



# DON'T LET YOUR DIET LET YOU DOWN

A GUIDE FOR  
HIGH-SCHOOL  
ATHLETES

CIRCULAR 1044  
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Athletics is becoming increasingly competitive. More and more stress is being placed on how well you perform. To reach your highest potential, all of your body systems must be perfectly tuned. Nothing is more important to your well-being and ability to perform than good nutrition. Eating the right foods helps you maintain desirable body weight, stay physically fit, and establish optimum nerve-muscle reflexes. Without the right foods, even physical conditioning and expert coaching aren't enough to push you to your best. Good nutrition must be a key part of your training program if you are to succeed.

There is no one "miracle food" or supplement that can supply all of your nutritional needs. Certain foods supply mainly proteins, other foods contain vitamins and minerals, and so on. The key to balancing your diet is to combine different foods so that nutrient deficiencies in some foods are made up by nutrient surpluses in others. Eating a variety of foods is the secret.

The nutrients—the proteins, carbohydrates, fats, vitamins, minerals and water—are teammates that work together to provide good nutrition. Just as each team member carries out different tasks during a game, each nutrient performs specific functions in your body. A lack of just one nutrient is a disadvantage to your body, just as losing a player to the penalty box is a disadvantage for a hockey team. Your body needs all these nutrients all of the time, so the foods you eat should supply them every day.

Just because you are not hungry does not necessarily mean that your body has all the nutrients it needs. You can fill up on foods that contain mostly carbohydrates and fats, but your body still has basic needs for proteins, minerals, and vitamins.

### MAKE SNACKS COUNT

Choose snacks that contain more than just calories. When you eat out with friends, choose something nutritionally sound, like a cheeseburger with a slice of tomato and lettuce leaf. How many food groups are present in this sandwich? What might you eat along with this sandwich to make an even better snack?

