Eat to Compete in High School: Sports Nutrition for Teen Athletes

Heading off to high school is a big step. You're no longer the big fish at middle school. The classes in high school are tougher, and the sports are definitely more challenging. You no doubt played recreational sports growing up, but that was one or maybe two practices a week and a game on the weekends. The physical commitment to high school sports is in another league altogether. There may be daily practices — sometimes in the morning and afternoons, separate weight-training workouts, and one or even two competitions in a week depending upon the sport.

Gone are the days of orange slices at half-time and a glazed doughnut as the post-game snack. Many teenage athletes get hit with this stark reality the first week of the preseason. You drag yourself home after 6 or 7 periods of class and an exhausting practice, and you can barely find the energy to make it through dinner, let alone tackle a night of homework. Sound familiar?

As a teenage athlete, you face the challenge of keeping pace with the nutritional demands of your sport, while also consuming the nutrients required to fully grow and develop. In this article, you'll learn what you need nutritionally to be healthy and to support the growth spurt that is transforming your body. You'll also gain expertise on the key principles of sports nutrition and how to apply them so that you can be at your best when training and competing.

You're not just competing, you're growing

During your teen years, you're growing at an incredible rate. Girls sprout an average of 10 inches (25 cm) and gain 53 lbs (24 kg) during the growth spurt. Boys tack on an average of 11 inches (28 cm) and pack 70 lbs (32 kg) onto their frames.

The exact timing of when you'll grow and what height you have the potential to reach has lots to do with your genetics — something you don't have any control over. But you can only achieve your full growth potential if you consume adequate amounts of the many different nutrients your body needs to develop and stay healthy — and that's something you do control!

Which foods to eat and why

To reach your full growth potential and to compete successfully in high school athletics, you need a host of essential nutrients and dietary factors. Included on the list are adequate calories, carbohydrates, protein, fat, fiber, water-soluble vitamins, fat-soluble vitamins, minerals, and trace minerals.

With a nutrient list this long, it stands to reason that you're not going to get the full gamut of what you need from a few foods or even by popping dietary supplements. Yes, it sounds like a cliché, but the recommendation to eat a wide variety of foods has a purpose. It's that wide variety that's going to ensure that you get all the nutritional factors you need to develop your full potential.
The following foods are the foundation of healthy eating, and healthy eating is what all athletes need to do in order to perform at their best:

**Fruits, vegetables, and grains** are your dietary staples. They should make up three-fourths of every meal. These foods provide carbohydrates. Carbohydrates are your primary fuel source when you're working hard at practice, and you only have a very limited supply of these carbohydrate fuel reserves in your body. That means you need to replace on a daily basis what you use up during exercise. If you don't, you'll be dragging at every practice and workout, and failing to deliver during competitions. These foods are also storehouses for essential vitamins and minerals, as well as fiber. Consume at least 5 servings of fruits and vegetables each day. Fruits include apples, bananas, oranges, tangerines, berries, melons, and so on. Whole fruits are preferred over fruit juice. Vegetables include carrots, celery, lettuce, salads, broccoli, cauliflower, Brussels sprouts, green beans, peas, corn, and so on. Grab 2 or 3 pieces of fruit and a bag of whole grain crackers on your way out the door in the morning, and make these your snacks. And a word to the wise: Choose fresh fruit and vegetables over more processed varieties for the most health benefits.

When it comes to grains, choose them whole when you can. Examples include wholegrain and multi-grain breads and cereals, oatmeal, and brown rice. A whole grain, ready-to-eat breakfast cereal is a great start to the day or as a high-carbohydrate snack anytime.

**Protein foods** should make up the other fourth of your meals. Healthy protein foods are lean meats, chicken, turkey, fish, nuts, beans, and tofu. Protein foods provide amino acids, which are the building blocks your body uses to make all kinds of different proteins, including muscle tissue. Protein foods like meat are also good sources of iron, which is an important mineral you need to maintain your energy level. Contrary to popular opinion, most athletes get plenty of protein, and eating more than you need won't make you any stronger or bigger. But timing your protein intake in relation to your practices and workouts is something to pay attention to, and we'll cover that more a bit later. A good, practical way to get healthy protein sources is to bring a couple of sandwiches to school to eat during breaks and at lunchtime. Peanut butter and jam, chicken, tuna, and meat sandwiches all fit the bill. A bag of nuts with dried fruit also makes for a munchable snack, and the fats in nuts are particularly healthful.

