

## **GLOBAL SOCCER MINISTRIES INTERNATIONAL SOCCER EDUCATION- HYDRATION & NUTRIENT LECTURE**

### [How Much Water Should You Drink to Hydrate for a Football Match?](#)

Football is strenuous and requires a lot of physical stamina, and proper hydration will reduce your risk of injury as well as help you maintain peak fitness levels after the match. You need to consume more water and fluids than normal while playing soccer to make up for lost fluids due to perspiration, helping you stay focused and in a high level of physical condition.

### [Water Loss During Football Training or Exercises](#)

The amount of water you lose during exercise depends on the degree of intensity and the weather condition (heat vs. cold). If you are playing football in hot weather, you will need to consume more fluids. The American Council on Exercise states that one hour of exercise can lead to more than a quart of water being lost. Drink water throughout the match, regardless of whether you feel like you need it or not.

### [Stay Hydrated Before, During and After Training and Matches](#)

Proper hydration begins 24 hours before the start of the match. The majority of your intake needs to be from drinks, roughly 80 percent, with the remainder of your fluid intake coming from foods. Medline

Plus recommends a minimum of six to eight 8-ounce glasses of fluids each day given average temperatures, humidity and physical exercise. The American Council on Exercise suggests drinking 17 to 20 ounces of water two to three hours before the start of the match and 7 to 10 ounces every 10 to 20 minutes of the game. Afterward, drink 8 ounces of fluid.

### Fluid Intake Choices

You can hydrate with a variety of fluids. The American Council on Exercise recommends water as the best choice, although drinks that contain electrolytes are recommended if you are engaging in strenuous exercise for a minimum of 45 to 60 minutes. Electrolytes are minerals that are found in your blood and body fluids, and they affect how much water is in your body, as well as your muscle function. Water does not contain electrolytes; drink sports drinks or coconut water, each of which contains electrolytes, to replenish your supply. Sugar contains no electrolytes. Electrolytes can be found in food sources and with a combination of water and certain food sources, football players would best serve themselves. Water is less expensive and easier to procure.

**The Bottom Line:** While sports drinks can help competitive athletes, these drinks add extra empty calories. Water is the best re-hydration drinks for most exercisers.

## Signs of Dehydration

If you do not stay well-hydrated, you run the risk of dehydration. A study published in the "British Journal of Sports Medicine" in 2007 found that even moderate dehydration led to a significant decrease in fitness performance levels as measured by a 45-minute match. When you start feeling thirsty, your body is already mildly dehydrated, which is why you need to drink fluids regularly and not only when you feel thirst. Signs of dehydration include a dry mouth, less urination, dark-colored urine, a headache and muscle cramps. Mild dehydration can often be self-treated with drinking water or a sports drink, as well as sucking on ice cubes while severe dehydration needs to be treated with professional medical care. Treat dehydration as soon as you recognize the symptoms.

## Dehydration Decreases Performance

Studies have found that athletes who lose as little as two percent of their body weight through sweating have a drop in blood volume that causes the heart to work harder to circulate blood.

### Hydration Needs for Athletes

Because there is wide variability in sweat rates, losses and hydration levels of individuals, it is nearly impossible to provide accurately recommendations or guidelines about the type or amount of fluids athletes should consume.

Finding the right amount of fluid to drink depends upon a variety of individual factors including the length and intensity of exercise and other individual differences.

There are, however, two simple methods of estimating adequate hydration:

1. **Monitoring urine volume output and color:** A large amount of light colored, diluted urine probably means you are hydrated; dark colored, concentrated urine probably means you are dehydrated.
2. **Weighing you before and after exercise:** Any weight loss is likely from fluid, so try to drink enough to replenish those losses

### Five Foods That Help Replenish Electrolytes

Skip sugary sports drinks and opt for nutrient-rich fruits, vegetables, dairy, and whole grains to replace minerals lost during strenuous sweat sessions

## Foods Containing Electrolytes

### Overview

Electrolytes are minerals that carry an electric charge. The body needs electrolytes to regulate nerve and muscle function, maintain acid-base balance and maintain fluid balance. Electrolytes such as

chloride, potassium, sodium, magnesium and calcium can be lost through sweat and need to be replaced through the diet.

