



American Heart Association®



It Takes Heart to be a Hero



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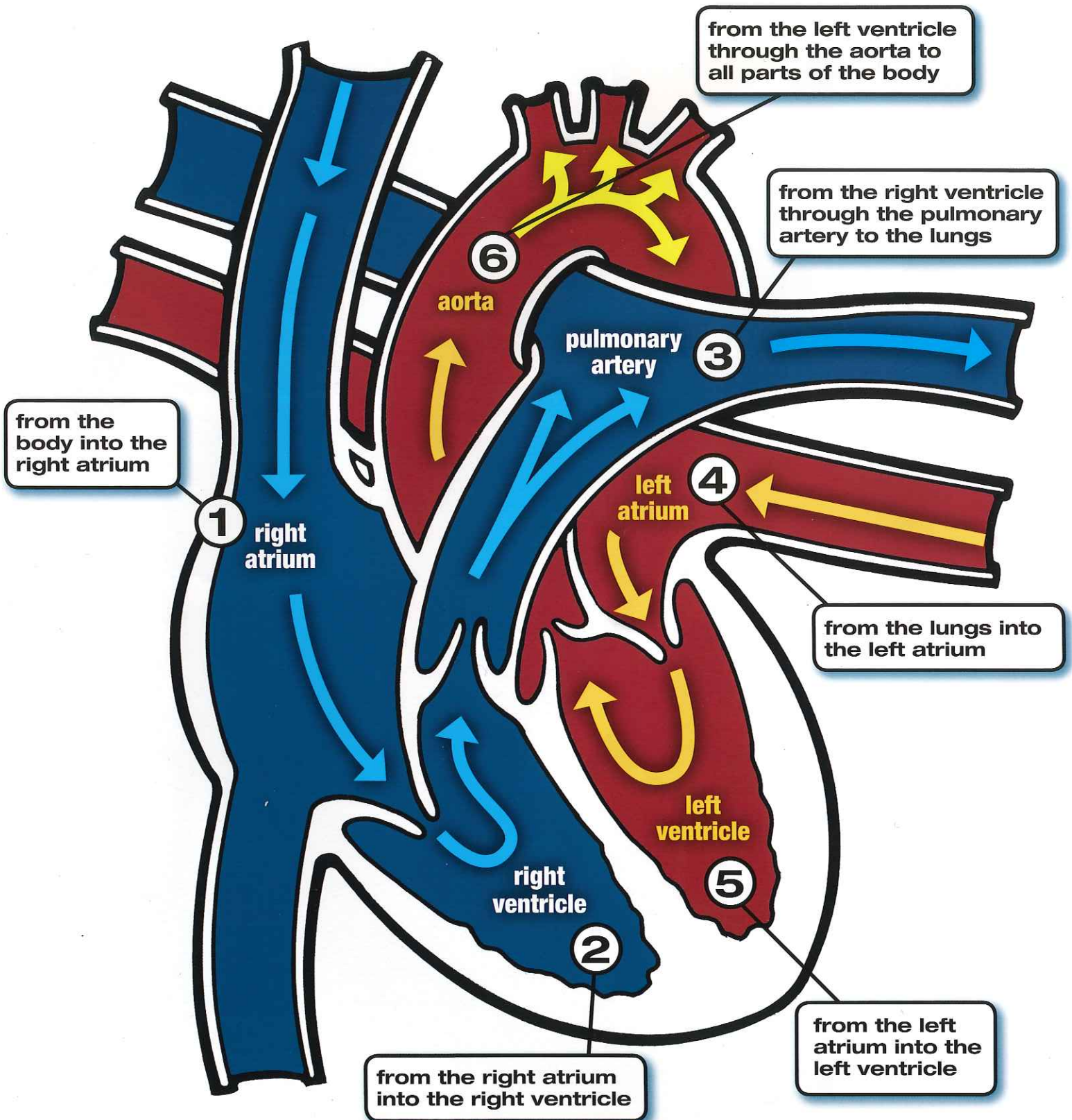
American Alliance for Health, Physical Education, Recreation and Dance

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The Heart and How It Works

The language and activities in this guide can be used as a tool to teach students how the heart works, why it is important to keep the heart healthy and how to be heart-healthy for life.



Your Amazing Heart

Your heart is an amazing muscle. It is only about the size of your fist and beats many millions of times in your life. Your heart grows with you, and it can continue to strengthen even after the rest of your body has finished growing.

Your amazing heart pumps about 2,000 gallons of blood through 60,000 miles of blood vessels every day!

How the Heart Works

Without oxygen, the body cannot survive. When you breathe, oxygen is taken in through the lungs and transferred to the blood. This freshly oxygenated blood travels from the lungs to the heart, where it is pumped through all of the arteries in the body, bringing fresh oxygen to your muscles and organs. When the blood runs out of oxygen, it returns to the heart to be pumped back into the lungs and refilled with oxygen. This incredible process carried out by the cardiovascular system keeps all body systems functioning in harmony.

In the cardiovascular system, the heart and lungs work together to pump blood and nutrients throughout the body through arteries. When the blood is empty of oxygen, it returns to the heart through the veins.

When the heart pumps, it makes a sound like a drum. This is your heartbeat, or pulse. Unlike other muscles in your body, your heart is an involuntary muscle. It contracts on its own without any effort on your part.