**Recommendations for dairy foods** are to have 3–4 servings a day. Dairy foods include milk, yogurt, cheese, cottage cheese, and ice cream. Choose lower-fat versions. Dairy foods provide high quality protein and often some carbs, and are also great sources of calcium and vitamin D. During your teenage growth spurt, you'll be adding nearly 40% of the total amount of bone you will have as an adult. If you don't bone up as a teenager, there's no catching up later. In fact, you'll live with the bone health consequences the rest of your life. Calcium is a key mineral that gives bones their strength, and vitamin D helps your body to absorb calcium. To get the calcium and vitamin D you need every day, try to drink milk with your meals, have cheese in your sandwiches, and make yogurt a regular snack. If you can't consume dairy products, consider calcium and vitamin D fortified foods or beverages or a calcium and vitamin D dietary supplement to ensure an adequate intake of these important nutrients.

**Fat** is the primary muscle fuel you use during low-intensity activities. Realistically, fats will be second only to carbohydrates in terms of the calorie contributors in your diet. So when you eat them, try to steer clear of the unhealthy versions and towards those that can make you healthier. Butter, the fat in and around meat, the fats in most restaurant fried foods, and the fat in dairy products are high in either saturated fat or trans fat. Long-term, when consumed in excess, these fat sources can be harmful to the heart. Healthy fats are the monounsaturated and polyunsaturated fats found in fish, such as salmon; and a variety of plant sources, such as nuts, avocados, and vegetable oils. So where it's practical for you, try olive oil or another vegetable oil in place of butter, select low-fat or nonfat versions of dairy products, limit your intake of restaurant fried foods, choose lean cuts of meat, and trim the fat off meat and the skin off poultry.

**Not on the list** is most of what you find in convenience stores, coffee shops, and vending machines. Surprise! A 16–fl oz energy drink and a bag of chips doesn't make the cut, and they won't help you make the cut, either. An occasional treat is fine but should not be the
mainstay of your diet plan.

You need extra energy
Playing sports boosts your need for calories. A typical teenage boy requires a base level of about 2,100–2,400 calories daily, while a typical girl needs around 1700 calories. Throwing sports into the mix changes the calorie score. Girls need an extra 750 calories daily to meet the energy demands of training and competing, while boys need an extra 900 calories. Somehow you're supposed to get all these extra calories from healthy food sources while going to classes, attending practices, getting your homework done, and getting enough sleep. Granted, it's not always easy, but short-changing calories while you're training hard is asking for trouble. Too few calories will cause your performance to suffer, you'll get sick more frequently, and for you girls, it can negatively impact your hormone balance, leading to devastating long-term consequences on bone health. So you need those extra calories. Enlist the help of parents in buying the essential groceries you'll need for lunches and snacks. Help them by making a grocery list. Plan ahead and get into the habit of packing a lunch and snacks for the school day. Eat frequently during the day, like at each break, and choose from the healthy options we outlined above. You've heard the phrase garbage in, garbage out. Don't let that be you!

Sports nutrition for training and competitions
Now we turn to the nuts and bolts of sports nutrition. How you prepare nutritionally prior to practicing, working out, or competing, how you hydrate and fuel during exercise, and what you do afterwards to promote recovery can have a significant impact on the gains you make from training and on your performance during competitions.

There are 3 basic principles of sports nutrition:
1. Hydration: Start exercise fully hydrated and rehydrate as needed during exercise
2. Fueling: Start exercise fully fueled and refuel as needed during exercise
3. Recovery: Promote full recovery after exercise

Hydration
The single largest contributor to fatigue during exercise in high school athletes is dehydration. Allowed to progress unchecked, dehydration can also lead to serious adverse health consequences. Your muscles generate heat during exercise, and sweating helps to cool you off. Sweat is primarily composed of water and dissolved minerals known as electrolytes. The mineral found in highest concentration in sweat is sodium. Large sweat losses deplete your body of the fluids and sodium needed to keep you cool. When this occurs, your internal body temperature rises, your heart rate increases, and it's much harder to exercise. Dehydration is negatively affecting your ability to exercise when you lose just 2% of your body weight due to fluid loss. For a 150-lb (68-kg) athlete, a 2% weight loss equates to just 3 pounds (about 1.4 kg). It's easy to lose this much fluid during a long practice or competition, especially in the heat or humidity. And don't be lulled into thinking that thirst will signal you to consume the fluids you need. It won't! Thirst during exercise doesn't kick in until well after you're dehydrated and your performance is already suffering the consequences. Fortunately, dehydration can be avoided, but it requires that you stick to a disciplined hydration plan before, during, and after exercise.