## Sodium and Chloride Foods

### A Beef Burger with French Fries

Sodium and chloride are two electrolytes that make up table salt and are present in foods together and work in the body to maintain fluid balance for proper cell function. Foods containing sodium and chloride include table salt, beef, pork, sardines, cheese, olives, corn bread and sauerkraut. All processed and canned foods made with added salt, such as deli meats, chips and other snacks, nuts, butter, margarine, mayonnaise and many condiments, have sodium and chloride. However, because most food already have more much sodium and chloride than players need. A daily recommendation is try not to consume more than 2,300 milligrams of sodium daily.

## Potassium Foods

Potassium is in a multitude of fruits and vegetables especially leafy green vegetables such as spinach, turnip greens, collard greens and kale, bananas, tomatoes, oranges, melons, potatoes and sweet potatoes, prunes, raisins, peas and beans. Potassium is also in milk and salt substitutes made from potassium chloride. Potassium supports normal cell function, regulates blood pressure and prevents bone loss and kidney stones. Consume 4.7 grams of potassium daily to maintain your health.

## What to Eat Before a Game?

The fuel you put in your body will have a huge impact on your physical performance during a football match. Proper diet and hydration will have a direct effect on how far you can run, and how long you can play without fatigue. The repeated sprints and runs required during a game of football place a high demand on the glycogen stores of the body. This places a great importance on a carbohydrate rich diet.

## Timing of Intake is Very Important

The fuelling process should begin 2 to 3 days before a game and continue on an ongoing basis. Players should hydrate on a consistent basis with at least 1.5 to 2 liters per day. Players should also consume sports drink up to, during and after a game.

On game day, players should consume a meal rich in Carbohydrate 2.5 to 3 hours before kickoff. Eating too soon before the game will not allow the body sufficient time to digest the food and use the carbohydrate provided to optimal effect. Players should also eat a meal rich in carbohydrate immediately after a game. Protein and carbohydrate consumed after a game will help the body's recovery process and repair muscles after a strenuous competition.

## Fluids and Hydration

Hydration is a crucial element of football nutrition and also good health, for both adults and youth players alike. The University of Connecticut produced research on hydration in youth football players. The study examined youth football players during a football camp. Between 50 and 75% of the players were reported as “significantly” dehydrated. Drinking flavored water or sports drink can help if young players find water bland. The UConn research found children voluntarily drank 44.5% more water when it was flavored. In 2005, The American College of Sports Medicine produced a report on hydration in sports. It was found that even a 1 to 2% reduction in body mass through perspiration can decrease aerobic performance.

### Food Types

The glycogen stores in the body play a large part in your physical capacity standing up throughout a game. Healthy foods rich in carbohydrate will optimize your glycogen stores and allow you to make the end to end runs during the second half and later stages of a game. Good foods to eat for carbohydrate are:

- Whole grain pasta
- Whole grain bread
- Brown rice
- Baked potato
- Rice pudding (dessert)

Protein is also an important element of a football player's diet.

Protein will develop muscles and increase the recovery and repair process of the body following competition. Good sources of protein include:

- Chicken
- Lean red meat
- Fish
- Beans

### Foods to Avoid Eating

High-fat processed foods have little value to the body when it comes to converting food to energy. Football players should steer clear of high-fat foods and candy, especially during the season. Not only does eating a healthy diet increase your football performance, but it also improves your overall health and will help you lead a longer life over years.

You should also avoid soda and juices high in sugar. Natural fruit juice is excellent but brands containing high sugar levels will hinder performance not help it. Soda can also have a dehydrating effect on the body, putting you in a bad position before the game even starts with regards to hydration.

If you enjoy your favorite sweets, try limiting it to one time per week and not before a game, maybe as a reward the night after a game.

## Half Time Food

If you eat at half time or close to a game you must keep the food light and high in nutritional value. Not recommended because there are better times before matches to eat. Football teams often eat oranges at half time. Other foods that can provide quick energy are grapes or raisins.