Your heart is similar to a two-story house with four rooms: two rooms on the top floor and two rooms on the bottom floor. Each room is called a chamber. The right atrium and left atrium are the upper chambers. The right ventricle and left ventricle are the lower chambers.

The right atrium receives the blood from the body that is low in oxygen and pumps it into the right ventricle. The right ventricle then pumps the blood through the pulmonary artery to the lungs to receive oxygen.

Newly oxygenated blood is sent back from the lungs to the heart, this time to the left atrium where it is then pumped into the left ventricle. The oxygen-rich blood is then pumped out through the aorta to the entire body.

The heart also has valves that control the direction of blood flow. Think of these valves as doors between the rooms that open and close to let blood in or stop it from entering. The “thump-thump” you hear when you listen to the heartbeat is the sound of the valves closing.

Vocabulary Definitions

- **Cardio:** Refers to anything that has to do with the heart.
- **Vascular:** Refers to anything that has to do with the body's network of blood vessels (veins, arteries and capillaries).
- **Cardiovascular system:** The network of the heart, lungs and blood vessels that delivers blood throughout the body.
- **Heart Chambers:** The four, hollow sections of the heart that receive and distribute blood.
- **Atria (singular: atrium):** The two upper chambers of the heart that receive blood.
- **Ventricles:** The two lower chambers of the heart that distribute blood.
- **Heart Valves:** The four doors between the heart chambers that open and close to let the blood flow in only one direction.
- **Aorta:** As the freeway for oxygenated blood, the aorta is the main artery that disseminates oxygen-rich blood from the heart to the body.
- **Pulmonary Artery:** The pathway that “used” blood (blood low in oxygen) takes from the heart to the lungs to be refreshed with oxygen.

Did You Know?

- The human heart beats an average of 72 times per minute.
- Over an average lifetime, the heart beats about 2.5 BILLION times!
- During exercise, blood travels from your heart to your big toe and back again in only 10 seconds.
- Your amazing heart loves it when you laugh. A good laugh sends 20 percent more blood through your body!

Special Hearts

Some people are born with hearts that are formed differently. People with these special hearts often require help from doctors. The term *congenital heart defect* is used to describe these heart ailments. A congenital heart defect is not a disease. It is a malformation of the heart that prevents the heart from functioning normally.

Heart Disease Facts and Warning Signs

What is Heart Disease and Who's at Risk?

Everyone has heard the term “heart attack,” but what does it mean? The heart pumps blood full of oxygen and other nutrients to all parts of the body, but the heart muscle needs oxygen and nutrients too. The arteries that supply the heart muscle with blood to keep it working are called coronary arteries. In a healthy person, blood flows freely through the coronary arteries. Over time, unhealthy habits like not getting enough physical activity or not eating a healthy diet can cause them to get clogged.

When this happens, fatty deposits called plaque build up inside the artery walls — atherosclerosis. Over time, if enough plaque builds up, the arteries — which are normally flexible and elastic — can become hard. Blood flow can become partially or totally blocked in the coronary arteries supplying the heart muscle. If the heart muscle cannot get the oxygen and nutrients it needs, it starts to die. This is called a heart attack.

Atherosclerosis and the damage a heart attack causes to the heart, are some of the conditions referred to as heart disease. Several factors can increase the risk for heart disease, but the good news is that some of these factors are within your control. If you eat right, exercise and stay tobacco-free, your heart will thank you. The most important thing you can do is to start now because it will be a lot easier to form heart-healthy habits for life if you start at a young age.

Here's what you need to know to reduce your risk:

- **Know your history:** Some types of heart disease are genetic, which means people have an increased risk of heart disease if their immediate family members have had heart disease. Ask your parents if someone in your family has had heart disease. If you have a family history of heart disease, it's even more important that you strive to live a heart-healthy life.
- **Stay tobacco-free:** Nicotine, the addictive chemical in cigarettes, makes your heart rate and blood pressure rise. The carbon monoxide in cigarettes also makes it difficult for your heart to get the oxygen it needs to function properly. Smoking is responsible for 443,000 premature deaths each year, with about one-third of those deaths linked to heart disease. But smokers aren't the only ones at risk: Secondhand smoke exposure causes roughly 49,000 smoking-related deaths each year.
- **Get enough exercise:** Obesity, or being 20 percent heavier than the ideal body weight for your height, means the body must work harder to support the extra weight. Over time, this can strain the heart and increase the risk of high cholesterol and diabetes. Exercise helps keep your body at a healthy weight and reduces the risk of heart disease.
- **Eat a healthy diet:** Fruits and vegetables contain nutrients your body needs, and they taste great too! Eat heart-healthy by limiting foods high in sodium and sugar and eating a variety of fruits, vegetables and whole grains every day.

Did You Know?

- Nearly 84 million American adults — that's about one in three people — have at least one type of cardiovascular disease.
- About every 34 seconds, someone in the United States has a heart attack.
- Smoking increases the risk of heart disease by two to four times.
- Major risk factors for heart disease include tobacco use, poor diet, physical inactivity, genetics, obesity, high blood pressure, high cholesterol and diabetes.



Activity

Activity: Risk Factor Tag

Source: Mike Lowery, physical educator at Cedar Ridge Elementary School in Lowgap, N.C. and Chad Triolet, physical educator at Deep Creek Elementary School in Deep Creek, Virginia.