### LOOK FOR EXTRA FOOD ENERGY

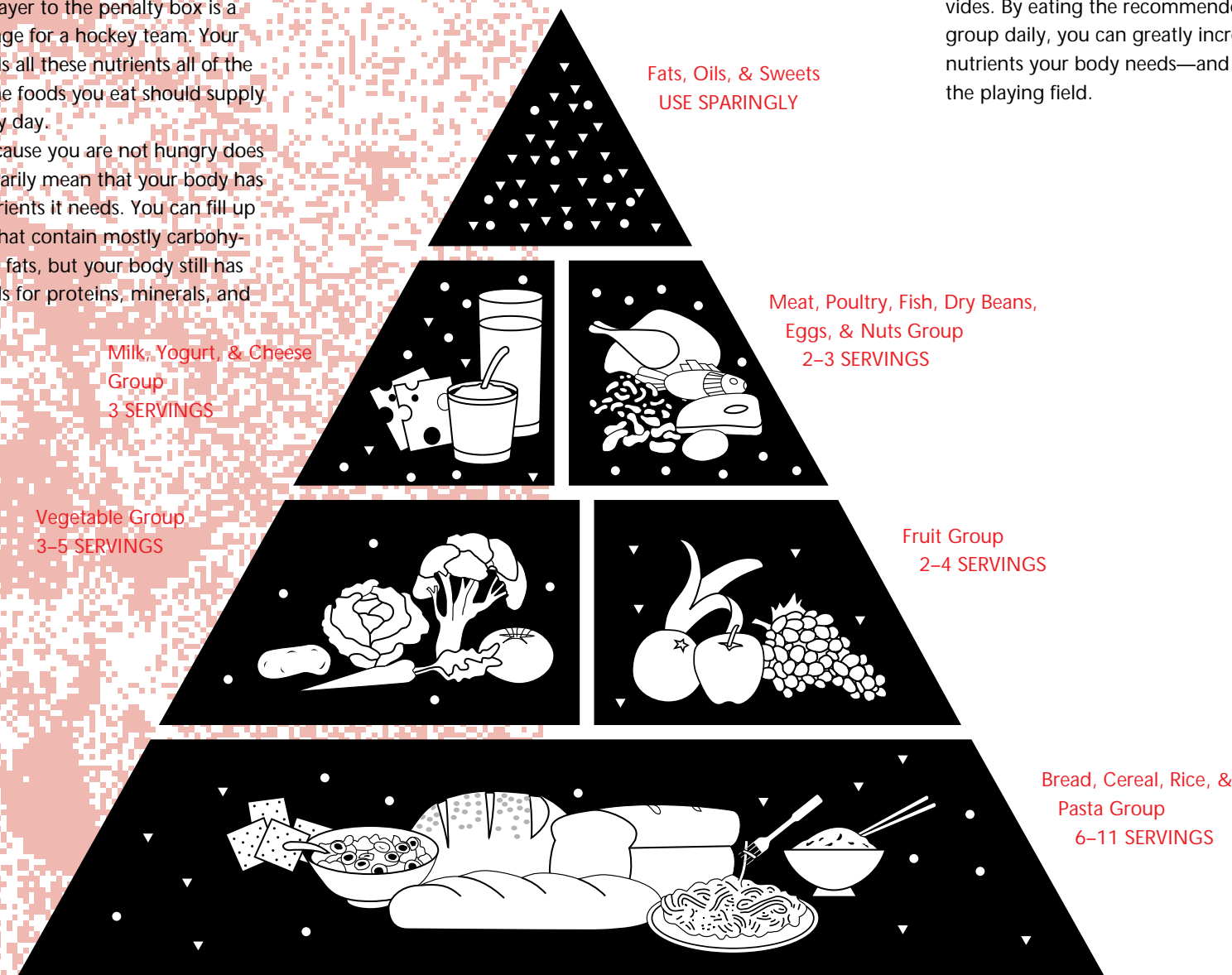
Teenage athletes burn up more calories than non-athletic teens. You can fill this requirement by eating more food from all food groups. Carbohydrates are the most efficient fuel for your body during strenuous exercise. Get most of your extra energy from foods like starchy vegetables and whole-grain or enriched bread, cereal, rice, or pasta instead of from fatty foods. For example, on an athlete's plate, a baked potato should get the nod over french fries.

## YOUR TRAINING-TABLE GUIDE

How can you tell if your diet is stacking up? Nutritionists have developed a food-guide system in the shape of a pyramid that can help you rate or evaluate your diet. This guide divides foods into five groups on the basis of the nutrients each group provides. By eating the recommended amounts of food from each group daily, you can greatly increase your ability to get all the nutrients your body needs—and that will improve your ability on the playing field.

HERE IS SOME ADDITIONAL INFORMATION ABOUT THE FOOD GROUPS THAT CAN HELP YOU IMPROVE YOUR DIET.

