

DUKE SPORTS MEDICINE

OUTREACH SOCCER PROGRAM

Nutrition for Soccer: Eating for Performance

Soccer is a unique sport which requires explosiveness, speed and power combined with endurance to last through the entire game. High level soccer players run approximately 5-6 miles in a 90 minute game. Research has shown that a player runs slower and runs shorter distances at high intensity in the second half due to decreased muscle glycogen levels (carbohydrates stored in the muscles) which cause fatigue. However, proper food consumption can help prevent fatigue during a game.

There are three areas that need to be considered when discussing food consumption as it relates to soccer: Pre-game day, game day and post game.

Pre-game day: 2-3 days prior to a match

The most important pre-game meals occur 2-3 days prior to a game because energy is most affected by what was eaten in this time frame. Therefore, glycogen loading or carbohydrate loading is performed 2-3 days prior to a game. Carbohydrates are the main fuel used during a game, therefore it is important for the player to have a build up of muscle glycogen by game day. **Research on soccer players has shown that those with the most pre-game muscle glycogen run the farthest at the fastest speeds during a game.** Unfortunately, most soccer players do not practice carbohydrate loading and their muscle glycogen levels at pre-game are no different than those who are in the stands watching the game.

The general recommendation for carbohydrate loading is 5-6 grams of carbohydrates per kilogram of body weight over the course of a day. To determine your weight in kilograms take your weight in pounds divided by 2.2. For example, a 130 pound or 59 kilogram player ($130/2.2 = 59$) should eat 295-354 grams of carbohydrates over the course of a day. So make sure to check those nutrition labels and calculate your carbohydrates.

Game Day

3-4 Hours prior to the game

Most pre-game meals are eaten 3-4 hours before the game, but remember that meal will have little effect on energy during the game. Most players want to eat a pre-game meal which will not leave them feeling full come game time. Fats and proteins take longer to digest; therefore carbohydrates often are the food of choice.

1 hour prior to the game

In the hour prior to the game, food, especially carbohydrates, should be avoided. Carbohydrates cause an increase in insulin which lowers the blood sugar levels and will make you feel sluggish. However in the few minutes prior to the game, carbohydrates can be eaten to create a quick fuel source and the sluggish response will be counteracted by the adrenaline, excitement of game time and activity. Some examples of good food choices at the start of the game are oranges, grapes, raisins, watermelon, bagel, white bread, jelly and oatmeal. Carbohydrate drinks are also a good choice for a quick energy boost at the start of the game. (See fluid replacement article for more information on sports drinks.)



During the game

Likewise, during the game carbohydrate drinks are beneficial in providing energy to the player. **Most players are more fatigued during the second half and therefore you may have an advantage over your opponent if you have more energy.**

Post-game

Muscle glycogen (carbohydrates) is the primary fuel source used during soccer and is depleted following the game and needs to be replenished. Muscle is most receptive for glycogen replacement in the first 2 hours after exercise, so it is important to eat some carbohydrates in the first 2 hours after the game. The goal is to eat 50-100 grams of carbohydrates every 2 hours until you reach your total based on your body weight (5-6 grams/kg of body weight). **Do not try to replenish all of your carbohydrates in a few hours - it often takes 1-2 days to restore glycogen levels to completely depleted muscles.**

Playing more than one game in a day provides a unique challenge of eating enough carbohydrates without feeling full for the next game. Remember that it is important to eat foods which will digest quickly. Fast food, although convenient, contains a lot of fat and protein which takes longer to digest and does not provide much fuel needed for the next game. Try to avoid fast food when eating for sports performance. Some between game snack ideas are cereal and pretzel mixes (homemade, without the oil/fat), raisins, bagels, watermelon and bananas.

Summary

Eating for optimal sports performance takes a lot of planning and organization, but can be very beneficial if done properly. A generally recommended diet for in-season athletes to follow is 65% carbohydrates, 20-25% fats, 10-15% protein. Players who follow these guidelines will notice improvements in energy in the second half and in multiple games. Players will also notice improved recovery between games.

Q & A

My child has special dietary needs. How do I ensure he/she is eating the appropriate food for performance?

For specific needs you should consult a sports nutritionist. You can contact Kelly Hess at the below listed information and she will assist you in locating a provider.

What types of carbohydrates are the best?

Different carbohydrates affect your blood glucose levels differently. The glycemic index ranks foods according to how they affect individuals blood glucose. For more information on the glycemic index go to www.mendosa.com/gi.htm

What if I would like more information on this topic?

You may contact Kelly Hess at the below listed information.



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Kelly Hess PT, DPT is a Physical Therapist and Soccer Outreach Coordinator for Duke Sports Medicine. She received her Doctorate of Physical Therapy from Duke University. She is a former collegiate soccer player at Messiah College, PA. Having her NSCAA Advanced Regional Coaching License, she has over 10 years experience coaching youth through collegiate levels. **Email - hess0012@notes.duke.edu, Pager - (919) 970-2648**

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Dr. Bill Garrett, MD, PhD is a Team Physician for Duke University. For the past 16 years, he has served as the Chairman of Sports Medicine's Committee for the United States Soccer Federation and has served as team physician with the U.S. Men's and Women's National Teams in World Cup competition. **John Lohnes, PA-C** and **Libby Pennington, RN** assist him in providing care.