Learning Expectations: Students will understand the risk factors for heart disease and heart attack.

Equipment Requirements:

- Six pool noodles of different colors
- Six cones of the same color
- Six color-coded risk factor task cards

Standards: This activity meets NASPE Standards 1, 2 and 5.

Introductory Activity: Discuss the importance of knowing the primary risk factors for heart disease: obesity, high blood pressure, diabetes, inactivity, smoking and high cholesterol. You can use the acronym OH DISH to help students remember the six major risk factors.

Directions: The objective of the game is to avoid the risk factors for heart disease represented by the different colored pool noodles. Each noodle represents a different risk factor. If a student is tagged with a noodle, she or he will go to the color cone that matches the color of the noodle and perform the activity on the risk factor task card at that station. The person who is the tagger must drop the noodle after tagging another person. If a risk factor noodle is on the floor, any student who has not been tagged may pick it up and become a tagger. For safety, students must stay on their feet except when performing the risk factor task exercises and players must stay inside the boundary lines designated by the cones.

Discussion: Discuss the risk factors for heart disease using the mnemonic device OH DISH. Ask students to identify which color noodle represents each risk factor.

Common Symptoms of a Heart Attack

How do you know if someone is having a heart attack? Many symptoms of a heart attack are easy to recognize, but the warning signs often vary between men and women. And not everyone experiences chest pain with a heart attack. If someone you know experiences the following symptoms, they may be having a heart attack:

- Chest pain or discomfort
- Pain or discomfort in one or both arms, the back, neck, jaw or abdomen
- Shortness of breath
- Nausea
- Cold sweats
- Lightheadedness

What Should You Do if Someone You Are With Has a Heart Attack?

Get help from an adult right away if someone you are with believes they are having a heart attack. If there are no other adults around, call 9-1-1 immediately.

Emergency medical services (EMS) arrive within minutes to begin life-saving treatment. Learning what to expect when you call 9-1-1 can help you save a life:

- Try to stay as calm as possible. Speak slowly and loudly.
- Know your location: What is the address? Is there an adult nearby who can help you if you don't know?
- Do you know the name of the person who is sick? If so, tell the 9-1-1 call taker.
- Know your phone number: Do you know the telephone number of the phone you are calling from?
- Is the person who is experiencing heart attack symptoms awake and focused? Can they talk?
- Stay on the phone with the emergency services provider until the ambulance arrives.
- Remember, 9-1-1 is for emergencies only. Never call 9-1-1 as a joke.

Activities

Activity: Veins and Arteries

Source: Mehrhof, J.H., Ermler, K., Worrell, V. and Brewer, J. (2007). *Never Play Leapfrog with a Unicorn*. Reston, VA: National Association for Sport and Physical Education

Learning Expectations: Students will be able to recognize common risk factors for heart disease.

Equipment Requirements: None

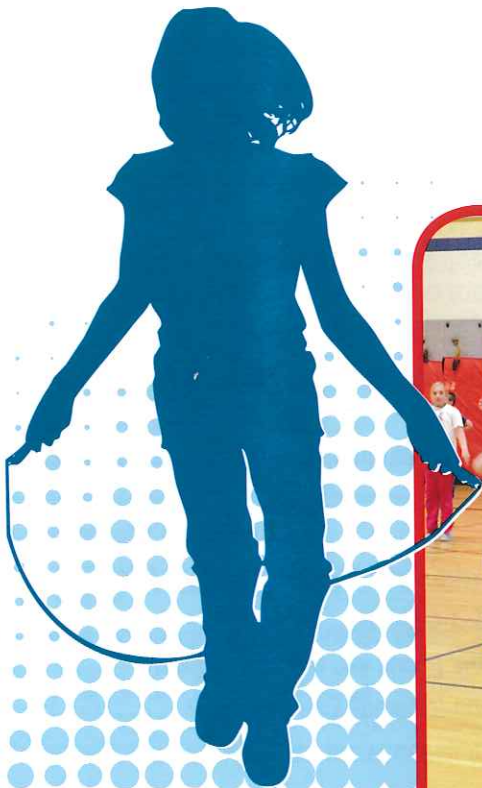
Standards: This activity meets NASPE Standards 1 and 4.

Introductory Activity: Discuss the risk factors for heart disease (obesity, poor diet, high blood pressure, tobacco use, physical inactivity, etc.) and how blockages in the veins and arteries can lead to heart attack or stroke.

Directions: Tell the students that the gym is the body and that lines on the gym floor are the veins and arteries. Assign several students to be taggers. The taggers represent risk factors for heart disease. The other students will walk along the veins and arteries and try not to get tagged. Taggers may move freely around the gym.

Instruct students, including the taggers, to move at a fast walk. When a student is tagged, he or she becomes a “blockage” in the vein or artery. The blockages must put themselves in an inverted “V” position for a count of 20 (or other appropriate time) and then return to the game. If students who are still moving come to a blockage, they must crawl under the blockage (i.e., the inverted “V”) to continue. Switch taggers after a set amount of time.

Discussion: Was it harder to move around or under a “blockage”? Explain that when there is fat in the arteries, the heart must also work harder to move blood around the blockage. This could contribute to a heart attack. To stay heart-healthy, instruct students to avoid as many heart disease risk factors as they can.



