

PROTEIN

FACTSHEET

Proteins are complex organic compounds. The basic structure of protein is a chain of amino acids. They provide energy for the body. Protein is an important component of every cell in the body. Hair and nails are mostly made of protein. Your body uses protein to build and repair tissues. You also use protein to make enzymes, hormones, and other body chemicals. Protein is an important building block of bones, muscles, cartilage, skin, and blood.

Along with fat and carbohydrates, protein is a “macronutrient,” meaning that the body needs relatively large amounts of it. Vitamins and minerals, which are needed in only small quantities, are called “micronutrients.” But unlike fat and carbohydrates, the body does not store protein, and therefore has no reservoir to draw on when it needs a new supply.

Types of protein

Proteins are made up of amino acids. There are 20 different amino acids that join together to make all types of protein. Some of these amino acids can't be made by our bodies, so these are known as essential amino acids. It's essential that our diet provide these.

In the diet, protein sources are labeled according to how many of the essential amino acids they provide:

- A complete protein source is one that provides all of the essential amino acids. You may also hear these sources called high quality proteins. Animal-based foods; for example, meat, poultry, fish, milk, eggs, and cheese are considered complete protein sources.
- An incomplete protein source is one that is low in one or more of the essential amino acids. Complementary proteins are two or more incomplete protein sources that together provide adequate amounts of all the essential amino acids.
- Every function in the living cell depends on proteins.
- Motion and locomotion of cells and organisms depends on contractile proteins. [Examples: Muscles]
- The catalysis of all biochemical reactions is done by enzymes, which contain protein.
- The structure of cells, and the extracellular matrix in which they are embedded, is largely made of protein. [Examples: Collagens] (Plants and many microbes depend more on carbohydrates, e.g., cellulose, for support, but these are synthesized by enzymes.)
- The transport of materials in body fluids depends of proteins. [Blood]
- The receptors for hormones and other signaling molecules are proteins.

List of High-Protein Foods and Amount of Protein in Each

Beef

- Hamburger patty, 4 oz – 28 grams protein
- Steak, 6 oz – 42 grams
- Most cuts of beef – 7 grams of protein per ounce

Chicken

- Chicken breast, 3.5 oz - 30 grams protein
- Chicken thigh – 10 grams (for average size)
- Drumstick – 11 grams
- Wing – 6 grams
- Chicken meat, cooked, 4 oz – 35 grams

Fish

- Most fish fillets or steaks are about 22 grams of protein for 3 ½ oz (100 grams) of cooked fish, or 6 grams per ounce
- Tuna, 6 oz can - 40 grams of protein

Pork

- Pork chop, average - 22 grams protein
- Pork loin or tenderloin, 4 oz – 29 grams
- Ham, 3 oz serving – 19 grams
- Ground pork, 1 oz raw – 5 grams; 3 oz cooked – 22 grams
- Bacon, 1 slice – 3 grams
- Canadian-style bacon (back bacon), slice – 5 – 6 grams

Eggs and Dairy

- Egg, large - 6 grams protein
- Milk, 1 cup - 8 grams
- Cottage cheese, ½ cup - 15 grams
- Yogurt, 1 cup – usually 8-12 grams, check label
- Soft cheeses (Mozzarella, Brie, Camembert) – 6 grams per oz
- Medium cheeses (Cheddar, Swiss) – 7 or 8 grams per oz
- Hard cheeses (Parmesan) – 10 grams per oz

Beans (including soy)

- Tofu, ½ cup 20 grams protein
- Tofu, 1 oz, 2.3 grams
- Soy milk, 1 cup - 6 -10 grams
- Most beans (black, pinto, lentils, etc) about 7-10 grams protein per half cup of cooked beans
- Soy beans, ½ cup cooked – 14 grams protein
- Split peas, ½ cup cooked – 8 grams

Nuts and Seeds

- Peanut butter, 2 Tablespoons - 8 grams protein
- Almonds, ¼ cup – 8 grams
- Peanuts, ¼ cup – 9 grams
- Cashews, ¼ cup – 5 grams
- Pecans, ¼ cup – 2.5 grams
- Sunflower seeds, ¼ cup – 6 grams
- Pumpkin seeds, ¼ cup – 8 grams
- Flax seeds – ¼ cup – 8 grams

Recommendations

It's recommended that 10–35% of your daily calories come from protein. Below is the Recommended Dietary Allowances (RDA) for different age groups.

Recommended Dietary Allowance for Protein	
	Grams of protein needed each day
Children ages 1 – 3	13
Children ages 4 – 8	19
Children ages 9 – 13	34
Girls ages 14 – 18	46
Boys ages 14 – 18	52
Women ages 19 – 70+	46
Men ages 19 – 70+	56

Sports Nutrition - Protein

Athletes need protein primarily to repair and rebuild muscle that is broken down during exercise and to help optimizes carbohydrate storage in the form of glycogen. Protein isn't an ideal source of fuel for exercise, but can be used when the diet lacks adequate carbohydrate. This is detrimental, though, because if used for fuel, there isn't enough available to repair and rebuild body tissues, including muscle.

Recommended Daily Protein Intake

- The average adult needs 0.8 grams per kilogram (2.2lbs) of body weight per day.
- Strength training athletes need about 1.4 to 1.8 grams per kilogram (2.2lbs) of body weight per day
- Endurance athletes need about 1.2 to 1.4 grams per kilogram (2.2lbs) of body weight per day

References:

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