

Protein Power

Protein is the body's workhorse. It is often promoted as a muscle enlarging substance, yet its function extends far beyond just that. From building and repairing muscles and other body tissues to promoting efficient metabolic processes and providing last resort energy, proper protein intake is essential.

Structure and Function

Proteins are made of amino acids linked together in a chain like fashion. Amino acids are molecules made of carbon, hydrogen, oxygen, and nitrogen combined in different arrangements. We eat proteins in food and our body breaks them down into individual amino acids. The individual amino acids are then resynthesized into various proteins depending on the body's needs. Proteins can serve as enzymes, hormones, structural support, transport molecules or components of the immune system.

- Enzymes: specialized proteins to speed up reactions in the body
- Hormones: regulate metabolism
- Structural Proteins: component of muscles, cell membranes, skin, nails, hair
- Transport Proteins: transport compounds such as oxygen, carbon dioxide, fats, etc. around the body
- Immune System: proteins make up antibodies, compounds that recognize and kill viruses and other foreign invaders

Sources

Protein sources can either be animal or plant based. **Animal sources include lean meats, poultry, fish, milk, yogurt, cheese, and eggs. Plant sources include beans, whole grain bread, grains such as quinoa, lentils, nuts, and nut butters.** The table to the right summarizes the main sources of protein and the amount of protein in grams each contains.

* 3 oz is about the size of a deck of cards.

Recommended Intake

Protein needs vary depending on activity level. A recreational athlete needs about 0.5g/lb. of body weight. For example a 170-pound person would need about 85 grams of protein in a day ($170 \times 0.5 = 85$). Endurance athletes need 0.5-0.7 g/lb. Female strength athletes need 0.5-0.8 g/lb. and males need 0.7-0.9g/lb.

To calculate your daily needs insert your personal information in the equation below.

$$\boxed{} \times \boxed{} = \boxed{}$$

Weight in lbs.

Protein amount per lb.

Total grams protein needed/day

Protein Timing and Pairing

The body is not able to store protein like it does carbohydrates. Thus, protein is degraded and used after it is consumed, which is why it is important to **eat protein at every meal and in a couple snacks spread throughout the day.** Good protein snacks include **string cheese, yogurt, glass of milk, handful of trail mix, peanut butter with bananas or apples, or a hard boiled egg.**

Foods	Protein (grams)
Beef (3oz)	22-27
Pork (3oz)	24-26
Chicken (3oz) -white meat	26
Fish (3oz)	18-22
Tofu (3oz)	6
Eggs (1 egg)	6
Milk and yogurt (1 cup)	8-10
Beans (1/2 cup cooked)	8
Nuts (1/4 cup)	8-10
Peanut Butter (2 T)	8

As far as protein timing relative to exercise, **protein should be consumed 30 to 60 minutes following a workout** for optimal muscle recovery. Muscle recovery and repair is also enhanced if protein is paired with a carbohydrate (about 15 grams) following a workout.

Protein Powders/Shakes & Effects of Excess Protein

Many strength athletes or someone just trying to build muscle turn to protein shakes to aid in muscle building, yet it is a common misconception that eating more protein than the body needs will lead to bigger muscles. The maximum amount the body utilizes per meal is 30g, which is why it is important to spread protein intake throughout the day. Protein shakes can be beneficial if you are on the go or do not eat a lot of meat, but I would stick to just drinking one a day, as excess protein can be harmful. If you drink protein shakes, or add a scoop of protein to smoothies, **use whey protein for best muscle growth and repair**. Whey is the protein in milk and is directly utilized by the muscles instead of being metabolized in the liver like other amino acid containing proteins. So when shopping for protein powders, look for one that is 100% whey protein.

While protein shakes and powders are a convenient way to get protein, be careful not to over consume them. Too much protein can displace other nutrients and indirectly cause low carbohydrate or fat intake. Additionally, many athletes, especially those competing in figure competitions, often restrict carbohydrates and consume excess protein. Carbohydrate restricting is a problem because they are the main source of energy for a working body. Therefore, if carbohydrate sources are inadequate, the body will break down protein for energy and not use it to build muscle, defeating the purpose of eating large amounts of protein in the first place. Just as the body can reconfigure protein into glucose to be used for energy, excess protein can also be converted to fat and stored. Another issue with excess protein intake is fluid loss. When the body has too much protein it breaks it down, reallocates parts to glucose and fat, and strips away the nitrogen. Excess Nitrogen is bad for the body so it is excreted in the urine. Therefore, if the body is trying to rid itself of excess nitrogen, it needs large amounts of water for urination, which can result in dehydration. So make sure to stay hydrated!

Favorite Smoothie Recipe

[Ice, 1 banana, 2 Tbs PB, any kind of milk (but vanilla soy is great!), tons of spinach, cinnamon, 1 scoop vanilla protein powder.]

Peanut Butter Protein Bites

These are great to keep in the fridge and grab for a quick snack on your way out the door. It is fun to play around with this recipe, adding different nut butters, dried fruit, sweeteners etc. The ones below contain...

[Oats, PB, smashed banana, honey, cinnamon, chia seeds, flax seeds, chocolate chips]

I don't really measure exact amounts. It depends on how many you want to make but I would start with 1-2 cups oats and then add the peanut butter and other ingredients until it is a consistency able to be rolled into balls. Place in the fridge and enjoy!

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