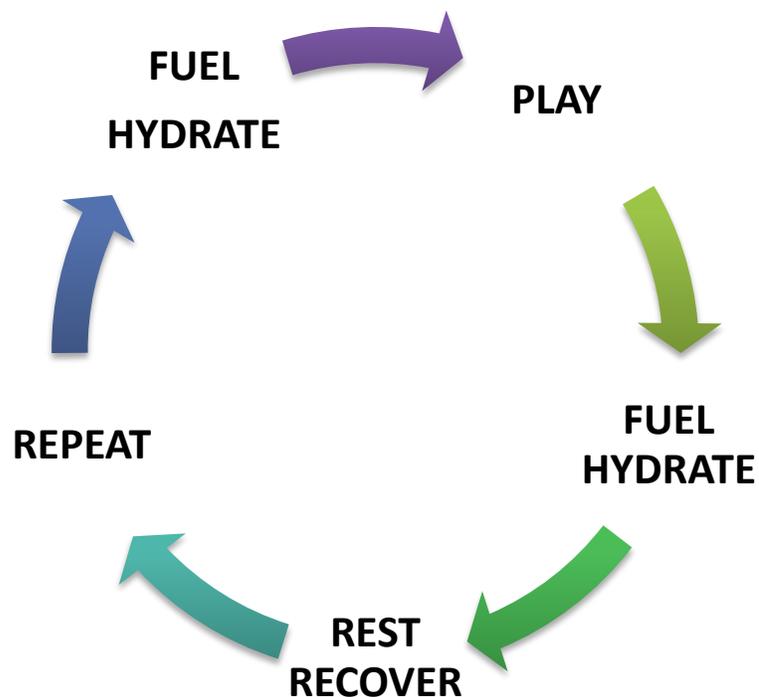


Nutrition and Sports Performance

A guide to helping you feel and play your best



A high-quality diet enhances performance on the field. Fueling soccer athletes is unique in that the sport requires strength, speed, agility and endurance. At an advanced level of play, working hard in training is a given. What can set you and your team apart is how you practice off the field. Top-notch performance needs top-notch nutrition, rest and recovery.



The 4 key areas of importance in optimizing nutrition for soccer players are:

1. Hydration
2. Fueling
3. Timing
4. Practice.

1. HYDRATION, HYDRATION, HYDRATION



Water is critical to maximize endurance performance. Good hydration improves the body's ability to recover quickly from training and competition, and plays a role in minimizing injury and muscle cramps. While dehydration can be dangerous, poor hydration is preventable and common in soccer athletes. Under-hydration affects the body's ability to mobilize fuel for your muscles to use while playing, and impairs decision-making on the field.

WHEN	BEFORE	DURING	AFTER
WHY	*At a level of 1% dehydration performance is impaired. This can occur within the first 15 minutes of play	Helps to limit further fluid losses and prevent dehydration. Cools the body's core	To replace fluid lost through sweat and speed up the recovery process
WHAT	Water	Water or sports drink	Water/sports drink for activity > 60 min
HOW MUCH	20oz. 1-2 hours, 8-12oz 15-30 minutes	3-6 oz. every 20 min or 12oz. at halftime	16-32 oz. immediately after

**Hydrating before a game or big event starts the day before*

Facts/Tips:

- By the time you are thirsty, your body's water is already low. **Don't rely on thirst alone** to guide your hydration decisions. Even the smallest amount of dehydration leads to fatigue and loss of focus affecting decision-making and trouble with performing basic tactics.
- The color of your urine is one of the **best indicators** of how well-hydrated you are. <http://health.clevelandclinic.org/2013/10/what-the-color-of-your-urine-says-about-you-infographic/>
- Research shows many athletes don't drink adequate water alone. Since taste influences the amount of fluid consumed, **try adding a flavor to your water** (lemon, mint) or use a diluted or regular sports drink to stimulate thirst and increase the volume consumed.
- **Avoid caffeinated and carbonated beverages** such as soda always during training times and games. Caffeine allows the body to lose more water and carbonation limits the amount one can drink, causes stomach discomfort, and has empty calories – those of little use to a soccer athlete. Limit these for the most part on days-off as well.
- If you sweat a lot, you are losing a lot of sodium. **Eat salty foods** before training such as pretzels or use the salt shaker on your pre-training meal. Follow with a sports drink.
- Drink frequently beyond the level of thirst but not to the level of feeling full. Studies show the body absorbs about 1 liter (~32oz) at a time. **Hydrate often, not all at once.**

