fat and energy combined with a consistent and progressive strength-training routine. Rather than building muscle, *excess* protein is stored as body fat or used as fuel.⁴

Protein and *Canada's Food Guide*

Following *Canada's Food Guide* will help you meet your protein needs.

- Food sources of protein are the best way to get the protein your body needs.
- Foods and beverages from the Meat and Alternatives and Milk and Alternatives food groups in *Canada's Food Guide* provide the best sources of dietary protein.
- Adults need two or three servings every day from the Milk and Alternatives food group, depending on age and gender (e.g., milk and flavoured milk, yogurt, cheese, fortified soy beverage).
- Adults need two or three servings every day from the Meat and Alternatives food group depending on age and gender (e.g., lean meats, poultry, fish, eggs, tofu, legumes, nuts and seeds).



The scoop on protein powders

Protein powders (e.g., whey, soy) and amino acid supplements are no better than food sources of protein for gaining muscle, particularly if you are getting enough daily calories to meet energy needs.²

Most Canadians get enough protein from their food anyway.³ Plus, food is less expensive, tastier and more nutritious than supplements.

Both carbohydrates and protein are important parts of a post-workout meal or snack.

Check out these post-workout snack and meal ideas that pack a protein punch.

- Yogurt with berries and granola
- Chocolate milk and a banana
- Cheese and crackers
- Trail mix with nuts and seeds
- White or flavoured milk
- Hard-boiled egg and orange juice
- Peanuts, almonds or roasted soybeans
- Cereal and milk
- Sandwich with tuna, meat, cheese or peanut butter filling
- Fruit smoothies
- Grilled cheese with tomato
- Vegetarian chili with cheese



High-performance pasta salad

Ingredients:

- 1 package (375 g) rotini pasta, cooked and cooled
- ⅓ cup (80 mL) orange juice
- ⅓ cup (80 mL) olive oil
- ¼ cup (50 mL) rice vinegar
- 1 teaspoon (5 mL) zest of orange
- 1 tablespoon (15 mL) liquid honey
- ½ cup (125 mL) chopped dried apricots
- ½ cup (125 mL) chopped dates
- ½ cup (125 mL) sliced almonds
- 1 unpeeled apple, diced
- ¼ cup (50 mL) chopped raw baby spinach
- 7 oz (210 g) Swiss-style or Mozzarella cheese, diced



Directions:

1. Whisk together orange juice, olive oil, rice vinegar, orange zest and honey.
2. In a larger bowl combine pasta, apricots, dates, almonds, apples, spinach and cheese.
3. Add dressing and mix well.

Makes 4 servings, each with 18 grams of protein.

Ideas for Action

- Choose good food sources of protein.
- Include good food sources of protein at breakfast, lunch and dinner.
- Choose snacks that pack a protein punch (see ideas on page 5).
- Have a glass of milk with meals or snacks.
- Prepare snacks or meals with both carbohydrates and protein to take with you for after your workout.
- Aim to meet the recommendations from *Canada's Food Guide*.
- For more information regarding protein consumption, see a Registered Dietitian.

Good food sources of protein

FOOD/BEVERAGE	PROTEIN QUANTITY
Beef, cooked (75 g, 125 mL, ½ cup)	23 g*
Soybeans, boiled (175 mL, ¾ cup) or firm tofu (150 g, ¾ cup)	21 g
Poultry, cooked (75 g, 125 mL, ½ cup)	20 g*
Fish, cooked (75 g, 125 mL, ½ cup)	19 g*
Cottage cheese, 1%, or Ricotta cheese, part skim (175 mL, ¾ cup)	15 g
Roasted soybeans (60 mL, ¼ cup)	15 g
Shellfish (serving size varies)	14 g*
Eggs (2 large)	12 g
Other legumes, e.g., beans, chickpeas, lentils (175 mL, ¾ cup)	12 g*
Cheese, various (50 g)	11 g*
Yogurt, 1–2% M.F. (175 mL, ¾ cup)	10 g
Milk and chocolate milk (250 mL, 1 cup)	9 g
Peanut butter (30 mL, 2 tablespoons)	8 g
Peanuts, almonds, pistachios, mixed nuts and seeds (60 mL, ¼ cup)	8 g*
Soy beverage, unsweetened (250 mL, 1 cup) or soft tofu (150 g, ¾ cup)	7 g

*Mid-value from range of protein quantity given for this food.⁵

Plan your protein foods for a three-day period to ensure you are getting enough.

1. Calculate the amount of protein you need each day.

_____ kg x _____ g/kg*

= _____ g protein per day

*Adults need 0.8 g/kg/day
(1.1 and 1.3 g/kg/day for pregnant and lactating women)

Conversion of lb to kg:

_____ lb ÷ 2.2 = _____ kg

My recommended goal:

_____ grams of protein per day**

2. Select foods you enjoy from the *Good food sources of protein* table to meet your goal.

3. Use the Ideas for Action on page 6 to help you plan.

Time	Example	Day 1	Day 2	Day 3
Breakfast	Milk, 250 mL (1 cup) 1 egg			
	9 g + 6 g = 15 g protein			
Snack				
Lunch	Tuna, 125 mL (½ cup)			
	19 g protein			
Snack	Cheese, 50 g			
	11 g protein			
Dinner	Kidney beans, 125 mL (½ cup)			
	8 g protein			
TOTAL	53 g** protein			

With combination foods identify the protein sources and how much of each there is (e.g., cheese on a grilled cheese sandwich, kidney beans in chili).

** It's OK if you consume more protein than your recommended goal; healthy individuals can safely consume about one-third of their calories from protein. But remember that when energy needs are being met excess calories may be stored as fat.^{1,4}

For personalized advice, consult a Registered Dietitian (RD) with expertise in sports nutrition.

Visit dietitians.ca to find an RD in your area.

This is part of a series of informative resources for physically active Canadians developed in partnership with the Registered Dietitians at Dairy Farmers of Canada and CSEP Certified Exercise Physiologists®.



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