

Athletic Nutrition for Young Athletes

By Erin O'Neill

In a period when many parents enroll their children in organized sports, it is imperative that basic nutrition guidelines for young athletes be followed. This will help these children to progress to their desirable potentials. Along with their improvement in performance, a healthy diet may reduce injury, reduce recovery time between competitions, make them feel better both physically and mentally, and create healthy eating habits for life.

The guidelines to youth sport nutrition focus on getting the athlete enough energy and the right kinds of energy for the rigorous demands on their active bodies. A child should always receive a good meal at least an hour or two before practice or competition. In addition, you must encourage your youth athlete to eat a lot of food frequently. They need more fuel than the normal adult population due to their growth alone, but when physical activity comes into play, an increased amount of energy is called for.

An effective way to ensure that your athlete does not go hungry is to place nonperishable items such as pretzels or sports bars in their book bags or practice gear bags. Even extra calories, such as those found in fruits or sports drinks, during practice is highly recommended.

The food pyramid is an excellent guide for parents to follow when deciding on what to feed their young athletes. Youngsters should be ingesting plenty of carbohydrates with unsaturated fat. Fruits, vegetables, whole grains and easily digestible foods are recommended. Junk foods, which are high in simple sugars and saturated fats, should be avoided, especially before activity. The sugars may create a quick burst of energy followed by a dive in energy levels. The fatty foods are hard to digest. For the adolescent athlete, it is important to watch calcium and iron levels. In periods of rapid growth, athletes are especially susceptible to deficiencies in these areas. Most importantly, proper hydration must be stressed. Dehydration greatly hampers performance and may even lead to heat stress or even heat stroke in extreme cases. Water (or sports drinks or diluted fruit juice) should always be on hand and readily available for young athletes at practices and competitions.

Lastly, refueling your athlete after activity is equally important but it is often overlooked. Nutritious meals help speed up the recovery process and replace nutrients that have been lost. If the athletes are rewarded for their performances in the way of sweets or fast food, it must be stressed that they should only receive these treats after their game and not as a replacement for regular meals. Following these guidelines will result in a youth athlete who can perform at optimal levels.

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Article contributed by Coaching Youth Sports, an online newsletter presenting information about learning and performing sport skills.

Eating to Play

By Dr. Don Kirkendall

A letter was sent to the editors requesting information about eating around game times. With the new season nearly upon us, it is probably a good time to review some topics associated with nutrition and sports performance.

This has been one of the most intensely researched topics in the sports performance literature and there have been many advances from the "Saturday morning steaks" that dads might remember from their high school football days.

Research can be grouped into four categories regarding the timing of eating: training days prior to competition, day of competition, during competition and after competition. In brief, carbohydrates are the best choice so choose foods that give the most carbohydrate per serving.

Days Prior To Competition

This was the first real focus of study that led to the "glycogen loading" concept. Without going into a lot of scientific history,

the typical routine now is to gradually reduce training volume and intensity while increasing the fraction of the total diet that is carbohydrates. This will help the muscles load up extra glycogen (the main fuel for muscles) for the game.

In soccer, this is not a common practice unfortunately. Most research shows that the muscle glycogen levels of (male) soccer players are no better than the spectators in the stands - not good.

Studies on soccer players have shown that those with the most pre-game muscle glycogen run the farthest at the fastest speeds during a game. As such, it is surprising to see that glycogen loading schemes have not been as universally adopted in soccer as they have in traditional endurance sports like running, cycling, cross-country skiing and triathalons.

Five to six grams of carbohydrate per kilogram of body weight over a 24 hours period is the typical suggestion so read those labels on food packaging. Remember, 1 pound of body weight/2.2 = kilograms of body weight.

Day of Competition

There is probably no more area full of misleading information than eating the day of competition - the proverbial pre-game meal. Most pre-game meals are eaten in the 3-4 hours prior to competition. But realize that the food eaten will have little to do with the energy expended in the game. That comes from what was eaten in the 2-3 days prior to the game.

Most players eat what they like so they won't still feel full come game time. Remember that the more calories (i.e. fat and protein) in a meal, the slower the food leaves the stomach. Carbohydrates are always the best choice as fruits, cereals, juices, pancakes/waffles etc. over sausage, eggs, steak, or many choices on the breakfast menu at a fast food restaurant.

Food in general, and carbohydrates in particular, should be avoided in the last hour before play. Carbohydrates stimulate an insulin response which lowers blood sugar and also stimulates the production of serotonin, a chemical in the brain that reduces arousal (makes you listless and sleepy).

Both are obviously counterproductive to competition. If something must be eaten, choose low glycemic index foods as they cause less of an insulin response.

