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## Fueling Volleyball Players

Court and sand volleyball require endurance, explosive power, quickness, and strength. Matches can last several hours and tournaments can last several days. The team with the endurance to stay strong for long matches usually wins.

Volleyball players have long, intense practice sessions that include weight training to build strength and aerobic training to improve endurance. Sand volleyball is played outdoors, where sun, heat, and humidity can result in dehydration if a proper hydration strategy is not maintained. Female volleyball players may experience body image issues resulting from the close-fitting spandex uniform for court volleyball and swimsuit-like attire for sand volleyball.

USA Volleyball is the national governing body for volleyball players ([www.teamusa.org/usa-volleyball](http://www.teamusa.org/usa-volleyball)).

## Fueling Strategies

Volleyball players practice for hours at a time and have a long competitive season. A typical season begins in August and goes through November and is followed by tournaments. Most elite volleyball players also play on club teams to support training and gain competition experience. Volleyball players require 2,500 to 6,000 calories a day during training, depending on age, gender, and hours spent in training and conditioning, practice, and competition. Some teenage and young adult volleyball players may need even more calories.

The nutrients that provide energy (calories) are carbohydrate, protein, and fat. The amounts of each nutrient you need to fuel your practice and competition are given below.

### Carbohydrate

Carbohydrate should make up most of your diet. During intense training periods, eat 2.3 to 3.6 grams of carbohydrate per pound of body weight per day (5 to 8 grams per kilogram). For example, a 165-pound volleyball player would need 380 to 594 grams of carbohydrate a day. On less intense training days or when sidelined by injury, you only need 1.4 to 2.3 grams of carbohydrate per pound (3 to 5 grams per kilogram).

Choose high-quality carbohydrate foods such as whole grain breads and cereals, rice, pasta, starchy vegetables, whole or dried

These foods have **15 grams** of **carbohydrate**:

- 1 slice bread
- 1 6-inch tortilla
- ½ cup corn
- ½ cup mashed potatoes
- ½ medium baked or sweet potato
- ⅓ cup rice
- 3 cups popcorn
- 1 small apple
- 15 grapes
- 2 tangerines
- 2 tablespoons raisins
- ½ cup orange juice
- 3 cups green beans
- 1¼ cups milk or yogurt

fruit, and low-fat milk and yogurt. Eat fewer refined carbohydrates and sweets such as pastries, cookies, cakes, candy, sugar-sweetened soft drinks, fruit drinks, tea, and specialty coffee drinks.

These foods have  
**7 grams of protein:**

- 1 ounce cheese
- 1 ounce beef, pork, chicken, or turkey
- ¼ cup cottage cheese
- ½ cup black beans or kidney beans
- 1 whole egg
- 2 tablespoons peanut butter
- 1 cup milk or plain yogurt

## Protein

Protein provides the building blocks for muscle mass and for healthy growth and development. You need 0.6 to 0.8 grams per pound (1.4 to 1.7 grams per kilogram). For example, a 165-pound volleyball player would need 99 to 132 grams of protein a day. Eating more protein than the recommended amount will not build muscle faster or add extra muscle mass.

Choose lean protein foods such as lean beef and pork, chicken, turkey, fish, eggs, and low-fat dairy foods. Nuts are a good source of protein and contain healthy fats. Eat fewer high-fat protein foods such as regular burgers, brisket, ribs, sausage, and full-fat cheeses and dairy foods.

## Fats

There is no specific recommendation for fat for volleyball players, but healthy fats should be part of every athlete's diet. Healthy fats include olives and olive oil, nuts and nut butters, avocado, and vegetable oils (such as canola oil). Fat has more calories than carbohydrate or protein so healthy fats can help add calories for athletes who want to gain weight.

## What Should Volleyball Players Eat Before and After a Workout?

When possible, eat 3 to 4 hours before a hard practice or competition. Aim for a low-fat meal with about 200 to 300 grams of carbohydrate and 30 grams of lean protein. This will ensure you have enough fuel on board but will leave time for your stomach to empty before you take the court. A turkey sub sandwich with baked chips and a side of fruit or a grilled chicken wrap on a flour tortilla with pretzels and fruit juice or low-fat milk are examples of meals that will meet the energy demands of a long practice or competition.

If there is not enough time to eat 3 to 4 hours before practice or competition, eat a snack 1 to 2 hours before you begin training. Good choices include juice, fruit, milk, granola or cereal bars, a small bagel with peanut butter, crackers and cheese, a bowl of cereal, or yogurt. If there is less than 1 hour before exercise, liquids, such as a sports drink or a low-fat liquid meal replacement, may be the best choice.

