

Sports Nutrition

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The Athlete's Kitchen

For years, body builders have fed themselves a traditional diet based on egg whites, chicken breasts, canned tuna and protein shakes. They have shunned burgers and fries for a very "clean" diet. They've gotten results.

Historically, we've had inadequate science to debate those rigid dietary rules. But today, exercise physiologists are intently researching the best ways to build muscles—without steroids, that is! In particular, they are examining the role of nutrient timing—the impact of when and what you eat in relationship to resistance exercise. This article touches upon the science of eating to build muscles. For more information, I recommend the book *Nutrient Timing* by exercise physiologists John Ivy and Robert Portmans.

What should I eat before I lift weights?

By eating carbohydrate 10 minutes before exercise, you'll provide fuel for a stronger workout. By eating some protein, you'll start to digest it into amino acids, the building blocks of protein. Those amino acids will be available to be used by the muscles during and after exercise. Enjoy a fruit yogurt (150 cal) or a small bowl of Cheerios + milk.

Why should I eat right after I lift weights?

After a hard gym workout, your muscles are primed for getting broken down: their glycogen (carbohydrate) stores are reduced; cortisol and other hormones that break down muscle are high; the muscle damage that occurred during exercise causes inflammation; the amino acid glutamine that provides fuel for the immune system is diminished. If you just drink water after your workout and dash to work, you'll miss the 45-minute post-exercise window of opportunity to optimally nourish, repair and build muscles.

You can switch out of the muscle break-down mode by eating a carb-protein combination as soon as tolerable after you exercise. Carbohydrates stimulate the release of insulin, a hormone that helps build muscles. Carbs combined with a little protein creates an even better muscle building response and reduces cortisol (breaks down muscle). In a 12-week training study, the subjects who took a carb-protein supplement immediately after each exercise session achieved an 8% increase in muscle size and 15% increase in strength, as compared to the control group who took the supplement two hours later and saw no change in muscle size nor strength (Esmarck, *J Appl Physiology*, 2001).

Just as eating protein before and after exercise optimizes muscle development; so does eating protein throughout the day. When the amino acid levels in the blood are above normal, the muscles take up more of these building blocks; this enhances muscle growth. Hence, eating several protein-containing meals and snacks is preferable to eating one big dinner at the end of the day. Also, don't restrict calories while building muscles. With inadequate fuel, you will use protein for energy, not for building muscles.

Building Muscles: Tricks of the Trade

How much protein should I eat to build muscles?

According to Dr. Ivy, strength athletes need about one gram of protein per pound body weight per day—along with weight lifting—for optimal muscle development. In comparison, the recommended protein intake for sedentary people is about 0.45 gram protein per pound; active people about 0.6 to 0.7 grams. Most hungry athletes can consume this much protein by choosing protein-rich foods and lowfat milk at all meals and snacks. For example, a 180-pound strength athlete can consume 180 grams protein by drinking two quarts of skim milk (80 gm) and eating the equivalent of two (6-ounce) chicken breasts (105 gm) per day.

Why are protein supplements so popular?

In today's fast-food society, a mindless way to get healthful (no cholesterol, low fat) protein is with supplements. Protein shakes, in particular, are popular because after a strength training session, athletes may not feel hungry, but they are likely thirsty. Skim milk + banana + protein powder (or powdered milk) + sugar (for quickly available carbs) is a simple, hassle-free way to consume the protein and carbs needed to rebuild and refuel muscles. Yet, protein supplements are not a whole food and fail to offer the complete package of health protective nutrients found in natural foods. Use them to *supplement* wise eating, not to replace it.

What's all the hype about whey protein?

Whey comprises 20% of the protein found in milk; casein comprises the other 80% of the protein. The two are separated during cheese-making. (Remember Little Miss Muffet who sat on her tuffet, eating her curds and whey?) Whey used to be discarded, but today it is made into whey powder and used in a variety of protein supplements.

Whey is digested and absorbed into the bloodstream faster than other proteins such as casein. Whey is a rich source of the branch chain amino acids (BCAAs) leucine, isoleucine, and valine. BCAAs are taken up directly by the muscles instead of having to be first metabolized by the liver. Hence, whey is "fast acting" and a fairly efficient muscle energy source during exercise—plus a good source of raw materials for building muscles after exercise.

The 20 grams of protein in a glass of (protein-fortified) skim milk offers 1,900 mg of the BCAA leucine (@ \$0.40); a serving of MetRx Ultramyosyn Whey Powder offers 2,120 mg leucine for a 50% higher price (\$0.62). Unfortunately, whey powders often boast "very low carbs"; athletes need a foundation of carbs, with protein as the accompaniment, to optimize results from hard training. Chocolate milk anyone?

Sports dietitian Nancy Clark, MS, RD counsels casual and competitive athletes at her private practice in Healthworks, the premier fitness center in Chestnut Hill, MA (617-383-6100). Her best-selling *Nancy Clark's Sports Nutrition Guidebook* (\$18), *Food Guide for Marathoners* (\$15) and *Cyclist's Food Guide* (\$15) are available via