Activity: Artery Avengers

Source: National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Elementary Level*. Champaign, IL: Human Kinetics.

Learning Expectations: Students will be able to identify and discuss how too much saturated and *trans* fat in the diet can increase cholesterol in the blood and result in placing them at risk for heart disease.

Equipment Requirements:

- Softballs (or yarn balls or paper balls)
- Hula hoops
- Cones
- Frisbees

Standards: This activity meets NASPE Standard 4 and AAHE Standard 1.

Introductory Activity: Explain to the students that regular physical activity (at least 60 minutes a day for kids) helps to prevent fatty cholesterol from building up in the arteries and helps to keep the heart healthy. Red meat, eggs and full fat dairy products are sources of saturated fat and cholesterol.

Explain how blood flows through our arteries (hoops) and how too much accumulated fat (softballs) in the blood can cause plaque to develop in the arteries and thicken over time. Remind students that physical activity reduces the amount of fat in the blood and keeps the heart healthy. Explain that the more active they are in the game, the less fat (softballs) there will be in their team's arteries (hoops).

Directions: Divide students into two groups. Line up the cones in the middle of a room to divide the room into two halves. Tell students they cannot cross over the line. Place the hula hoops (arteries) in the back of each half of the room. Spread the softballs (fat) around the floor.

Students toss one softball at a time across the room to the opposing team's hula hoops, trying to fill their opponent's hula hoops with balls. After the balls are in the hoops, students cannot take them out. Balls that do not land in a hula hoop may be picked up and thrown again. The game continues until you have a good example to begin the discussion with a visual aid.

Reset for the second part of the activity.

For the second round, select students to act as artery avengers in a ratio of three avengers to six hoops. This ratio should provide some challenge and allow sufficient room for students to move around safely. Artery avengers block the softballs from entering the hula hoops with a Frisbee, which they should hold like a shield. Tell students that the shields represent physical activity that helps keep fat from building up in the blood.

Teaching Hints: Be sure to tell the students that our bodies need some fat to help our body carry out normal body functions, but too much fat can lead to serious health conditions.

If you have colored Frisbees, assign each color a name. For example, green could represent vegetables, blue could represent water and red could represent increased blood flow from exercise.

For students with limited mobility, designate a peer helper to help pick up the balls. Place a hula hoop at the center line for those who have difficulty throwing or grasping and manipulating objects.

Discussion: Ask students to stand by the healthiest artery (the hula hoop with the fewest balls in it). They should identify hoops largely filled with balls (fats) as unhealthy.



How to Recognize if Someone is Having a Stroke

Activity: F.A.S.T (K-2)

Learning Expectations: Students will learn what a stroke is and stroke warning signs and symptoms. Students will engage in physical activity in order to memorize what F.A.S.T. stands for in a fun and interactive way.

Equipment Requirements:

- F.A.S.T. Posters
- F.A.S.T. Coloring sheet
- Crayons, colored pencils and/or markers
- 60-second F.A.S.T. video (optional)

Introductory Activity: Place four of the F.A.S.T. posters on the perimeter of the classroom. The posters include:

- FACE (with picture of a face)
- ARM (with picture of an arm)
- SPEECH (with picture of a mouth)
- TIME (with picture of phone)

Directions: Divide the class into four groups: Group 1 – FACE, Group 2 – ARM, Group 3 – SPEECH and Group 4 – TIME. Each group will sit below their group poster. Ask the students if they know what your brain does.

Explain that your brain controls the way we move, think and talk. Briefly explain what a stroke is. Strokes happen when blood can't get to your brain, which means the brain may not be able to work the way it should. When this happens, the person may have a droopy face, saggy arm or sound funny when they talk. If you see any of those signs, you should call 9-1-1.

Discussion:

FACE – Explain a droopy face. Ask the FACE team to try to make a droopy face (demonstrate what it can look like).

ARM – Talk about what arm weakness might look like. Show arm weakness and ask them to demonstrate what it can look like.

SPEECH – Explain how speech could be affected. It might be jumbled or words might come out slurred. Ask the SPEECH team to give an example of what that might be or sound like.

TIME – Talk about why it is important to call 9-1-1 for quick treatment. Ask the TIME team if they know how to call 9-1-1.

Have each group rotate to each station for three to four minutes so they can practice each role. After they have practiced their roles, ask the students to repeat what F.A.S.T. stands for. If desired, show the 60-second F.A.S.T. PSA. Allow the students to color the F.A.S.T. coloring page.



Activity: F.A.S.T (3–5)

Learning Expectations: Students will learn the stroke warning signs by memorizing the F.A.S.T. acronym.

Equipment Requirements:

- Printouts of the F.A.S.T. handout (one for each student)
- Four sets of laminated F.A.S.T. memory cards (four sets of the letters F.A.S.T. and four sets of the descriptions)
- 60-second F.A.S.T. video (optional)

Directions: If desired, show the 60-second F.A.S.T. video PSA.

Divide the class into four groups. Give each student a F.A.S.T. handout, and give them two minutes to review and memorize the meaning of F.A.S.T. Pass out one set of F.A.S.T. memory cards to each group. They should lay the cards face down on the ground.