FOOD GROUP	FOODS INCLUDED	MAJOR NUTRIENTS SUPPLIED	RECOMMENDED AMOUNTS FOR TEENAGE ATHLETES*
Milk, Yogurt, and Cheese Group	Milk, yogurt, and all types of cheese	Provides calcium. Also contains protein, vitamin A, and riboflavin (B <sub>2</sub> ).	3 servings daily. 1 serving is <ul style="list-style-type: none"> <li>• an 8-ounce glass of milk</li> <li>• 8 ounces of yogurt</li> <li>• 1½ ounce of natural, unprocessed cheese</li> </ul>
Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group	Beef, pork, lamb, poultry, fish, eggs, dry peas, dry beans, peanuts, peanut butter	Good source of protein. These foods also contain thiamin (B <sub>1</sub> ), riboflavin (B <sub>2</sub> ), niacin, iron, and zinc.	2 to 3 servings daily. 1 serving is <ul style="list-style-type: none"> <li>• 3 ounces of lean, cooked meat</li> <li>• 2 eggs</li> <li>• 1 cup of cooked dry beans, peas, or lentils</li> <li>• 4 tablespoons of peanut butter</li> </ul>
Vegetable Group	All vegetables (including dark green, deep yellow, and starchy vegetables) and their juices	Provides vitamins and minerals that complement other food sources. Good sources of vitamin C include tomatoes, broccoli, and brussels sprouts. Good sources of vitamin A include carrots, broccoli, spinach, greens, pumpkin, and sweet potatoes.	3 to 5 servings daily. 1 serving is <ul style="list-style-type: none"> <li>• ½ cup of cooked vegetables</li> <li>• ½ cup of chopped raw vegetables</li> <li>• 1 cup of leafy raw vegetables such as lettuce or spinach</li> <li>• ¾ cup (6 ounces) of juice</li> </ul>
Fruit Group	All fruits and their juices	Good source of many vitamins and minerals. Good sources of vitamin C include citrus fruits and their juices, melons, and strawberries. Apricots are good sources of vitamin A.	2 to 4 servings daily. 1 serving is <ul style="list-style-type: none"> <li>• 1 whole fruit such as a medium apple, banana, or orange</li> <li>• ½ grapefruit</li> <li>• ¾ cup (6 ounces) of juice</li> <li>• ½ cup (4 ounces) of berries</li> <li>• ½ cup (4 ounces) of cooked or canned fruit</li> <li>• ¼ cup of dried fruit</li> </ul>
Bread, Cereal, Rice, and Pasta Group	All whole-grain and enriched breads and cereals, such as cooked or ready-to-eat cereals, bread, macaroni, grits, spaghetti, crackers, noodles, and rice.	Contributes complex carbohydrates (starch and fiber) and significant amounts of protein, B vitamins, and iron.	6 to 11 servings daily. 1 serving is <ul style="list-style-type: none"> <li>• 1 slice of bread</li> <li>• ½ hamburger bun or English muffin</li> <li>• 1 small roll, biscuit, or muffin</li> <li>• 3 to 4 small or 2 large crackers</li> <li>• ½ cup cooked cereal, rice, or pasta</li> <li>• 1 ounce ready-to-eat breakfast cereal</li> </ul>



### EATING PRACTICE EVERY DAY!

The training period offers you an excellent opportunity to establish sound eating practices that will benefit you on the playing field as well as give you a measure of well-being throughout life.

- Fat (naturally occurring and added)
- ▼ Sugars (added)

### EAT REGULARLY

Breakfast is especially important because you need food to start the day. Your body begins the day in a low-energy, fasted condition. Teens who eat breakfast score higher on physical fitness tests. Breakfasts can be made up of any combination of nutritious foods that you enjoy eating. Spaghetti and meatballs, together with an orange and a glass of milk, is a nutritionally sound meal for any time of the day—even breakfast!

\*To meet increased energy needs, most teen athletes require more than the minimum number of servings listed. In some cases, a teen athlete may need *more* than the recommended number of servings. For most athletes, the increased energy should come from the vegetable group and the bread, cereal, rice, and pasta group. Foods in these two groups contain a lot of starch, which is an excellent source of food energy. Athletes who participate in very high levels of physical activity and/or who have the largest body stature will require the highest intake of food energy.

Foods that occupy the smallest area at the top of the food guide pyramid, such as butter, margarine, sweets, and jellies, should be used sparingly. These foods do provide energy and some nutrients. However, go easy on these foods and get your energy from foods that are more nutritious. Your body needs the additional vitamins and minerals to help it use energy. Make this food guide pyramid system the basis of your training table.

### CHECK YOUR DIET FREQUENTLY

Spot-check your daily diet at least once a week. Are you eating at least the minimum number of servings from each food group each day? How can you use the food guide pyramid as a tool to make improvements?