Immediately prior to competition (in the minutes before kickoff), carbohydrates can be taken in. The excitement of the game will counteract the insulin response and the fresh carbohydrates give the muscles an extra source of fuel. The type of carbohydrates is important. Foods should be of a moderate or high glycemic index (see table).

Carbohydrate supplement drinks work great. "Clear" candies (jelly beans, "Gummy" candy, Skittles etc. you get the idea) are another choice. .

Eating During Competition

During the game, carbohydrate supplement drinks given before the game and at halftime have been shown to increase running volume and intensity in the second half in soccer players. This is important to consider because goals become more frequent later in the game as players get tired.

If you have more energy than your opponents, you are more likely to have an advantage over the opposition and hopefully, score more later in the game. As you can see from the table below, the ubiquitous orange slices at halftime are pretty low on the priority as a carbohydrate source.

Eating After The Game

The game uses muscle glycogen (carbohydrate) so it must be replaced. Research has shown that muscle is the most receptive for carbohydrate replacement in the first two hours after exhaustive exercise. Therefore, it is important to eat some moderate to high glycemic index foods in the first two hours after a game.

From the table, you see there are quite a variety of options for food, most of which require a little planning and typically do not come in a bag or a tray from a fast food restaurant. With games at 12 noon and 4 pm, it is necessary to get some carbohydrates back into the muscles quickly.

Remember, fast foods are high in fat and protein and can remain in the stomach at the start of the next game (depending on

when it was eaten and how much was eaten) and doesn't return much in the way of carbohydrates to the muscles, therefore should be avoided.

A nutritionist gave me a good suggestion: make up bags of Chex Mix with some pretzel sticks added (forget the oil and baking requirement) and let the players eat this after the game. Clear candy is also good as are raisins, cakes, pies, bagels.

Ideally, eat 50-75 grams of carbohydrate every two hours until you reach the total based on your weight (5-6 grams/kg body weight).

But don't get the idea that all the carbohydrate can be replenished in a couple of hours. Under the best of conditions, it can take 20 hours to fully replenish muscle glycogen from muscles that have been completely depleted.

Eating for sports performance requires a bit of planning and clock watching, but can lead to improvements in performance. When done properly, the players will notice they have more energy late in games as well as when they have multiple games with minimal recovery between games.

For more information, try:

<http://www.olympic-usa.org/inside/> - USOC website for nutrition information including some sample menus.

<http://www.mendosa.com/gi.htm> - a complete discussion of the glycemic index.

<http://www.mendosa.com/gilists.htm> - for a long list of foods with their glycemic index. These last two sites are written for diabetics, but contain much useful information.

Glycemic Index Table

High Glycemic Foods

Syrups (e.g. maple, corn, cane); Honey; Bagel, white bread, jams, jellies; Potato; Most cereals; Raisins, banana, watermelon, pineapple; Carrots, cooked; White rice; Maltodextrin; Jelly beans, Skittles, pretzels, most candy bars

Moderate Glycemic Foods

Whole grain bread; Spaghetti; Corn; Oatmeal; Oranges, grapes

Low Glycemic Foods

Yogurt; Peanuts; Beans, peas; Apple, peach, pear; Milk and milk products.

Fluids

By members of the US Soccer Sports Medicine Committee

These days, drinking fluids during exercise is considered normal behavior. The importance of drinking water was first documented during the construction of the Hoover Dam near Las Vegas in the mid-1930's. Unfortunately, the athletic community didn't catch on until the middle 1960's. In the late 60's and early 70's, the opinion of many began to shift and drinking water during exercise started to become commonplace. Nowadays, withholding water might even be considered negligent.

We begin to sweat within the first seconds of exercise, but we don't perceive it on our skin because the sweat evaporates so fast. Once our body temperature rises, sweat production exceeds evaporation and that is when we start to notice it on our skin. Evaporation of the sweat is the actual loss of heat. The lower the humidity, the faster the evaporation. There are even modern fabrics that help in the evaporation process. Sweat is mostly water. The amount of salt in sweat is small, so our most important task is to replace water. (were you aware that the first sports drink, Gookin-Aid, was simply the salt and water composition of the sweat of a runner named Matt Gookin?) We don't begin to get thirsty until about 1% of our body weight is lost. However, our thirst mechanism is not very good.