Ask individuals to match each letter in the F.A.S.T. acronym to its appropriate description of a stroke warning sign. The rules are essentially the same as a traditional memory game: Each player can flip and uncover only two cards at once. If they make a match, they can leave the cards face up. If it is not a match, the player must turn the cards back over and try again. The player must continue until all cards are successfully matched, then pass the cards to a teammate, who will shuffle the cards and complete the matching game, too. The first team to have all of its players complete the exercise wins.



Nutrition and Healthy Eating

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Eating for a Healthy Heart

Help your students make healthier food choices with these eating tips:

- **Limit** foods high in saturated fat, *trans* fat, cholesterol, sodium and added sugars.
- **Eat** at least 4½ servings of fruits and vegetables each day. They can be fresh, frozen or canned — just avoid sugary or salty choices.
- **Vary** your diet. Eat a variety of foods every day to get enough carbohydrates, proteins and other nutrients. Nuts and fish are good sources of protein and healthy fats.
- **Replace** refined grains with whole grains in the breads, cereals, pastas and muffins you eat. If you like sweet foods, eat fresh fruit or other foods that contain natural sugars and ditch the candy, sodas and desserts that contain refined sugars.
- **Stop** eating when you are full. Your body will tell you when you have had enough food and will naturally prevent you from overeating and taking in unnecessary calories.
- **Limit** foods high in sodium. High levels of sodium are present in most snack foods and fast foods. Also check the nutrition labels on breads, soups and sandwich meats.

Dietary recommendations for children ages 4 to 8:

- **Fat:** Limit fat consumption to 25 to 35 percent of the total daily calories
- **Milk and Dairy:** 2 cups per day (fat-free or low-fat)
- **Lean Meat and Beans:** 3 ounces per day for girls and 4 ounces per day for boys
- **Fruit:** 1½ cups per day (fruit servings from juice should be avoided)
- **Vegetables:** 1 cup per day for girls and 1½ cups per day for boys (choose from a variety of vegetables over the week)
- **Grains:** 4 ounces (113 grams) per day for girls and 5 ounces (142 grams) per day for boys (half of all grains should be whole grains)

Dietary recommendations for children ages 9 to 13:

- **Fat:** Limit fat consumption to 25 to 35 percent of the total daily calories
- **Milk and Dairy:** 3 cups per day (fat-free or low-fat)
- **Lean Meat and Beans:** 5 ounces per day (about 1/3 pound)
- **Fruit:** 1½ cups per day (fruit servings from juice should be avoided)
- **Vegetables:** 2 cups per day for girls and 2½ cups per day for boys (choose a variety of vegetables over the week)
- **Grains:** 5 ounces (140 grams) per day for girls and 6 ounces (170 grams) per day for boys (half of all grains should be whole grains)

Visit www.cnpp.usda.gov/USDAfoodpatterns.htm and select “Estimated calorie needs per day” for an age-specific guideline table.



Activities

Activity: Capture the Food

Source: National Association for Sport and Physical Education

Learning Expectations: Students will recognize examples of healthy foods.

Equipment Requirements:

- 10 cones or 10 plastic pieces of food (representing the five food groups: fruits, vegetables, grains, protein and dairy)
- Flag belts (two different colors)
- Optional: Pinnies (two different colors)
- Hula hoop to serve as the refrigerator

Introductory Activity: Give students a flag belt when they enter the gym and evenly divide students into two teams differentiated by the color of the flags or pinnies.

Directions: Explain that the objective of the game is to grab the correct food group from the opposing team's side and get it back to the refrigerator without getting your flag pulled. Your flag can be pulled off when you cross into the opponent's territory. If your flag is pulled you must go to the designated jail area on the opponent's side until a teammate frees you by slapping your hand. When freed, you return to your side and rejoin the game.

To begin, ask students a question about one of the five food groups. The answer will be one of the foods they need to capture. Once a team captures what they think is the correct food, stop the game to check. If they get it right, return the food and ask another question to start a new round. If they get it wrong, continue playing until a team gets it right.

Discussion: Discuss how the five food groups affect the health of the body. Discuss the importance of nutrition and eating a balanced diet.

Beware Salty Foods

Kids between the ages of 8 and 18 eat an average of 3,387 milligrams a day of sodium. That's nearly the same amount consumed by adults and more than double the less than 1,500 milligrams recommended by the American Heart Association.

Too much sodium is linked to high blood pressure, a major risk factor for heart disease, stroke and other serious health problems. High blood pressure, once seen mainly in adults, has become much more common in kids because of high-sodium diets and increasing obesity. So how do we know which foods are high in sodium?

The American Heart Association has identified six common foods that may be loaded with sodium. We call them the Salty Six:

- 1. Bread and rolls:** Bread items make the Salty Six because we usually eat them several times a day. Even though it may not seem like a piece of bread has a lot of salt in it, the sodium adds up if you have two pieces of toast for breakfast, a sandwich for lunch and then a pasta dish at dinner. That is a lot of sodium!
- 2. Cold cuts and cured meats:** Deli meats and cured meats such as hot dogs and bacon are often very high in sodium. Six thin slices of deli meat on a sandwich can contain as much as half of your daily recommended sodium.
- 3. Pizza:** Most people like pizza, but the sodium in the cheese and toppings (like sausage and pepperoni) can make pizza a very high-sodium food. Did you know one slice of pizza could contain more than half the recommended amount of daily sodium?
- 4. Poultry:** Poultry, such as chicken and turkey, can be either high or low in sodium depending on how the meat is cooked. Meat that is baked and flavored with herbs has much less sodium than meat that is fried or flavored with seasonings.
- 5. Soup:** One cup of canned soup can have as much as 940 milligrams of sodium! Luckily, there are plenty of lower-sodium varieties of soup that still taste great. Check the nutrition labels to find a heart-healthy soup.
- 6. Sandwiches:** Sandwiches and hamburgers from fast food restaurants can contain more than 100 percent of the total sodium you should eat in an entire day! Not to mention fast foods are full of fat and high in calories. So try this instead: half a sandwich with a side salad.