2. FUEL EARLY, FUEL OFTEN, FUEL SMARTLY



Consuming adequate calories from carbohydrate, protein, and fat is the way the body gets energy or fuel. **Soccer relies on carbs as the main fueling source.** Carbohydrate-rich foods include whole and partially whole grains such as bread, rice, pasta, oatmeal and most cereals, fruit, starchy vegetables such as potatoes, peas, and corn, and milk and yogurt. High-quality nutrition is important all the time, and eating frequently optimizes the way the body uses nutrients.

WHEN	BEFORE	DURING	AFTER
WHY	*Well-balanced meal 3-4 hours before training or game. "Top-off" with only carb as training gets closer (1-2 hours before) ex. fruit, bread/bagel, bar	Nutrients are typically not needed during a game. If intensity and duration are longer, simple carbs are indicated	A recovery nutrition snack is key to ongoing high performance within 30-60 minutes of play. Follow with a balanced meal.
WHAT	Meal: Carbohydrate-rich foods, moderate amounts lean or plant-based protein and fat	Simpler carbs only: fruit, sports drink, low-fat granola bar or fig/fruit bar	3:1 Recovery Snacks: 1-2 cups choc. milk Sports bar with at least 8g protein and 25g carb (Clif, Luna)
HOW MUCH	*See meal plans	30-60g carb at most	*see meal plans

**Fueling before a game or big event starts the day before*

Facts:

- Carbohydrate is the major nutrient that fuels the working muscles. **Take carbs seriously** and eat them throughout the day. If inadequate in the diet, glycogen, the storage form of carbohydrate for energy, will be low. Under-fueling carbs leads to earlier exhaustion on the field. Muscle repair and growth will not occur if carbohydrate is not adequate. **Yes – muscle’s most important nutrient is carbohydrate – not protein!**
- **Eating an overabundance of protein does not build muscle.** Training hard and eating an adequate amount does. New research shows that **spreading out protein throughout the day** optimizes training and muscle healing/growth. Eat a high-quality protein source at every meal, such as lean meats like chicken, turkey, fish, lean cuts of pork and beef, tofu, low-fat milk, cheese/yogurt, beans, nuts and nut butters, and eggs.
- The body needs **consistent fueling throughout the day** to optimize performance. There are limits to how much your body can utilize at one time. Athletes need to eat frequently.



3. IT'S ALL ABOUT TIMING



Refer to the above hydration and fueling tables for the basics on timing. Often, early morning games and back-to-back games do not leave enough time to use best practice guidelines. See the below scenarios to optimize performance.

➤ **Scenario 1, Back-to-back games/Tournament Play:**

If there is less than 2.5- 3 hours between games, having a full meal is not indicated. Continue to hydrate with water. Try one or more of these suggestions:

- Half peanut butter and jam sandwich, fruit, yogurt or milk
- Sports bar with at least 8 grams of protein and 30 grams of carbohydrate with fruit
- 12 crackers with 2 cheese sticks/1Tbsp peanut butter, 100% juice/sports drink
- Yogurt and fruit with granola or cereal

➤ **Scenario 2, The 8am Game:**

Arrive to breakfast between 5:30 and 6:00am. Choose mostly carbohydrates such as bread and bagels, lower sugar cereal with low fat milk, and fruit. Avoid high fat meats such as bacon and sausage. Choose a small amount of eggs instead. If the game starts at 9, still try to arrive to breakfast by 6:00am. Practice eating breakfast within a half-hour of waking up.

Facts: Recovery Nutrition – Post-fueling

What is eaten immediately after practice or a game **determines how quickly a soccer player recovers** and can play the next time. Carbohydrate-rich foods restore glycogen, the body's storage form of carbohydrate that is relied on in every practice and game. Protein is also needed in smaller amounts to help repair muscle cells.