We get thirsty after we've started to become dehydrated. When we start drinking, we satisfy our thirst before we have replaced the lost fluid. If we lose 3 pounds of weight by sweating (that is 3 pints of water-remember that relationship: 1 pint of water = 1 pound of body weight), we don't drink back those 3 pints of lost water. We typically stop drinking well before full replacement of water. It is best to drink some fluids 15-20 minutes prior to exercise. Two to three good size mouthfuls of fluid is about right. Drink 2-3 mouthfuls every 15-20 minutes during exercise (performance drops off with dehydration not

too mention that the real risk of heat illness accompanies dehydration) Drinking during exercise helps keep performance up and the body temperature from getting too high. Place water bottles around the field, in the goals, and make it easily accessible on the bench so players can freely drink during the game. Use the normal stoppages in play to replenish your fluids-remember, a 90-minute game only has around 60 minutes of play, even less on hotter days so there are plenty of opportunities to drink. Water or a commercial drink? Actually, the salt in the commercial drinks helps get the water absorbed a little faster. Taste also has a lot to do with it. The better the taste (water is a bit bland) the more consumed. Carbonated sodas are never a good choice -- not before, during or after a game. The carbonation fills you up too fast and you drink less. It takes a while to replenish your fluid levels. Do not force fluids in a short period of time. Research shows that it can take up to 6 hours to get back to a normal water balance. To get back into water balance after exercise, drink 1.5 times your weight loss.

Therefore, if you lose 4 lbs. of weight in a game (4 pints of water) - you should drink 6 pints of fluids in the hours after the game. Remember to drink 8 glasses of water (or 2 of those 32 oz water bottles many players have) every day. The suggestions mentioned are in addition to the normal 8 glasses per day.

Heat illness is a very dangerous condition, but it is an entirely preventable problem. Drink before, during and after each exercise session. Weigh yourself at the same time each day. Unless you are trying to lose weight, your weight should be stable. If it's not, you may be becoming progressively dehydrated.

Four Common Myths About Nutrition Among Soccer Players

Dr. Donald T. Kirkendall

from U.S. Soccer Resource Center

By Donald T. Kirkendall, works with U.S. Soccer's National Teams

There are more myths that coaches, players and parents may be following, but below four of the more common myths are dispelled. By following the nutritional guidelines below, players, coaches and teams can put themselves in an advantageous position before the match starts.

Myth 1: Game performance is not affected by what you eat.

Virtually every study on athletic performance for both team and individual sports shows that a diet rich in carbohydrates improves running performance. However, nutritional research from the 1970s to present day still show that soccer players choose a diet that is approximately 40 percent carbohydrates, 40 percent fat and 20 percent protein.

What is discouraging is that in the very early 70s, the Swedes conducted a study that showed soccer players with low muscle fuel (glycogen) walk about 50 percent of the game. Even 30 years later, a study showed that more than half of a national team in the 1994 FIFA World Cup thought food had nothing to do with their performance. The bottom line is that players eat what is put in front of them.

The more carbohydrates an athlete eats, the more endurance he or she will have. This means that when the end of the game approaches, the player will be able to run faster and longer if he or she consumed the proper amount of carbohydrates.

Myth 2: What you eat after the game does not matter.

At games and tournaments around the country, players will sometimes eat the worst post game snacks possible including soda, sweet drinks in soft packaging, potato chips, candy bars and fries. Everyone who has ever been to a soccer field on a weekend has seen this.

Muscles are most ready to receive a fresh supply of fuel during the first hour or two directly following exercise. The smart coaches and parents supply food that will start refilling muscles with carbohydrates at just that time.

A proper supply of carbohydrates is needed. It can come from a carbohydrate replenishment drink or other foods like bagels with jelly, pretzels, raisins or other dried fruit. This is even more critical between tournament games when the time between games is even shorter.

Myth 3: A diet is good as long as an athlete gets enough protein.

While most every survey of the athletic diet shows that players get all the protein they need from food, there is a problem. The vast majority of protein is consumed in conjunction with fat.

Marbled meat, ground beef, and fried chicken all are examples of protein that is combined with lots of fat. Red meat should be trimmed of fat, and ground beef should be very lean. Chicken should have the skin removed before cooking.

One place protein isn't commonly found is the immediate post-exercise meal. A little protein helps in storing new fuel in the muscles faster than when there is no protein. Players can try to figure out a protein source after the game or drink a carbohydrate replenishment drink that contains protein.

Myth 4: Your body is the best indicator of when to drink; Mother Nature knows best.

For most mammals, it is OK not to drink until thirsty. However, the thirst mechanism of humans operates differently than the average mammal. In fact, the human thirst mechanism doesn't even kick in until a person has lost about two percent of body weight from sweating. At this level, a decrease in performance begins to become evident.

Players should drink before starting the game, every 15-20 minutes during play if possible, and at halftime. Make sure the team has drink bottles along both sidelines and in the goals so players have easy access to fluids during stoppages of play. Don't forget that playing in the cold is also dehydrating, so drinking fluids is just as important in cold weather.

Overall, it is important for the well-rounded player to keep an eye on what they eat and drink in order to get results on the field. For more information on nutrition in soccer, check out the Resource Center archives on the Services page of ussoccer.com.
