

Soccer Nutrition

Soccer Nutrition by Nanna Meyer, Ph.D.

Soccer is one of the most popular youth sports in the U.S., and more young athletes play soccer than any other organized sport. Soccer demands a variety of skills, from sprinting to dribbling and jumping to diving, all of which require great physical ability as well as mental alertness. Proper nutrition is one factor that will allow a player to perform at his or her best. In this article, we will address the nutritional demands that soccer places on young athletes and provide practical examples on how to best fuel for soccer performance.

Carbohydrate

The largest nutritional concern in soccer players of any age is depleted energy stores late in the game and at practice. Studies have shown that players often have low muscle glycogen, which is carbohydrate stored in the muscle and used for energy, after games. Low glycogen stores have even occurred by halftime in games, causing slower running speeds, and thought to be responsible for a slower game pace in the second half. Players with adequate muscle glycogen stores do not experience this drop in performance; thus, replacing carbohydrates during the game and practice seems extremely important in order to sustain optimal effort and avoid injury. Drinking sport drinks is an easy way to replace carbohydrates, while hydrating at the same time. Athletes should also be sure to eat a carbohydrate-rich meal several hours before and within the first hour after a game or practice when the rate of replacing muscle glycogen stores is highest. Because depleted stores in muscle are the leading cause of fatigue in soccer players, carbohydrate intake is the major nutritional focus for these athletes. Carbohydrate is also the main energy source for the brain, so a diet with adequate carbohydrates allows athletes to concentrate and make important tactical decisions both on and off the field. The typical athlete's diet usually provides only moderate amounts of carbohydrate (about 55% of total calories or 250 g for an athlete weighing 110 lbs), which is not ideal. Athletes participating in soccer and practicing for 2-3 hours per day should eat at least 6 g of carbohydrate per kilogram of body weight (2-3g per pound), or 300 g for a 110-pound athlete, to sustain activity level and to adequately recover from day to day. For athletes who train twice a day or perform in tournaments with multiple games per day, carbohydrate requirements are higher (between 8-10 g of carbohydrate per kilogram of body weight per day (3.5-4.5 g per pound) or 350-500 g per day). Optimal carbohydrate sources include whole grain cereals, breads, pasta, rice, potatoes, fruits and vegetables, and sport drinks (see Table 1 to put numbers into practice!).

A soccer player's diet should provide adequate energy from food to balance energy expended through daily living and growth, as well as training and competition and should include a variety of foods with carbohydrates, protein, and fat. As a general rule, athletes should strive to fill 2/3 of their plates with carbohydrate-rich foods at every meal. The rest of the plate should be filled with a lean source of protein as well as colorful fruits and vegetables, with moderate amounts of fat used for cooking and flavor.

Protein

Protein is also an important nutrient for soccer players. Protein is necessary for building and repairing of muscle, proper immune function, and hormone production. Protein also provides a small amount of energy during very long or intense exercise bouts, such as long soccer games interspersed with sprints. The typical athlete's diet provides adequate amounts of protein, but athletes who restrict their diets, picky eaters, and/or vegetarians may not get enough protein, and therefore, should pay special attention to their protein intake. Young athletes should consume 75-90 g of protein per day (estimation for an athlete weighing 50 kg or 110 lbs). Optimal protein sources include poultry, lean red meat, fish, eggs, soy products, low-fat dairy products, and nuts and legumes (see Table 2).

Fat

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Fat is another important nutrient for young athletes. Fat is also a key fuel for soccer performance, besides carbohydrate, particularly when exercise intensity is lower (between sprints). Excessive restriction of fat can limit this energy source and can result in nutrient deficiencies that may affect the health of the athlete. When choosing the best sources, fat from vegetable oils (olive and canola), nuts, seeds, soy products, and fish should be preferred over fats from butter, cheese, bacon, and fast food (see Table 2 for examples and serving sizes).

Fluid Replacement

Fluid loss and dehydration are also concerns for soccer players. Many games are played during warm, sunny weather, which increases fluid losses. Most players usually only replace half of the fluids they lose through sweat during a game or practice, but performance can suffer with losses of as little as 2% of body weight (2lbs for a 110-lb athlete). To prevent dehydration, players should begin each practice session or game fully hydrated by drinking water or a sport drink every 15-20 minutes during warm-up. Sport drinks are helpful because the flavor often motivates athletes to drink more, while supplying energy. When play stops (when a goal is scored or the ball goes out of bounds), players may take the opportunity to sip on fluid. Placing water bottles along the sidelines and near each goal will make this much easier. Lastly, soccer players should always practice their fluid replacement and fueling strategies in training so that it will become automatic for games. Fluid replacement strategies are most effective when based on body weight changes from pre- to post-game or practice. Players should avoid losing more than 1-2% of their body weight during games or practices, especially in the heat.