Fueling
Carbohydrates and fat are your primary muscle fuels when training and competing. Fat stores we all have plenty of, but the same can't be said about our carbohydrate reserves. Carbohydrate stores get significantly depleted during long, strenuous practices day after day, and they need to be replenished for you to continue to be at your best athletically. The key is to start exercise with your carbohydrate fuel stores fully loaded. For long practices and competitions, refueling with carbs may be needed during exercise or during breaks.

Recovery
Training and competing whittle away at your reserves of carbohydrate fuel. Exercise causes damage to muscle tissue, which requires repair. During training, your muscles are being stimulated to adapt to the workload you’re imposing. And finally, you lose fluids and the key electrolyte sodium due to sweating during exercise. Recovery is the process of reloading depleted carbohydrate fuel stores, repairing and building new muscle tissue, and rehydrating after exercise. It's during recovery that you make the gains from your training and prepare for your next exercise session. Your body is ready to begin recovery as soon as you finish exercising, but the process doesn’t begin until you provide the necessary nutritional components.

Practical Sports Nutrition Strategies for Teen Athletes
Fortunately, there are practical sports nutrition strategies that can help you to successfully implement the basic principles of sports nutrition.

Start exercise fully hydrated
- Bring a water bottle to school and take frequent sips throughout the day
- Consume 14–20 ounces (400–600 ml) of water or sports drink 2–3 hours before you train or compete
- Keep hydrating as needed during warm-ups by drinking another 8 oz (280 ml) of fluid, especially if conditions are hot or humid
- Check your urine color before exercise to monitor your hydration status. A light yellow color is consistent with adequate hydration. A darker color, like the color of apple juice, is typically a sign that more fluids are needed before you start training or competing

Start exercise fully fueled
- When possible, consume a meal 2–4 hours before training or competing. Choose familiar high-carb foods and beverages, and include a moderate amount of lean protein as well. Avoid slow-to-digest, fatty foods during the pre-exercise meal. Take a look at the table below for examples of pre-exercise meals
- Have an easy-to-digest carbohydrate snack if you're hungry in the hour before exercise. See the table below for snack ideas. If you have an early-morning practice or competition, consume your pre-exercise meal the evening before and have a carbohydrate snack on your way out the door in the morning
- If your stomach is in a knot before a competition, try a liquid carbohydrate source (e.g., fruit smoothie or a meal-replacement drink) in place of solid foods
- Trial your pre-exercise meals before practices so that you know you will be comfortable with these foods on competition days

Re-hydrate and refuel as needed during exercise
- Plain water is fine for exercise lasting less than 1 hour in moderate weather
- Consume fluids at a rate that closely matches your sweat rate during exercise. This generally requires something on the order of 13–26 fl oz (400–800 ml) every hour of exercise, preferably in smaller amounts taken frequently, such as 3–7 fl oz (100–200 ml) every 15 minutes
- Drink from your own sport bottle so you can track your fluid intake
- Fluid needs can vary considerably from athlete to athlete, and in different weather conditions. Therefore, you may want to calculate your sweat rate for the conditions in which you practice or compete
To refuel, to ward off hunger, and to rehydrate between events during meets or between matches or games during tournaments, consume familiar, easy-to-digest carbohydrate snacks along with water or a sports drink. See the table below for snack ideas.

Trial your re-hydration and re-fueling strategies during practices before implementing them during competitions.