- Post-fueling needs to take place as soon after play ends as possible. Aim for 30 – 45 minutes. This is called the **“Window of Opportunity”** in sports performance because exercise stimulates glycogen formation, the storage form of carbohydrates, to occur at a quicker pace. The ‘window’ stays open for ~ 2 hours – **but the sooner the better**.
- Shoot for a **3:1 or 4:1 carbohydrate to protein ratio** in your post-fueling snack. Then, follow with a meal when able. Most athletes prefer to drink than eat, but the choice is yours! Something is always better than nothing! Examples of post-fueling snacks:
 - 16 – 20 oz. Low-fat chocolate milk
 - Bars with at least 25 grams of carbohydrate and 6-8 grams of protein. High quality examples are Clif (Regular and Mojo), Luna, Kind
 - 16oz. fruit and yogurt smoothie
 - Greek yogurt with fruit and/or granola
 - ½- ¾ cup cottage cheese and fruit
 - Apple or banana with peanut butter
 - 1 cup trail mix including dried fruit, cereal and nuts

4. PRACTICE BEFORE YOU PLAY



You put in hard work practicing the game. Proper hydration and fueling takes practice as well. Test your tolerance to the guidelines above during harder training days to assure new systems work for you. Trying something new the day of a big game is too risky! Once you find out what works for you, stick with it. While some athletes have “lucky meals” or pre-game food rituals that scientifically make no sense, the largest majority of successful athletes follow sound guidelines.

SAMPLE PERFORMANCE MEAL PLANS FOR 3 MEALS AND 3 SNACKS

Meal/Snack	Meal Plan	Meal Plan
#1 Breakfast	2 cups whole grain lower sugar cereal (Wheaties, Total, Cheerios) with ¼ cup slivered almonds and 1 cup low fat Milk Banana	2 eggs 2 slices of whole wheat toast with peanut butter 1 orange 1 cup low fat milk
#2 Lunch	Lean protein sandwich 1 cup soup Fruit 1 cup raw carrots and snap peas	2 vegetarian corn tortilla wraps (2 corn tortillas each with ½ c. hummus, 1 slice cheese, spinach, tomato) Hard-boiled egg Fruit 1 cup low fat milk (soy or almond)
#3 Afternoon Snack and “Top off” (pre-fuel)	¾ cup Greek yogurt with fruit and ½ cup granola “Top-off”- peach or plum, 6-8 crackers with jam, water	Bagel with Greek cream cheese or 1oz. hard cheese “Top- off” – dried mango 15 wheat thins, water
#4 “Window of Opportunity” after training snack (post-fuel)	12 ounces chocolate milk Banana	Clif, Luna or Kind bar 12-20 ounces Gatorade
#5 Dinner	3-5 ounces lean protein (size of the palm of your hand) 1.5 - 2 cups pasta, rice or 1 large potato, 1-2 cups veggies 8 oz. low fat milk	Chicken stir fry with 3-4 ounces sliced chicken, 1- 2 cups vegetables of choice and 1.5-2 cups brown rice 8 oz. milk
#6 Evening snack	1 slice toast with peanut butter/honey, ½ cup milk	1 cup cereal with ½ cup low fat milk

THINK FOOD FIRST: SUPPLEMENTS AND SPORTS



Athletes are always seeking ways to enhance their performance and often turn to supplements. Supplements come in many forms. Basic multivitamins are supplements, as are individual nutrients such as iron or calcium. Protein supplements are common among athletes. It is important to understand that the manufacturing of dietary supplements in the U.S. is not tightly regulated or standardized. The safety and purity of supplements and the concentration of active ingredients in them is inconsistent. Many nutrition supplements provide NCAA banned substances and are labeled using names consumers are unfamiliar with. Buyers beware!

THINK FOOD FIRST! Food is absorbed better than any dietary supplement and provides many other health benefits.

IF YOU ARE DEFICIENT IN A NUTRIENT OR CANNOT TOLERATE CERTAIN FOODS IN YOUR DIET, YOU MAY NEED TO SUPPLEMENT. Consult with a Registered Dietitian for advice on supplementation.

There is nothing magical about protein supplements, but if you have a suppressed appetite, require the convenience of a supplement or have increased needs, choose supplements with ingredient labels you understand. Dietitian top-picks for protein supplements are derivatives of milk or soy, such as whey and casein powders, or soy powder.

The icons above are independent labs that test supplements for quality and purity. When buying a supplement, check for one of these three icons on the label for increased assurance.

See further information on supplement use in the additional resources section.