Learning how to read the Nutrition Facts label on food packages can help you choose healthy foods that are low in sodium. The nutrition label tells you how much salt, or sodium, is in a single serving of that particular food. Sodium is listed in milligrams (mg) on the nutrition label. But don't forget to do the serving size math. A 1-cup serving of some cereals, for example, may contain 200 mg of sodium. So if you pour two servings into your breakfast bowl that equals 400 mg of sodium.

Color Your Plate

Fruits and vegetables are nutritious fuel for the body. They also come in lots of different colors. The best way to know which nutrients a fruit or vegetable contains is to look at its color. Colorful fruits and veggies are often high in vitamin C, vitamin A, potassium, folate and fiber. For a diet that is good for your heart, be sure to fill your plate with as many different colors as you can.

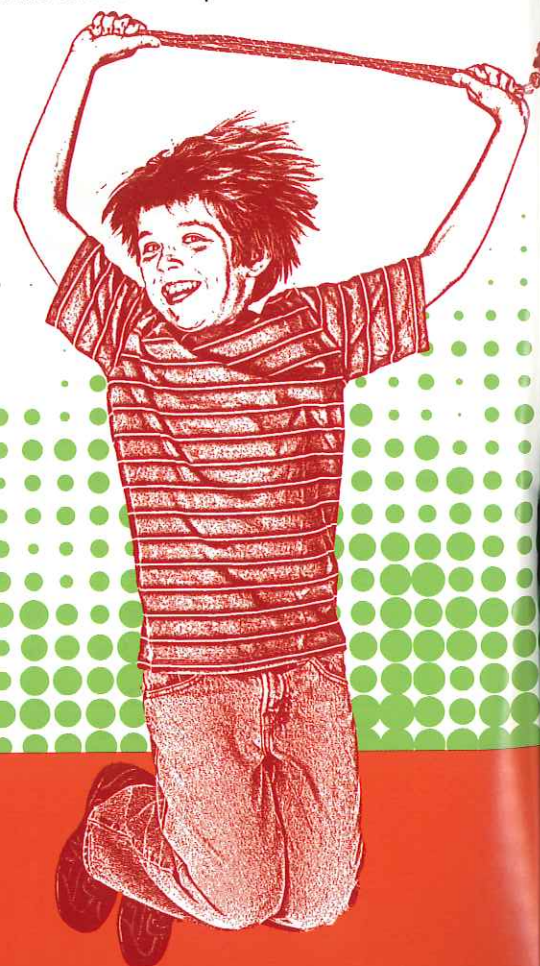
- **Red:** tomatoes, watermelon, strawberries, red peppers, cherries, cranberries, raspberries, red apples and red grapes
- **Orange:** carrots, mangos, orange peppers, apricots, cantaloupe, oranges, peaches and tangerines
- **Yellow:** lemons, pineapple, yellow squash, nectarines and yellow apples
- **Green:** lettuce, kale, broccoli, cabbage, avocado, spinach, kiwi, green beans, green peppers, asparagus and green grapes
- **Blue/purple:** blueberries, blackberries, plums, prunes, raisins and eggplant
- **White:** onions, garlic, bananas and cauliflower

What is the difference between a fruit and a vegetable?

- A fruit is the part of a plant that contains the seeds. Sometimes we eat the fruit (fleshy area) and not the seeds (peaches, apples). Other times we eat the fruit and the seeds (tomatoes, bananas, strawberries). Other examples of fruits are: cantaloupe, lemon, papaya, bell pepper, plum, grapefruit and watermelon.
- A vegetable is the other parts of the plant, including the stems, leaves roots and flower buds. A few examples are:
 - Stems: asparagus, celery, wandering chopsticks, rhubarb
 - Leaves – lettuce, collards, dandelion, cabbage, spinach
 - Roots – potato, carrot, beets, onions, turnips
 - Flower buds – broccoli, cauliflower

Fun Facts About Fruits and Vegetables

- The pineapple is a universal sign for hospitality.
- Each American eats 22 pounds of tomatoes each year. More than 11 pounds are in the form of catsup or tomato sauce.
- Carrots were first grown as a medicine. Raw, grated carrot can be applied as a compress for burns.
- Good sources of vitamin C are oranges, lemons, grapefruit, strawberries and tomatoes.
- Fresh apples float because 25 percent of their volume is air.
- The ancient Egyptians thought onions kept evil spirits away.
- The average American eats 4½ pounds of broccoli each year.
- Watermelon is 92 percent water. It has no fat or cholesterol and is an excellent source of vitamins A, B6 and C.
- Vitamin E helps to keep your blood and skin healthy. Spinach, broccoli, mango and kiwi are high in vitamin E.