## AS A COACH WHAT'S YOUR ACTION PLAN WITH PLAYERS

- Plan your meals on game day in advance.
- Eat a meal high in carbohydrate 2.5 to 3 hours before game time.
- Eat a meal high in carbohydrate and protein immediately after a game.
- Drink 1.5 to 2 liters per day of water. The body is about 60% water, give or take. We're constantly losing water from our bodies, primarily via urine and sweat. There are many different opinions on how much water we should be drinking every day. The health authorities commonly recommend eight 8-ounce glasses, which equals about 2 liters, or half a gallon.
- Consume water or sports drink before, during and after a game.
- Avoid processed foods, or foods high in sugar and fat.
- Avoid drinking soda or highly caffeinated beverages.

Glycogen is primary storage form of glucose in the body. Glucose can't be stored as such, so stored as glycogen. A large amount of glycogen is stored in liver, muscles and RBC (Red Blood Cells) and small amounts in brain cells and WBC. When there is decreased, a level of glucose in the body (during fasting, heavy exercise or other condition), glycogen stored in those organs are converted into glucose and used by the body.

Glucose is the carbohydrate transported by the bloodstream to the various tissues and organs, including the muscles and the brain, where it will be used as energy. If the body does not need glucose for energy, it stores glucose in the liver and the skeletal muscles in a form called glycogen.

In humans, glycogen is made and stored primarily in the cells of the liver and the muscles hydrated with three or four parts of water. Glycogen functions as the secondary long-term energy storage, with the primary energy stores being fats held in adipose tissue. Muscle glycogen is converted into glucose by muscle cells and liver glycogen converts to glucose for use throughout the body including the central nervous system.

In the liver, glycogen can compose from 5 to 6% of its fresh weight (100–120 g in an adult). Only the glycogen stored in the liver can be made accessible to other organs. In the muscles, glycogen is found in a low concentration (1-2% of the muscle mass). The amount of

glycogen stored in the body—especially within the muscles, liver, and red blood cells—mostly depends on physical training, basal metabolic rate, and eating habits. Small amounts of glycogen are found in the kidneys and even smaller amounts in certain glial cells in the brain and white blood cells.

### The Forgotten Brain Cell

The brain is made up of more than just nerve cells (neurons). Although there are about 100 billion neurons in the brain, there may be about 10 to 50 times that many glial cells in the brain.

### The Liver As An Organ and It's Function

As a meal containing carbohydrates or protein is eaten and digested, blood glucose levels rise, and the pancreas secretes insulin. Blood glucose from the portal vein enters liver cells (hepatocytes). Insulin acts on the hepatocytes to stimulate the action of several enzymes, including glycogen synthesis. Glucose molecules are added to the chains of glycogen as long as both insulin and glucose remain plentiful. In this postprandial or "fed" state, the liver takes in more glucose from the blood than it releases.

After a meal has been digested and glucose levels begin to fall, insulin secretion is reduced, and glycogen synthesis stops. When it is needed for energy, glycogen is broken down and converted again to glucose. Glycogen phosphorylase is the primary enzyme of glycogen breakdown. For the next 8–12 hours, glucose derived from liver

glycogen is the main source of blood glucose used by the rest of the body for fuel.

Glucagon, another hormone produced by the pancreas, in many respects serves as a counter signal to insulin. In response to insulin levels being below normal (when blood levels of glucose begin to fall below the normal range), glucagon is secreted in increasing amounts and stimulates both glycogenolysis (the breakdown of glycogen) and gluconeogenesis.

### Muscle Tissue and Storage

Muscle cell glycogen appears to function as an immediate reserve source of available glucose for muscle cells. Other cells that contain small amounts use it locally, as well. As muscle cells lack glucose-6-phosphatase, which is required to pass glucose into the blood, the glycogen they store is available solely for internal use and is not shared with other cells. This is in contrast to liver cells, which, on demand, readily do break down their stored glycogen into glucose and send it through the blood stream as fuel for other organs.

Glycogen is also a suitable storage substance due to its insolubility in water, which means it does not affect the osmotic pressure of a cell.