

## Pump it Up – Timing and Amount of Protein to Optimize Strength Training

Watching the brawny young men with bulging biceps shake up their protein drinks after a good workout, one would assume mammoth amounts of protein must be necessary to build and strengthen muscles. And yes, it's true...protein is a key player in muscle growth and development. But many athletes overdo it when it comes to protein...thinking mistakenly that more protein translates directly into bigger biceps. Read on to learn how much protein YOU need and how to time it right to enhance its effects on your physique.

First of all, it's important to remember that carbohydrates should lay the groundwork for any training regimen. Muscles (and every other cell in the body) require carbohydrate for energy. Even body builders need carbs – it's the carb stored in the muscles that are fueling bodybuilders' intensive workouts. If you aren't fueling your muscles with enough carbohydrate, you won't be able to exercise hard enough to build to your potential. Whole grains, fruits, vegetables, and low fat dairy are the perfect nutrient-dense carbohydrate sources for athletes...trying to build mass or not.

To build muscle mass, your diet must contain adequate, but not excessive amounts of protein. Your body can only build a limited amount of muscle in a given period of time, so it's useless to get more than you need. And since there's no storage form of protein in the body (like there is for carb and fat) excessive calories from protein could end up being stored as fat.

It is difficult to define exact protein needs for active people, because individual needs vary. Using information from various professionals including the American College of Sports Medicine, the American Dietetic Association, and the Dietitians of Canada Joint Position Statement, expert sports dietitian Nancy Clark published this chart in the 3<sup>rd</sup> edition of her book, Nancy Clark's Sports Nutrition Guidebook.

	Grams of protein	
	Per Pound of Body Weight	Per Kilogram of Body Weight
Current RDA for sedentary adult	.4	.8
Recreational exerciser	.5-.7	.8-1.5
Endurance athlete, adult	.6-.7	1.2-1.6
Adult building mass	.7-.8	1.5-1.7
Athlete restricting calories	.8-.9	1.8-2
Est. upper requirement for adults	.9	2

While it is true that athletes do indeed need more protein than their sedentary counterparts (those trying to build mass need about almost DOUBLE!), it should be noted that there is no scientific evidence that protein intakes higher than .9g/pound of body weight provide any true advantage. In addition, it's important to understand that it's quite easy to meet these protein needs with food alone, and there is no proven benefit to using a protein supplement (assuming your dietary intake from food is adequate). While the convenience (and sometimes the taste) of protein shakes are nice, they provide protein at 2-4 times the price of protein in "real foods". Additionally, real foods provide the benefit of OTHER vitamins, minerals, and nutrients that your body can use. To optimize your results and keep healthy, use real foods most of the time. Consider a protein shake/bar every once in a while for convenience or variety.

Strength training creates micro-tears in muscle fibers. The real muscle growth doesn't occur until AFTER exercise, when protein is used to rebuild and repair the torn, stressed tissues...resulting in larger, stronger muscles. Because you can't store protein in the body, it's only logical to feed it to your muscles when they need it most. Research results are beginning to showcase the benefits of protein eaten BEFORE exercise, even though the muscle is not re-synthesized until AFTER exercise. What's even more interesting is that only small amounts of pre-exercise protein are necessary to achieve superior gains in lean mass. In fact, as little as 6 grams (slightly less than a container of yogurt or an ounce of meat) is all that is needed to improve results. It is thought that having a little extra protein in the blood stream combined with the increased blood flow during exercise enhances amino acid (protein building blocks) delivery to the muscles, creating an environment that guarantees amino acids will be "ready for action" and available for tissue repair.

Conventional practice often involves consuming protein immediately after a workout. And there's proven benefit to this as well. Research has shown that taking in a mere 10g of protein (1/2 a turkey sandwich) combined with some carbohydrate can result in an increase in muscle mass. The same amount consumed more than 2 hours after exercise doesn't yield the same results...so you gotta get eat that protein right after you exercise to see the extra benefits.

To further enhance the benefits of your post-exercise protein, consider coupling it with some carbohydrate (whole grains, fruit, low fat dairy) in order to stimulate the release of insulin. While testosterone and growth hormone often come to mind when thinking of anabolic hormones, insulin proves to be a potent anabolic hormone too, that promotes lean tissue synthesis and decreases the rate that protein breaks down.

So...how do you take all this info and put in into practice? It only makes sense to eat a little something just before your strength training workout and a little bit right afterwards too...keeping in mind that all you really need to enhance your results is 6-10g of protein per pre/post exercise snack...and any excess may be converted to fat. Adding carb to your pre-workout snack will provide an extra energy kick for your muscles. Adding carb to the post-workout snack will stimulate the insulin release promoting the "anabolic environment" for your muscles. The following snacks will provide adequate protein to enhance the results of your strength-training workout and provide you with additional essential nutrients for your body as well:

*1 apple with 2 tbsp peanut butter (7g protein, 15g carb)*

*¼ cup dried cranberries with ¼ cup mixed nuts (8g protein, 40g carb)*

*10 True North Nut Clusters - apple cinnamon flavor (10g protein, 20g carb)*

*1 Special K Protein Meal Bar (10g protein, 25g carb)*

*1 svg Carnation Instant Breakfast drink powder mixed with 1 cup skim milk (13g protein, 39g carb)*

*¾ cup Quaker Oatmeal Squares Cereal with ¾ cup skim milk (11g protein, 42g carb)*

*½ turkey sandwich: 1 slice whole wheat bread with 1 oz turkey and mustard (10g protein, 15g carb)*

*1 small whole grain tortilla with ¼ cup 2% shredded cheese & ¼ cup canned non-fat refried beans (12g protein, 22g carb).*

Remember that the REAL KEY to building muscle is EXERCISE combined with adequate rest and an overall well-rounded diet. A little protein right before your exercise and a protein/carb snack right afterwards can enhance your results, but it's important to eat well throughout the entire day. Consistently emphasizing whole grains, fruits, and vegetables in your diet while including low fat dairy and lean protein sources will ensure your muscles are adequately fueled so you can workout to your full potential and get the lean, cut look you want.