Activity

Activity: Brown Bag Dinner

Source: National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Elementary Level*. Champaign, IL: Human Kinetics.

Learning Expectations: Students will be able to identify different types of foods to eat each day for a healthy body composition.

Equipment Requirements:

- Brown paper bags
- Pictures of foods from the five food groups: grains, vegetables, fruits, milk and meats and beans
- Fast music
- Stability balls and stretch bands for choice activities (if desired)
- Pedometers

Standards: This activity meets NASPE Standard 6 and AAHE Standard 1.

Introductory Activity: Food is the fuel your body needs to perform well. The nutrients gained from each food group help to fuel the body.

Directions: Create a food bag for each student using the food pictures. Put five examples of different foods in each bag, but make sure the bags do not have a food item from each food group. For example, some bags may only have fruits, vegetables or protein items, while other bags may have foods from different food groups but without having a complete meal.

Discuss the food groups and the types of food found in each group. Tell students that a nutritious meal should have at least one food from each food group.

Show the students several food pictures and talk about what food group each food belongs to and ask them to compare their foods to the various food groups. Show students an example of a complete meal so they know what five food groups they need to collect.

When you start the music, students move around the room using the locomotor movement of your choice. When the music stops, students should stop moving and pair up with another student. The pair must choose an exercise they will do 10 times.

After students perform their exercise, they look in their food bags and exchange one food item with their partner. The goal is to finish the activity with one food from each of the five food groups so they can have a complete meal.

After exchanging food items, students find another classmate and perform another exercise of choice 10 times before exchanging one food item. Students continue this pattern until the music starts again. Students then start moving using a different locomotor movement of your choice.

After three rounds, ask students to group their foods (except for oils) and see whether they are missing any food groups.

Teaching Hints: Talk about the “sometimes foods” and how they should not be part of this dinner: french fries, candy bar, cookies, ice cream, etc.

Before starting, suggest types of exercise the students might perform during the exercise of their choice portion of the game (for example, jumping jacks, toe touches, etc.).

Discussion: Ask students to raise their hands if they have a balanced meal. Have them explain why it is balanced. Ask students to list the five food groups and to give examples of various foods in each food group.

Getting Enough Sleep

Sleep plays a vital role in good health and well-being. When you sleep, your brain recharges, your cells repair themselves and your body releases important hormones. Although often overlooked, getting enough restorative sleep is an important way to stay healthy and fit.

Sleep loss can make you cranky, decrease alertness and prompt feelings of stress, anger and sadness. These emotional states often make it even harder to get good sleep. Regardless of your age, research indicates that sleep loss reduces learning and memory, physical performance and mood. Losing an hour or two of sleep actually does matter, even for elementary school students.

Cardiovascular disease, diabetes and obesity are also associated with long-term lack of sleep. When you don't get enough sleep, your body tries to compensate by fueling itself with food. This means you eat about 500 more calories a day than usual. Not getting enough sleep over a long period of time can lead to consuming more calories than your body can metabolize, which can result in obesity, heart disease or diabetes.

If you're like most kids your age, you've had a busy day. There's school, extracurricular activities, hanging out with friends, homework and household chores. With all this activity, your body and your brain need a rest. So stay away from drinks with caffeine, finish your homework early, turn off the TV and the computer — and go to bed.

So how much sleep do you need? Here's the breakdown by age.

How Much Sleep Do You Really Need?	
Age	Sleep Needs
Newborns (0 to 2 months)	12 to 18 hours
Infants (3 to 11 months)	14 to 15 hours
Toddlers (1 to 3 years)	12 to 14 hours
Preschoolers (3 to 5 years)	11 to 13 hours
School-age Children (5 to 10 years)	10 to 11 hours
Teens (10 to 17 years)	8½ to 9¼ hours
Adults	7 to 9 hours

Source: National Sleep Foundation

Here are some tips to help you get enough sleep:

- Go to bed and wake up at the same time every day, even on weekends
- Make sure your bedroom is quiet and dark and not too hot or too cold.
- Remove all TVs, computers and other electronics from the bedroom (or at least turn them off).
- Avoid sodas, which have caffeine that keeps you awake at night and make you tired the next day.



The Importance of Physical Activity

Your Pulse

Your pulse is the same thing as your heart rate. It is the number of times your heart beats each minute. How fast or slow your pulse is determines how much fuel your body is using to send oxygen and nutrients throughout the body.

Your **resting heart rate** is the number of times your heart beats each minute when you are not exercising. It represents the speed at which your heart must beat to send the least amount of freshly oxygenated blood to your muscles. When you are sitting or lying down and are calm and relaxed, your heart beats 60 to 100 times per minute. A resting heart rate that is lower than 60 beats per minute is common for people who exercise a lot. It means their heart is strong enough to pump blood more efficiently and needs fewer beats per minute to send oxygen and nutrients throughout the body. Every person's resting heart rate is a little bit different because every person's body composition is a little bit different.

How do you find your pulse? To take an accurate reading of your heart rate, you can locate your pulse in several areas. The best places to feel your pulse are at the wrist, the inside of your elbow and the side of your neck. To feel your pulse, place one or two fingers over the area and count the number of heartbeats in one minute.

Activity

Activity: Frantic Ball

Source: National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Elementary Level*. Champaign, IL: Human Kinetics.

Learning Expectations: Students will evaluate how physical activity increases a person's heart rate.