# QUESTIONS FREQUENTLY ASKED BY YOUNG ATHLETES

## DO ATHLETES HAVE SPECIAL NUTRIENT NEEDS?

Increased physical activity increases some of your food needs. You require more energy, water, and possibly salt (sodium chloride). An athletic teenage boy may need 5,000 calories a day, compared to the 3,000 calories required daily by his nonathletic friends. By taking extra servings of foods from all food groups (particularly breads, cereals, vegetables, and fruits), you can fill this increased energy need.

Water lost through sweating is not easily replaced. Low water-intake during strenuous exercise leads to dehydration, which can lead to fatigue, heatstroke, and death. Replacement water should **never** be restricted during exercise. If you drink too much water too quickly during increased physical activity, you may become "waterlogged," an unpleasant condition that you may already have experienced. Moderate amounts of cool water taken frequently before, during, and after the activity prevent this problem. Six to eight ounces of fluid taken every fifteen to twenty minutes during strenuous activity is about right for most athletes.

Cool water (around 40 to 50° Fahrenheit) is best. Cool water helps absorb body heat, and it empties from the stomach at a faster rate, which allows it to be absorbed into the body more rapidly.

There are many different commercial sport drinks available. They contain varying kinds and amounts of sugars and electrolytes. Whether they offer advantages over plain water depends on the situation. Many times, plain water is all that an athlete needs. When activities last an hour or more, however, some sport drinks may offer advantages both for carbohydrate and electrolyte replacement.

If you use a sport drink, use one that has less than 8% total solids (sugars, electrolytes). More concentrated solu-

tions can delay fluid absorption. Also, avoid drinks that contain fructose as the only source of carbohydrate. Fructose may cause upset stomach. Additionally, fructose must first be converted to glucose before it can be used for energy. This conversion delays its use as an energy source.

Salt needs can be met by increased use of salt on foods. The use of salt tablets is not recommended. Salt tablets hold water in the stomach longer and can actually cause water to be pulled back into the intestinal tract and away from body tissues where the water is needed most.

## ARE HIGH-PROTEIN DIETS NECESSARY FOR THE HIGH-SCHOOL ATHLETE?

At one time, it was believed that muscle-building exercise greatly increased dietary protein needs. This idea led to the development of special high-protein meals and drinks for athletes. This greatly increased need for protein was exaggerated, but an athlete's need for protein does increase somewhat. Besides muscle-building, aerobic exercise like distance running may also burn some protein for energy. That's why it is important for all athletes to have adequate protein intakes.

However, these increased protein needs can be met quite easily without using protein supplements or consuming high-protein diets. Increasing basic foods to meet your increased energy needs will supply more than enough protein.

Eating high-protein diets or taking protein supplements may prove harmful and may lead to loss of appetite, diarrhea, dehydration, and undue stress on the kidneys. Extra protein is also expensive.

## DOES THE ATHLETE NEED VITAMIN OR MINERAL SUPPLEMENTS?

Opinions vary. Increased physical activity increases calorie needs. For the body to use these extra calories, you may need greater amounts of nutrients such as riboflavin, thiamin, niacin, and iron. But again, increasing nutritious foods to meet increased energy needs should supply more than enough vitamins and minerals.

Experts agree that the basis of good nutrition is a well-balanced diet and that vitamin supplements are no substitute for it. Excessive amounts of some vitamins (especially vitamins A and D) taken as supplements over a prolonged period have proved harmful, so depend on a well-balanced diet to supply all your vitamin needs.

Some people think that athletes should take potassium supplements. However, including potassium-rich foods such as oranges, bananas, and baked potatoes will supply adequate potassium. Potassium supplements are not necessary.

Iron deficiency can be a problem with some teenage female athletes, particularly during menstruation and for those on self-prescribed weight-reduction diets. However, the female athlete should not self-prescribe iron supplements. She should question her family doctor about this potential problem and her individual need for iron. The doctor may prescribe an iron supplement after a clinical examination.