MINERALS OF IMPORTANCE FOR ATHLETES

Strong Bones: CALCIUM

Calcium builds and maintains bones and teeth. We only build bone up to about age 25—so it's very important to stock up on calcium now! Calcium also helps your heart beat and helps your muscles contract and relax. Low levels of calcium can lead to increased risk for bone related injuries (such as stress fractures). Calcium is best absorbed when Vitamin D is also in the same food, such as dairy foods. If you do not like, or tolerate, dairy click [here](#) to learn ways to increase your calcium intake.

Where can I get calcium?

*Male & Female athletes should take in about **1,300 mg** of calcium per day (3 dairy sources a day).*

Food	Serving	Milligrams of Calcium
Low-Fat Milk	1 cup	305 mg
Almond Milk	1 cup	451 mg
Soy Milk*	1 cup	299 mg
Yogurt	6 oz. container	311 mg
Cheese	1 oz. (1 slice)	189 mg
Almonds	1/4 cup	96 mg
Spinach	1 cup	30 mg
Orange Juice *	1 cup	350 mg

**=calcium fortified*

Tip

If you are still falling short on calcium, you can consider a calcium supplement. Choose one with approximately 500 mg of calcium and added Vitamin D. Your body will only absorb one calcium tab at a time.

Pumping IRON

Iron's job is to carry oxygen to the entire body through blood. When iron levels drop, the body starts producing smaller and fewer red blood cells that can't meet the oxygen demands of the body. This affects performance on the field. For more info click [here](#).

Where can I get IRON?

Keep your iron stores pumped up! Males 14-18 years need 11 mg each day and females 14-18 need 15mg.

Foods with Heme Iron		Foods with Non-Heme Iron	
Ground Beef (3.5 oz.)	2.35 mg	Fortified cereal (1 oz.)	4.5-18 mg
Lean Ham (3.5 oz.)	1.48 mg	Tofu, raw (1/2 cup)	6.65 mg
Chicken breast (3.5 oz.)	1.06 mg	Power bar *and other fortified bars (1)	6.30 mg varies
Tuna (3 oz. can in water)	1.30 mg	Oatmeal, instant packet	6.30 mg
Turkey Slices (4 slices)	1.08 mg	Black beans (1 cup)	3.61 mg
Salmon, wild (3 oz.)	0.88 mg	Enriched white rice/pasta (1 c.)	1.90 mg
	<i>*only 0.29 in farmed</i>	Wheat bread (1 slice)	0.9 mg
Egg (1)	0.59 mg	Raisins (1/3 c.)	1.04 mg

Tips:

- Meat, poultry, and fish contain a form of iron (Heme) that is better absorbed than the iron found in plants.
- Iron is best absorbed with foods high in **Vitamin C**, such as: Broccoli, cantaloupes, grapefruits, oranges, strawberries, tomatoes, and potatoes.
- Using cast iron pans for cooking can increase iron.
- Females lose iron every month with menstruation. Optimizing iron in the diet is of upmost importance.
- **If you know you are not getting enough iron in your diet, using a basic multi-vitamin that has 100% of the RDA for iron may help.**

REFERENCES:

1. Academy of Nutrition and Dietetics Position Paper Nutrition and Athletic Performance <http://www.eatrightpro.org/resource/practice/position-and-practice-papers/position-papers/nutrition-and-athletic-performance>
2. Sports, Cardiovascular and Wellness Nutrition Fact Sheets (SCAN) at [www.scandpg.org](http://ods.nih.gov/About/DSHEA_Wording.aspx)http://ods.nih.gov/About/DSHEA_Wording.aspx
3. American College of Sports Medicine www.acsm.org
4. US Soccer and US YOUTHSOCCER.ORG Sport Nutrition [file:///C:/Downloads/SportsNutritionForTheSeriousAthlete_Sacheck%20\(1\).pdf](file:///C:/Downloads/SportsNutritionForTheSeriousAthlete_Sacheck%20(1).pdf)
5. Fuel for Young Athlete by Ann Litt, MS, RD

Handout provided to you by the Registered Dietitian Nutritionists at the Indiana University Health Center, Bloomington, Indiana.

ADDITIONAL RESOURCES:

For the Vegetarian athlete [click here](#)

For those confused about sports drinks, bars and gels [click here](#)

For those who want more information on supplements [click here](#) and [here](#)

US Soccer [10 Nutrition Rules to Live by](#)

For those who love numbers [click here](#)