

Protein supplements

by author: Natalie Cajic

Athletes of all types are turning to protein supplements to boost their total dietary protein intake. In fact, protein powder is one of the best-selling sports supplements. With so many choices, though, how do you choose the right one?

Protein is one of our most essential nutrients for optimal health. It forms the structural basis of our muscle tissue and is the major component of enzymes. It can also serve as an energy source during prolonged periods of exercise.



Getting an adequate amount of dietary protein is crucial for everybody, and the North American diet has plenty of options for obtaining this important macronutrient. Foods high in protein include meats, fish, eggs, dairy products, and plant sources such as legumes, nuts, and grains.

Protein powder to the rescue

It's not always convenient, though, for busy athletes to down a protein-packed meal after a workout. Supplements such as protein powder offer a ready solution. They offer a convenient means to add additional protein to the diet while providing a balanced mixture of protein, carbohydrates, and fat. Some even contain supplemental vitamins and minerals.

As a bodybuilder, fitness athlete, and model, Wendy Lindquist eats five or six times a day to maintain even blood sugar levels and keep her metabolism humming, but more importantly, to ensure her body has more than adequate protein to sustain her muscle mass. She says protein makes up most of her dietary calories when she is in pre-competition mode.

“When most people picture eating five or six times a day, they imagine big sit-down meals. But most of us don't have time to sit down to eat six times a day,” she tells alive. “I'm always on the run, and protein shakes are ideal because they're quick.”

Choosing the right protein powder can be confusing and more than a bit overwhelming. From casein, egg, soy, and whey to plant-based sources such as hemp, pea, and rice, the choices are many.

Protein quality

Brendan Brazier, a vegan triathlete, author, and formulator of vegan food products, says digestibility is a key factor when comparing protein quality. “Protein in raw plant foods is much easier for the body to break down into amino acids, which means less energy is required for digestion,” he says.

A widely accepted method of evaluating protein quality is the protein digestibility corrected amino acid score (PDCAAS), proposed by the Food and Agriculture Organization/World Health Organization.

The PDCAAS uses human amino acid requirements to calculate the amino acid score. The score is determined by comparing the amino acid profile of the food in question against a standard amino acid profile, with 100 as the highest possible score.

Protein primer

Casein

Casein protein is made from cows' milk and is considered a slow-release protein because the casein gels in the stomach acid environment, taking longer to break down. Casein is rich in glutamine, an amino acid that helps stimulate protein synthesis, but it is also high in lactose and sodium so it is not a good choice for people with lactose intolerance or high blood pressure. Its PDCAAS is 95 percent.

Egg

Many consider egg protein second only to mother's milk for human nutrition. It scores 98 percent using the PDCAAS, but as eggs are one of the top eight food allergens, it is best to avoid if allergies are an issue.

Whey

Whey protein is probably the most prevalent in protein powders; however, read product labels carefully. There are important differences between whey protein concentrates, whey protein isolates, or hydrolyzed whey proteins.

- Whey protein concentrates cost less but are higher in lactose than whey protein isolates. Also, they can vary in protein availability.
- Whey protein isolates have higher protein availability by weight as they are filtered, but this extra process also removes some of the beta-lactoglobulins and lactoferrins that are important immune boosters.
- Hydrolyzed whey protein is processed even more, driving up the cost, but affording the highest levels of protein. This form is easy on the digestive system and has a high absorption rate.

Plant proteins

Protein exists in plant foods, but in smaller concentrations. They may have most of the 20 amino acids required in the human diet but are usually deficient in one or more of the nine essential amino acids.

There are exceptions. Hempseed produces a high-quality protein, complete with all essential amino acids. It is also high in fibre. Soybeans offer complete protein, and when processed properly, soy protein isolate scores 95 to 97 percent in protein digestibility. It is cholesterol free and low in saturated fat.

Other plant proteins found in vegan protein powders include rice, pea, spirulina, and chlorella.

Brazier says the big advantage of plant proteins is their alkalinity. “Animal-based foods tend to be highly acid-forming, which can promote inflammation, reduce immune function, and cause calcium to be pulled from the bones,” he says. “Alkalizing foods, especially those rich in chlorophyll, help expedite recovery and improve functionality.”

Timing

First thing in the morning

Breakfast replenishes lost glycogen stores. Protein shakes containing fruit will help replenish and give an energy boost. Moreover, taking protein in the morning can jumpstart an entire day of calorie burning, as protein requires more energy to digest than other food groups.

Post-workout

Muscles are actively repairing and rebuilding exercise-induced damage as well as replenishing glycogen stores 30 to 60 minutes following a workout. This is a good time for a protein shake.

Calculate your protein needs

Method 1: Current body weight

The recommended daily allowance for protein for adults is 0.8 g of protein per kilogram of body weight. To calculate body weight in kilograms, multiply body weight in pounds by 0.454. Recommendations for athletes range from 1.2 to 1.7 g/kg of body weight per day.

Method 2: Total percentage of calories per day

The Acceptable Macronutrient Distribution Range for protein is 10 to 35 percent of energy for adults. A diet of 1,800 calories per day where 35 percent of calories come from protein gives 157.5 g of protein ($1,800 \times 0.35 = 630$ calories; since 1 g protein = 4 calories, divide protein calories by 4).

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