For practices longer than 1 hour or for all-day tournaments, pack portable snacks. Try to eat 30 to 60 grams of carbohydrate every hour. Good choices for snacks include sports drinks, which

provide carbohydrate, fluids, sodium, and potassium; peanut butter sandwiches; pretzels; string cheese; trail mix; dried fruit; orange slices; baked chips; smoothies; or 100% fruit juice.

After practice, recover with a carbohydrate- and protein-rich snack. Carbohydrate replaces muscle glycogen (carbohydrate stored in muscles) lost during a long practice or competition, and protein helps muscle protein repair. Good choices include a turkey or grilled chicken sandwich, slice of vegetable-cheese pizza, low-fat chocolate milk, cottage cheese and fruit, or cheese and crackers. If you practice or compete again the same day or the next day, start recovery within 30 minutes after training. If the following day is a rest day, add recovery foods to your next meal.

## **Vitamins and Minerals**

Volleyball players can get all the vitamins and minerals they need by making healthy food choices and eating a variety of foods. Have at least 5 servings of fruits and vegetables each day. Adding berries to breakfast cereal, dried fruit to trail mix, frozen fruit to plain or vanilla yogurt, side salads with meals, vegetables on sandwiches, and salsa on baked potatoes and snacking on fresh fruits and vegetables will help you get all the nutrients you need.

Female volleyball players should pay extra attention to choosing iron-rich and calcium-rich foods. These nutrients are needed in larger amounts, especially during teen years. Lean beef in a stir-fry, dark-meat chicken or turkey, kidney beans and black beans, and breakfast cereals fortified with iron are good choices. For calcium, choose low-fat milk (cow's milk or soy, rice, or almond milk), low-fat cheese, yogurt, almonds, leafy green vegetables, orange juice with added calcium or smoothies made with milk or yogurt.

## **Hydration Strategies: What Should Volleyball Players Drink?**

Volleyball players, especially sand volleyball players, need to monitor hydration and establish a drinking schedule. Water is best for most athletes. Drink about 2 cups (16 ounces) of water 2 to 3 hours before a workout or a match. Then drink 1 cup (8 ounces) of water 10 to 20 minutes before stepping onto the court. Most workouts are long and strenuous, so drink about 1 cup of fluid every 10 to 20 minutes. Keep a sports bottle filled with water at the bench within reach. If you don't like plain water, slice up lemons or limes to drop into your water bottle for a refreshing taste.

Sports drinks are a good choice when you have long, hard workouts or have multiple games during a tournament. Stick to the basic tried-and-true sports drinks such as Gatorade or PowerAde, because they provide a good balance of carbohydrate, sodium, and potassium to replace losses. Follow the same drinking schedule as for water, but also listen to your body. Drink when you are thirsty and monitor how much you urinate and the color of your urine. If you are urinating frequently throughout the day and your urine is a light-straw color, you are probably drinking enough fluids.

## Frequently Asked Questions

### **We practice about 2 to 3 hours every day. How important is it to eat for recovery?**

Practicing every day for more than 90 minutes requires a recovery strategy to keep you fueled and strong for the next workout. Your muscles are most receptive to restoring glycogen (carbohydrate) immediately after exercise. Try to eat about 0.7 grams of carbohydrate immediately after exercise to get the glycogen restoration process kicked into high gear. A 165-pound volleyball player should get about 115 grams of carbohydrate in a post-workout snack. Sixteen (16) ounces of a sports drink or chocolate milk and 4 fig bars provide about 115 grams of carbohydrate.

### **What is the best way to lose body fat?**

Athletes should only try to lose weight in the off-season, never in-season, because decreasing calories could impair training and performance. Before attempting to lose weight, get an assessment of your body composition to determine your percent body fat. There is no ideal body fat percentage for a volleyball player, so aim for performance, not a specific number for body fat or body weight. A sports dietitian can devise an individual eating plan to help you meet your goals.

### **What are some good resources for nutrition and volleyball?**

The best resource is a registered dietitian nutritionist, especially one who specializes in sports nutrition.

To find a qualified sports dietitian, connect to Sports, Cardiovascular, and Wellness Nutrition (SCAN) website ([www.scandpg.org](http://www.scandpg.org)) and use the “Find a SCAN RD” search box. SCAN also has free sports nutrition fact sheets on a wide range of topics at [www.scandpg.org/sports-nutrition/sports-nutrition-fact-sheets](http://www.scandpg.org/sports-nutrition/sports-nutrition-fact-sheets).

For online resources, check out the United States Olympic Committee’s sports nutrition resources at [www.teamusa.org/About-the-USOC/Athlete-Development/Sport-Performance/Nutrition](http://www.teamusa.org/About-the-USOC/Athlete-Development/Sport-Performance/Nutrition). You will find many resources there, including videos, recipes, and eating guidelines for athletes.

### **Notes:**