Eating on Tournament Days

Soccer players will be able to perform best if they eat a carbohydrate-rich meal 3-4 hours before a game or long practice. It is also a good idea to have a small snack 1-2 hours before the game to ensure that they will not get hungry during the game. Choosing meals and snacks high in carbohydrate, moderate in protein, and low in fat will ensure quick digestion of food and optimal carbohydrate availability during the game or practice.

Pre-Game Meals (3-4 hrs before)

- cereal with low-fat milk and a piece of fruit
- pancakes with syrup and fruit and low-fat cottage cheese
- turkey or peanut butter sandwich with milk and a piece of fruit
- pasta with tomato sauce and small chunks of chicken
- bagel with yogurt and fruit
- fruit smoothie and whole-wheat bread
- rice bowl with small amounts of tofu or lean beef
- sweet potatoes and carrots with a small grilled chicken breast
- minestrone soup with cottage cheese and bread

Pre-Game Snacks (1-2 hrs before)

- Low-fiber cereal with skim milk
- Toast with jam or honey and skim milk
- Nonfat fruit-flavored yogurt
- Energy bar (mainly carbohydrate)
- Cereal or granola bar and banana
- Graham crackers with skim milk

It is also important to drink 2-3 cups of fluid before the game, ideally during warm-up, and 1-1.5 cups 10-20 minutes before the game begins. If eating a meal 3-4 hours before is not possible, it is best to have a carbohydrate-rich snack prior to the game (see above for examples).

During the game, sport drinks are an optimal choice for replacing fluid and carbohydrate. It is best to drink whenever possible during play stoppage. However, if this is not possible, players should try to replace lost fluids during half-time. Practice makes perfect! Thus, having sport drinks and/or water during training will help to make it an automatic habit during games!

Nutrition plays a very important role in the recovery after a strenuous practice or a soccer game. To recover as quickly as possible, players should try to eat and drink within the first hour after the game is finished. During this time, the body is the most efficient at restoring muscle glycogen. Thus, immediately following the game, it is a good idea to work on replacing this fuel with a sport drink and a small snack.

Post-Game Snacks Any of the pre-game snacks along with string cheese, cottage cheese, milk, deli turkey, tuna, peanut or almond butter, or another protein source and sport drink are good options. If athletes look for convenience a combination of sport drink and bar or a smoothie or specialized recovery drink, containing both carbohydrate and protein, may also apply.

To continuously recover and prepare for the next practice or game, however, refueling must be extended and include a carbohydrate-rich, post-game meal 1-2 hours later.

Post-Game Meals Players will be hungry after a hard game or practice, so the meal can be larger and contain, besides a good amount of carbohydrate, a little bit more protein and fat than the pre-game meals.

- tuna pasta with olive oil, garlic bread, and salad, brownies with milk
- frittata with toast and tomato-mozzarella salad, ice cream
- grilled chicken with rice, beans, vegetables, and cheese, such as a burrito
- lean piece of red meat, sweet potatoes, broccoli with almonds, and apple pie

Tournaments offer a unique nutritional challenge for soccer players. Because multiple games are played in one day, little time is available for athletes to recover and properly replace fuel stores and lost fluid. However, not replacing these stores will result in decreased performance and faster fatigue, which compromises a soccer player's skill, speed, and concentration and possibly increases the risk of injury. In a hot environment, dehydration is also of concern. During tournaments, sport drinks are an absolute necessity to prevent dehydration and to maintain carbohydrate availability (blood glucose feeds the brain!). Athletes need to plan ahead for long tournament days by bringing carbohydrate-rich snacks, such as sport drinks and bars, yogurt, granola and cereals, sandwiches, or breads, to eat between games, as well as enough sport drink to last through the entire tournament.

Table 1

Foods containing 25 grams of carbohydrate

- piece of fruit
- 1 thick slice of bread
- granola bar
- ½ bagel with 1 tablespoon jam
- 1 cup of fruit juice
- 1 fruit yogurt

Foods containing 50 grams of carbohydrate

- 1 medium potato
- 1 cup cooked rice
- 1 ½ cups cooked pasta
- 1 large flour tortilla
- 1 ½ cups cereal
- 1 energy bar (Clifbar, Luna Bar, Power Bar)

Table 2

Protein

- 3 ounces chicken, beef, fish, or pork
- 4 ounces tofu

1-2 cups milk
1 cup yogurt + ½ cup cottage cheese
1 egg + 2 egg whites
2 ounces canned tuna

Fat

1-2 tablespoons olive oil
handful almonds or trail mix
3 ounces salmon
1-2 ounces cheese
handful chips
1 cup ice cream