

HEALTH

Strength training relies on protein, hydration

By Susan Kundrat
Gatorade Sports Science Institute

Building strength requires athletes involved in weight training to fuel their bodies with the right foods and fluids. Knowing how much protein to eat and how to stay properly hydrated can be the keys to success.

Foods: Pre-workout fuel

Athletes should go into a workout well nourished and well hydrated. Without proper energy available in the bloodstream and muscles, it's difficult to hit goals that are set in the weight room:

- Plan a pre-workout snack or meal. Choose foods that are easy to digest, don't sit too heavily on the stomach and give a positive edge when lifting. Include high-energy foods, as well as lean sources of protein (see sample menu at right).
- Fill two-thirds of the plate with high-carbohydrate options for quick energy.

Foods: Post-workout fuel

Athletes burn up muscle energy stores during a workout. Their bodies' muscles lose the energy that has been stored for exercise. It's important that athletes:

- Get energy back to the muscles within 30 minutes and again within two hours to help rebuild muscle energy stores for the next workout.
- Have snacks like a carbohydrate/protein energy bar, chocolate milk, yogurt mixed with nuts, or a turkey or peanut butter sandwich handy to refuel fast.

Is more protein better?

It's true that athletes who strength-train require more protein than those who don't — 1.7 grams of protein per kilogram of body weight, or about 0.77 grams of protein per pound of body weight (see chart at right).

Sample menu

Simply by eating a variety of foods, strength athletes can meet their goals for protein and total energy. This sample meal plan provides 175 grams of protein, enough for a 225-pound athlete.

Breakfast

- 2 slices whole-wheat toast w/peanut butter
- 1 cup oatmeal w/1 cup lowfat/nonfat milk
- 1 banana
- 1 cup orange juice

Lunch

- 1 ham and cheese sandwich on whole-grain bread
- 1 cup vegetable and bean soup
- 1 cup fresh fruit salad
- 1 small fast-food milkshake

Post-workout snack

- 1 energy bar
- 16 ounces apple juice

Dinner

- 6 oz. grilled skinless, boneless chicken
- 1 cup pasta/tomato sauce
- 1 cup steamed broccoli
- 2 cups lowfat/nonfat milk

Building muscle

Weight (lbs.)	Daily protein requirements (grams)
125	96
150	116
175	135
200	154
225	173
250	193

Meeting protein requirements

Athletes who strength-train can get their daily requirements of protein and other important food sources by simply adhering to a nutritionally sound diet.

After all, a solid nutrition plan is just as important as a training plan when it comes to building lean muscle mass.

Unfortunately, some believe that supplements are the best source for adding protein to their diets.

If the truth is to be told, many supplements contain less protein than athletes think — much less than what they can find by eating real food. Consider the following sources:

Food type	Serving size	Protein (grams)
Brown rice	1 cup cooked	5
Whole-wheat bread	2 slices	6
Oatmeal	1 cup cooked	6
Spaghetti noodles	1 cup cooked	7
Pork and beans	1/2 cup	7
Cheese	1 oz.	7
Milk	1 cup	8
Peanut butter	2 tbsp.	8
Tofu	1/2 cup	10
Cottage cheese	1/2 cup	14
Plain yogurt	1 cup	14
Scrambled eggs	3	19
Baked cod	3 oz.	20
Canned salmon	1/2 cup	24
Roast beef	3 oz.	24
Lean meat	3 oz.	24
Pork loin	3 oz.	25
Canned tuna	1/2 cup	26
Chicken breast	3 oz.	26
Turkey breast	3 oz.	26

For more information on health-related topics, visit the Gatorade Sports Science Institute at www.gssiweb.com.

How to get the most from a workout: Be sure to stay hydrated

Athletes may think hydration doesn't matter in the weight room. In fact, research shows that properly hydrated resistance-trained weightlifters can lift more than those who are dehydrated.

Here's how to do it:

- Remember fluids throughout the day.

This may be as simple as grabbing a sports drink first thing in the morning, then using fountains, coolers and cafeteria beverages as triggers for drinking throughout the day.

- Hydrate two to three hours before training. Athletes should aim for at least 16 ounces (2 cups) of fluid at this time and an

additional 8 ounces (1 cup) 10 to 20 minutes before lifting.

- Drink during and after training. Sports drinks like Gatorade can help ward off dehydration and muscle cramps because they help replenish fluid and electrolytes lost in sweat without overdrinking.