## WHAT SHOULD THE ATHLETE EAT BEFORE A GAME?

Before a game, your digestive processes may be slowed down by your keyed-up emotional state. To allow for this condition, you should eat an easily digestible meal no later than three hours before the contest. Avoid foods that contain substantial amounts of fats

or oils. Fats are more slowly digested than other nutrients. Trying to participate with a high-fat meal still in your stomach is a losing proposition. Meals high in starches are better because they are digested more rapidly than fats or oils.

Some athletes like poached eggs, toast, and juice as a light pregame meal. Some prefer breakfast cereal with low-fat milk, toast with just a little jelly, and juice. All-day events such as track meets or basketball and soccer tournaments present special problems. Consuming several high-starch minimeals or snacks, accompanied by ample fluids, is a winning strategy for these situations.

Avoid sugary foods such as candy or honey before a contest. Sweets can cause rapid swings in blood-sugar levels and result in low blood sugar and less energy.

## IS CARBOHYDRATE LOADING (ALSO CALLED GLYCOGEN LOADING) RECOMMENDED FOR THE HIGH-SCHOOL ATHLETE?

The aim of this practice is to increase the amount of glycogen, or animal starch, stored in liver and muscle tissues.

The body makes glycogen from extra carbohydrates it has. This stored glycogen can be broken down and used for energy when needed. That's why it's good for athletes to have sufficient glycogen stores in their bodies at the start of an event.

Carbohydrate loading is practiced by mature athletes who participate in endurance events such as long-distance running and swimming of long duration.

To begin, the athlete eats a high-protein, high-fat, low-carbohydrate diet for a few days. While on this diet, the athlete exercises strenuously. This depletes, or lowers, the body's glycogen stores. After the depletion phase and just a few days before the event, the competitor eats a very high-carbohydrate diet (for example, pancakes, rice, and noodles). During this period, the athlete exercises very little. This eating and exercise routine increases the body's stores of glycogen in liver and muscle tissue, so more carbohydrates are available for muscle energy during endurance events. Carbohydrate loading should not be confused with a diet high in carbohydrates, which is recommended for all athletes, including teenagers.

Carbohydrate-loading routines have not been thoroughly tested for the rapidly growing high-school athlete. The disadvantages may outweigh the advantages. Events for most high-school athletes are not long enough to exhaust the normal levels of muscle glycogen. Ultra-high tissue levels of glycogen are not necessary for most sport activities. During the high-protein, high-fat phase of carbohydrate loading, even the mature athlete may not perform as well and may feel exhausted. Young athletes find it difficult to practice during this phase. During the final phase, the body retains water and gains weight.

So full-blown carbohydrate loading is probably not in the best interest of the high-school athlete. However, young athletes can ensure adequate glycogen stores by eating more starchy foods and reducing exercise the last twenty-four to

forty-eight hours before the event. This very modified form of carbohydrate loading has proved beneficial to some young athletes.

## SHOULD TEEN ATHLETES TRY TO REDUCE THEIR WEIGHT TO MAKE SPECIAL WEIGHT CATEGORIES?

Moderate weight reduction over an extended period of time, together with a balanced diet to ensure sufficient protein, vitamins, and minerals, may be necessary for some athletes to lose excess fat, which has been shown to limit performance. However, severe weight reduction or restriction of normal weight gain is not recommended. Glycogen and water are usually the first materials to be lost by the athlete on a quick weight-loss plan. Losing glycogen or water can be disastrous to performance and health. When you lose glycogen, you lose energy to power muscles. Losing water lessens your body's ability to cool itself, and endurance decreases.

Repeated episodes of starvation and dehydration during growth slow muscle development. Scientific studies show that when athletes who are in shape lose more than three percent of their body weight within a short period of time, they don't perform as well. Muscle is lost and strength is reduced.

Even more importantly, weight reduction may permanently stunt growth and muscle development. Lost muscle growth will not be restored later. So losing weight rapidly or restricting normal weight gain is not for you.

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