Promote full recovery after exercise

- After a long training session or an extended competition, consume 0.5 grams of carbohydrates per lb (1.1 grams per kg) body weight within 30 minutes of finishing exercise.
  - Repeat this again within 2 hours or transition to high-carbohydrate snacksand meals.
  - For a 150-lb (68-kg) athlete, this equates to about 75 grams of carbohydrates immediately after playing, and then again 2 hours later.
  - Consume some protein as soon as possible after exercise.
  - After a long practice or an extended competition, consume 10–20 grams of protein as soon as possible after exercise.
  - For a strength-training workout, consume 20–40 grams of protein (0.18 grams of protein per lb body weight [0.4 grams per kg]) just before and/or immediately after lifting.

- See the table below for ideas on what you can eat and drink after exercise to promote rapid recovery.

- Weigh yourself before and after exercise to gauge your net loss of fluids. To replace this fluid, gradually drink 23 fl oz (690 ml) of sports drink, recovery beverage, or water for every lb (1,500 ml per kg) of weight lost. Consume sodium sources along with your fluids for more effective re-hydration.
  - If your loss of fluids consistently exceeds 2% of your body weight, try to increase your fluid intake during subsequent training sessions or competitions to avoid dehydration.

How to Use Sports Nutrition Products Effectively

Sports nutrition products are specifically designed to address your nutrition needs before, during, and after exercise. They provide the carbohydrates, protein, fluids, and sodium your body needs, using ingredients that are optimal for absorption, and the products are easy and convenient to use. So you don't have to wonder whether you're eating the right thing in the right amounts at the right time.

**A sports drink** is designed to provide fluids and sodium for hydration and carbohydrates to help sustain your energy levels. Use a sports drink during extended exercise sessions and whenever conditions are hot or humid.

**An energy gel** provides readily absorbed carbohydrates and sodium in an easy-to-swallow gel form. You provide the fluids. Use an energy gel along with a source of fluids before and during exercise.

**An energy bar** provides easy-to-absorb carbohydrates and moderate amounts of healthful protein. Use an energy bar as a snack before exercise, and during exercise if it is feasible to chew. For longer, more intense exercise, you should avoid high-fat, high-fiber bars due to potential GI upset.

**Recovery beverages and bars** are designed to provide the nutrients you need to help jump start recovery after exercise. A recovery beverage is useful when you want something light to promote rapid recovery. A recovery bar is the right choice when you want something tasty and solid post-exercise.

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**Ideas for Meals and Snacks Before, During, and After Exercise**
### Before-Exercise Meal Ideas

**(2–4 hours before exercise)**

- Cold or hot cereal with fruit or fruit juice and low-fat or nonfat milk
- French toast or pancakes with maple or fruit syrup
- Toast with jam or honey, and low-fat yogurt
- Breakfast burrito, (scrambled eggs, salsa, cheese in a flour tortilla), and fruit juice
- Bagel or English muffin with jelly and or peanut butter, banana, and fruit juice
- Pizza or cheese roll with low-fat, tomato-based sauce, French bread or low-fat breadsticks, steamed vegetables, low-fat/nonfat milk, pudding snack, and canned fruit
- Grilled chicken sandwich with frozen low-fat yogurt, and baked potato with low-fat sour cream or salsa
- Turkey sub sandwich with tomato, lettuce, mustard, baked chips, fruit juice, and low-fat frozen yogurt
- Thin-crust cheese pizza, low-fat galette, and canned peaches
- Baked or grilled lean beef, chicken, turkey or fish, steamed rice, dinner roll, cooked green beans, low-fat frozen yogurt, and fruit juice

### Snack Ideas

**(before or during exercise)**

- Fruit smoothie made with mango/banana berries and low-fat or nonfat milk or yogurt
- Fruit or vegetable juice
- Small roll or sandwich made with a banana and honey
- Low-fat or nonfat yogurt, or fat-free frozen yogurt, galette, or cookie

#### Sports Nutrition Products:
- Sports drink
- Energy bar
- Energy gel
- Energy chew

### Ideas for Rapid Recovery

**(after exercise)**

- Bread, rolls, and bagels
- Sandwiches
- Crackers or pretzels
- Fresh and canned fruits and fruit smoothies
- Vegetables and vegetable juice
- Cereal with milk
- Nonfat or low-fat yogurt or cottage cheese with fruit

#### Sports Nutrition Products:
- Recovery beverage
- Recovery bar
- Sports drink
- Protein bar
- Energy bar

References: