

Protein Power: The Functional Nutrition Benefits of Nature's Building Blocks

Protein... it's all the rage! And as a key part of our Fat/Fiber/Protein principle for eating for health and healing, it deserves our attention and investigation.

Protein is one of the essential macronutrients required by the human body to function properly. It's composed of smaller units called *amino acids*, which are often referred to as the "building blocks" of life. Amino acids are vital for various physiological processes, including muscle building, tissue repair, enzyme production, hormone regulation, and immune system function.

Proteins play a crucial role in maintaining the structure, function, and integrity of cells, tissues, and organs. They're involved in almost every aspect of the body's functioning and are essential for growth, development, and repair (ie. nutrition!)

In this handout, we'll explore the health benefits of proteins, look at the most beneficial food and culinary sources, and answer some frequently asked questions that arise regarding protein intake.



THE HEALTH BENEFITS OF PROTEIN

Consuming an adequate amount of protein offers a wide range of health benefits. Here are some of the key health benefits of including protein in your diet:

- **Muscle growth and repair:** Protein is essential for building and repairing muscles. It provides the necessary amino acids that aid in muscle tissue synthesis and recovery after exercise or physical activity.
- **Weight management:** Protein can help with body composition by promoting satiety. It can also help maintain lean body mass.
- **Bone health:** Protein contributes to bone health by supporting the production of collagen, a critical component of bones, and aids in the absorption of calcium and other minerals.
- **Hormone production and regulation:** Many hormones in the body are made from amino acids that are naturally derived from dietary protein. These hormones play essential roles in metabolism, growth, mood regulation, and other body functions.
- **Immune system support:** Protein is crucial for the proper functioning of the immune system. It helps produce antibodies and immune cells that protect the body against infections and diseases.
- **Enzyme activity:** Enzymes are proteins that facilitate biochemical reactions in the body. They're essential for digestion, metabolism, and other physiological processes.
- **Energy:** While carbohydrates are the body's primary energy source, protein can be broken down and used for energy when carbohydrate intake is limited.
- **Blood sugar regulation:** Including protein in meals and snacks can help slow the absorption of sugars into the bloodstream, leading to more stable blood sugar levels and reducing the risks of both blood sugar and insulin spikes.
- **Skin, hair, and nail health:** Protein contributes to the formation of collagen and keratin, which are essential for healthy skin, hair, and nails.
- **Mood and cognitive function:** Proteins play a role in neurotransmitter synthesis, affecting mood, cognition, and mental clarity.
- **Wound healing:** Protein is crucial for tissue repair and wound healing. It provides the necessary building blocks for new cell growth.



PROTEIN SOURCES

ANIMAL SOURCES *(organic, grass-fed, and wild-caught when possible)*

- **Eggs:** A complete protein source rich in essential amino acids, vitamins, and minerals.
~6 grams per serving (1 egg)
- **Poultry (Chicken, Duck, Turkey):** Choose organic, free-range, or pasture-raised options when possible for better nutrient quality and sustainability considerations.
~7 grams per serving (1 oz)
- **Fish and Shellfish:** Opt for wild-caught varieties when possible to avoid potential contaminants and maximize omega-3 fatty acids.
~6–7 grams per serving (1 oz)
- **Red Meat (Beef, Bison, Lamb, Pork, Wild Game):** Select grass-fed, pasture-raised, and organic choices when possible for higher levels of omega-3s and nutrients.
~7 grams per serving (1 oz)

Note: Choose animal protein sources that align with personal values and consider supporting practices that promote animal welfare and sustainable agriculture.

DAIRY *(if tolerated)*

If dairy is well-tolerated, opt for cultured options like yogurt and kefir for beneficial probiotics. Choose organic and grass fed when possible. Remember that those with lactose intolerance, dairy allergy or sensitivity, or specific dietary restrictions, should choose alternatives to cow dairy.

- Full-fat or Raw Milk *~7–8 grams per serving (1 cup)*
- Full-fat Yogurt *~14 grams per serving (5 oz)*
- Hard Cheese *~14 grams per serving (½ cup)*
- Cottage Cheese *~12 grams per serving (½ cup)*

PLANT-BASED PROTEINS

- **Soy** (if tolerated; Non-GMO and ideally fermented)
 - tofu *~10 grams per serving (½ cup)*
 - tempeh *~15 grams per serving (½ cup)*
 - miso *~2 grams per serving (1 Tbspn paste)*
 - natto *~15 grams per serving (½ cup)*
 - edamame *~8 grams per serving (½ cup shelled)*



- **Beans and Legumes**

Excellent sources of plant-based protein, fiber, and essential nutrients.

~8–16 grams per serving (1 cup, cooked), depending on bean

- **Green leafy vegetables**

~2–4 grams per serving (1 cup, cooked); depending on green

PROTEIN POWDERS

Collagen and whey protein powders can be beneficial for joint health, muscle repair, and skin support. Other protein powders can help boost beneficial protein intake. When choosing a protein powder, it's essential to consider individual dietary preferences, tolerances, and health goals.

- **Collagen protein powder**

~12 grams per scoop/serving

Favorite brands include Further Foods, Vital Protein, Great Lakes

- **Whey protein powder**

~25 grams per scoop/serving

Favorite brands include Designs For Health, PaleoValley, Tera's

- **Plant protein powder**

- Rice protein powder

~23 to 25 grams per scoop/serving

- Pea protein powder

~25 grams per scoop/serving

- Hemp protein powder

~25 grams per scoop/serving

Favorite brands include Sunwarrior, Designs For Health, Metagenics, Garden of Life

INSECTS

Insects are a sustainable protein source, rich in essential nutrients with a low environmental impact. Their protein content varies depending on the insect.

PROTEIN SOURCES TO MINIMIZE/AVOID

- **Processed Proteins:** Minimize consumption of jerky, bacon, deli meat, sausage, and protein bars due to their added preservatives and potentially oxidized fats.
- **High Mercury Fish:** Reduce intake of fish known to have high mercury levels, such as swordfish and king mackerel.
- **Fried Meat:** Avoid deep-fried or heavily processed meats. They may contain harmful substances.
- **Processed foods:** Stay away from highly processed meat alternatives with artificial additives.



PROTEIN FREQUENTLY ASKED QUESTIONS

Q: What are the essential versus the non-essential amino acids?

A: Essential amino acids cannot be produced by the body and must be obtained from the diet, while nonessential amino acids can be synthesized by the body.

There are 9 **essential amino acids** that we must obtain through foods to meet the body's needs. Each of these amino acids has specific roles in various physiological processes, such as supporting muscle growth and repair, aiding in hormone production, and contributing to immune system function. Consuming a variety of protein sources, both from animal and plant-based foods, ensures that we obtain all essential amino acids in adequate amounts. The 9 essential amino acids include:

- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Phenylalanine
- Threonine
- Tryptophan
- Valine

While we do not need to consume the **non-essential amino acids** through our diet, because the body can create them on their own through various metabolic pathways, they still require adequate dietary protein intake for their synthesis. The non-essential amino acids include:

- Alanine
- Asparagine
- Aspartic Acid
- Cysteine
- Glutamic Acid
- Glutamine
- Glycine
- Proline
- Serine
- Tyrosine
- Arginine

Note: Arginine is conditionally essential, meaning it may become essential under certain circumstances, such as during periods of growth or illness.



Q: How can we ensure adequate protein intake on a vegetarian or vegan diet?

A: If eating a vegetarian or vegan diet, it's necessary to consume different plant-based protein sources to create complete protein profiles and to include a variety of legumes, nuts, seeds, and whole grains to meet protein needs.

Q: What are daily protein requirements

A: It depends! Daily protein intake requirements can vary based on individual factors such as age, gender, activity level, and specific health goals and existing conditions. Protein needs are typically expressed in grams per kilogram of body weight per day (g/kg/day).

Baseline Protein Intake: The baseline protein intake is the recommended amount of protein that an average, sedentary individual needs to maintain overall health and meet basic bodily requirements.

- The general guideline for the *baseline* protein intake is around 0.8 grams of protein per kilogram of body weight per day.
- For example, for a person weighing 70 kilograms (154 pounds), the *baseline* protein requirement would be approximately 56 grams per day (70 kg x 0.8 g/kg = 56 g/day).

Protein Intake for Athletic Performance: For folks engaged in regular physical activity, especially athletes involved in endurance or strength-based sports, protein needs are higher than the baseline requirement.

- The range for protein intake for athletic performance is typically between 1.2 to 2.2 grams of protein per kilogram of body weight per day.
- The exact amount within this range depends on the individual's training intensity, exercise duration, and specific performance goals.
- Endurance athletes may lean towards the lower end of the range, while strength athletes or those aiming to build muscle may require protein towards the higher end of the range.

Protein Intake during the Building Phase: A building phase refers to a period when individuals are actively working to increase muscle mass, either through resistance training or other strength-building exercises as well as during any period of intense healing (such as after surgery).

- During this phase, protein intake becomes particularly important to support muscle repair and growth.
- Similar to the protein intake for athletic performance, the recommended range for protein intake during the building phase is between 1.2 to 2.2 grams of protein per kilogram of body weight per day.
- Again, the exact amount within this range will depend on myriad factors and this should be used only as a general guideline.



Q: What's a protein serving size?

A: A serving size of a protein is roughly the size of your palm or a deck of playing cards.

Q: What are common signs and symptoms of protein deficiency?

A: Because protein plays a critical role in various physiological processes (as noted above), protein insufficiency can manifest in a number of ways. That's why we like to include protein in every meal or snack (Fat/Fiber/Protein). When considering signs and symptoms related to protein insufficiency, you might consider:

- muscle loss and weakness
- fatigue and low energy
- poor immune function
- slow wound healing
- swelling and edema
- hair and nail issues
- poor skin health
- mood changes and mental fatigue
- blood sugar imbalances

Q: What are the most common reasons for protein insufficiency?

A: When considering protein insufficiency, think about the following:

- inadequate protein intake (always start here)
- digestive issues impacting protein intake and nutrient breakdown and absorption
- vegan or vegetarian diets that may limit protein variety and sources

Q: Are there situations where a low or lower protein diet may be recommended or required?

A: Yes — there is never a one-size-fits-all solution for health and healing. Individual health conditions, medical needs, and specific circumstances may require *medical interventions* that include dietary restrictions. While protein is essential for various bodily functions, there are instances where reducing protein intake might be beneficial or necessary. Some of these medical situations (which should all be managed in conjunction with a medical professional) include:

- **Chronic Kidney Disease (CKD):** In individuals with advanced CKD, the kidneys may have difficulty processing and excreting waste products from protein metabolism. In these cases, a low-protein diet may be prescribed to reduce the workload on the kidneys and slow down the progression of kidney damage. This should be implemented with the support of a medical practitioner to ensure adequate intake of essential nutrients while managing kidney function.
- **Liver Disease:** For individuals with liver disease, especially those with cirrhosis or hepatic encephalopathy, a lower protein intake might be recommended to decrease ammonia



production and reduce stress on the liver. Again, this should be managed carefully and monitored by a healthcare professional to prevent malnutrition.

- **Metabolic Disorders:** Some individuals may have inherited metabolic disorders that affect the body's ability to process specific amino acids or protein components. In such cases, a specialized low-protein diet may be required to manage the condition and prevent complications.

