

# Protein and Athletic Performance

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Whether you are a powerlifter, endurance athlete, or somewhere in-between, all athletes need to be sure they are eating enough protein. When engaged in intense physical activity, the body needs protein to repair and grow damaged muscles and build more muscle tissue.

## What is protein's role in building muscle?

Proteins are the building blocks of muscle tissue. Eating protein will improve muscle growth and recovery after exercise. After a hard workout, muscles are damaged and need to be repaired so they can come back stronger (build muscle). Without protein this couldn't happen, and you wouldn't get stronger. Proteins are made up of 20 amino acids. Of these 20 amino acids, nine are considered essential and must come from our food. These nine essential amino acids are mostly found in animal products (meat, milk, eggs). Without eating these essential amino acids, you will not be able to repair and rebuild muscle. Proteins also make up the many enzymes



in the body that power the chemical reactions that give us energy, allowing us to workout harder and longer.

## How much protein do I need?

According to the Academy of Dietetics and Nutrition, an athlete needs between 0.55 and 0.91 grams of protein per pound of body weight per day. Each gram of protein contains 4 calories, which is equivalent to calories per gram of carbohydrate. In order to calculate this multiply by 0.55 and 0.91 by your body weight to get your daily protein needs.

To optimize muscle recovery, protein intake should be spaced throughout the day and after workouts. Although it may seem that the more protein one eats, the more muscle they will have, which isn't the case. Athletes who eat a balanced diet of carbohydrates and fat end up utilizing less protein for energy and using more for building and repairing muscle.

## What are good sources of protein?

Protein can be found in a variety of food sources such as meat, fish, dairy, eggs, soy, beans, and certain grains

(Table 1). A quality source of protein will contain all nine of the essential amino acids. Low-fat meat, fish, and eggs are all great sources of the nine essential amino acids. Some good plant sources that contain the essential amino acids are quinoa and soy, although most plant sources lack all nine essential amino acids. In order to overcome this, you simply have to eat a combination of plant sources of protein. Combining beans and rice, peanut butter on whole grain toast or hummus on pita bread will give you a complete, quality protein meal.

## When should I eat protein?

In order to optimize muscle growth and repair, protein should be ingested in constant and equal amounts throughout the day and immediately after a workout. For instance, if you weigh 150 pounds and need to eat 0.91 grams per pound of bodyweight you would need about 137 grams of protein a day. If you ate five meals a day you would need to ensure you are eating about 28 grams of protein per meal to get your daily goal of protein.

## What about protein supplements?

Most athletes can get enough protein through diet alone and do not require any supplements.

Protein powders are only good for times when you don't have food available to eat a meal (after a game or practice). Protein supplements are also helpful right after a workout because they are easily and quickly prepared. Protein powders should not replace meals, but can be used to supplement an already balanced and healthy diet.

## Will eating extra protein give me more muscle?

Even though protein is essential to build and repair muscle, eating more than the body needs doesn't lead to building more muscle. Any extra protein eaten will be used as an energy source or stored as fat. Protein



Table 1. Amount of protein in different food sources.		
Protein source	Serving size	Amount of protein
Chicken breast	3 ounces	23 grams
Pork	3 ounces	22 grams
Beef	3 ounces	21 grams
Yogurt	1 cup	19 grams
Milk	1 cup	8 grams
Tofu	¾ cup	19 grams
Peanut butter	2 tablespoons	7 grams
Mixed nuts	1 ounce	6 grams
Quinoa	½ cup	4 grams
Almond milk	1 cup	1 gram

is not a very good fuel to use as an energy source (carbohydrates are the best energy source, fat is second best). People who eat too much protein are usually not able eat enough carbohydrates and performance suffers.

## How much protein is in my food?

The amount of protein found in foods can vary. Remember, the majority of plant sources of protein do not contain all the essential amino acids. If you do not eat animal products, it's important to eat a variety of plant sources of protein to ensure you are eating all the essential

amino acids. Although peanut butter and nuts have protein in them, they don't have all nine essential amino acids. This means that 30 grams of protein from peanut butter alone is not the same as 30 grams from a chicken breast. When getting your protein from plant sources you need to eat a variety of sources (nuts, beans, and grains) to get all of the essential amino acids. All animal products have all nine essential amino acids, so you don't need to consume a variety of these to meet your requirements. The table below summarizes the amount of protein found in a

variety of common animal and plant food sources. (As a reference, 3 oz. is roughly the size of a deck of cards).

## References

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