Equipment Requirements:

- Three balls for each group of five students (6- to 8-inch foam balls recommended)
- Heart rate monitors for students to see the various heart rate changes during different activities
- Upbeat, fast music and stereo

Standards: This activity meets NASPE Standards 2 and 4.

Introductory Activity: Students measure their resting heart rates prior to any activity. Explain that a resting heart rate is lower because the body is not active and the muscles do not need blood and oxygen as quickly as they do during physical activity.

Define aerobic fitness before beginning the activity. Tell students this activity will help them understand what aerobic fitness means. Taking the heart rate allows students to see the different effects of movement in developing aerobic fitness.

Directions: Place students in groups of five. Teach them the passing pattern of a star. Students are not allowed to pass the ball to an adjacent person. They should also say the name of the person to whom they are passing. Give three balls to each group. After a short practice period with students standing still, have students stop and take their heart rates.

When the music starts, students move from one end of the gym to the other. Students need to travel safely by staying on their feet, watching where they are going and following directions. Students must stay together and continue the star passing pattern. Remind them to watch the person who will be passing them the ball.

When the music stops, students stop and take their heart rates.

Compare the number of beats per minute while at rest to the number of beats after various durations of exercise. Talk about how movement defines aerobic fitness. Talk about what they can do to increase the heart rate in this activity.

Repeat the activity and see whether they accomplish the task of increasing the heart rate. Were they successful? Why or why not?

Discussion: Guide a classroom discussion with the following questions:

- Did you notice a difference in your heart rate between when you came to class, stood and passed the ball, and moved and passed the ball?
- What does elevating the heart rate do for the body?
- What did you do to increase your heart rate?
- What are three different activities you can do to raise your heart rate?

Let's Move: 60 Minutes of Play a Day

One of the best ways to keep your heart strong and healthy is to stay physically active. The American Heart Association recommends kids your age get 60 minutes of moderate to vigorous physical activity every day. In fact, getting 60 minutes of physical activity every day helps you sleep better, gives you more energy, helps you concentrate and do well in school, and is a great way to spend time with friends or even make new ones.

Staying physically active is fun! Walking, running, swimming, riding your bike or jumping rope are just some of the ways to stay active. Here are more fun ways to get 60 minutes of exercise during the day:

- Challenge your friends or family to a short foot race
- Walk or bike (instead of ride) to or from school or to your friends' houses
- Take the stairs whenever you can
- Play hopscotch at school
- Play outdoor games like tag or Frisbee
- Go on a nature walk or a hike with your family
- Create your own obstacle course
- Try different types of exercise to improve your fitness, like yoga, skateboarding or dancing
- Take activity breaks while you watch TV
- Visit a new playground in your neighborhood
- Keep a workout log and write down all the things you did that day that were physically active

Activity

Activity: Just Be It, Healthy and Fit

Source: Celina Roybal, physical educator at San Juan Elementary School in Espanola, New Mexico.

Learning Expectations: Students will learn the three types of exercise and be able to identify and participate in exercises that correspond to each type.

Equipment Requirements:

- 5 to 10 pieces of equipment per station, including jump ropes
- Resistance bands
- Aerobic steps
- Hula hoops
- 8 station cards (exercise, type of exercise, duration)
- Music (one song for each station rotation)

Standards: This activity meets NASPE Standards 1, 2, 3, 4 and 5.

Introductory Activity: Discuss the three types of exercise: aerobic, strength training and flexibility. Discuss the importance of exercising at least 60 minutes a day for optimal wellness.

Directions: Discuss the definition of flexibility (the ability to bend without damage or injury) and talk about examples of flexibility exercises. Tell students that flexibility exercises done for five to 10 minutes every day can improve the body's ability to perform and may help prevent injury. Students will participate in stretching and warm-up exercises as a group.

Discuss the definition of aerobic exercise and provide examples of aerobic exercises. Explain that aerobic exercise works the heart and lungs to help the body use oxygen and the suggested duration is 60 minutes every day with vigorous-intensity activity at 3 days a week.

Discuss the definition of strength training and talk about examples of strength exercises, such as weightlifting or resistance band training. Explain that strength training makes muscles stronger and should be done at least three times a week as part of their 60 minutes of daily physical activity.

In small groups, students will participate in a station workout spending two to three minutes at each station.

Station workouts with suggested daily durations are:

- Jump rope: Aerobic (every day for 20 to 30 minutes), to equal 60 minutes a day
- Resistance bands: Strength (two to three times a week for 20 to 30 minutes), to equal 60 minutes a day
- Stretching exercises: Flexibility (every day for five to 10 minutes), to equal 60 minutes a day
- Aerobic steps: Aerobic (every day for 20 to 30 minutes), to equal 60 minutes a day
- Hula hoops or jumping jacks: Aerobic (every day for 20 to 30 minutes), to equal 60 minutes a day

Discussion: Ask students to name the three types of exercise and give examples of each type of exercise. Review the importance of exercising for 60 minutes a day and emphasize that exercise gives you a feeling of energy.

Exercise and Your Brain

The activities you do in P.E. class can be a lot of fun, but did you know that you're also getting a major brain boost? Plus, there are lots of other benefits from being active every day.

Here is information to help you enjoy physical activity at home, with friends and at school. Whether you jump rope, play sports or walk the dog, you can make plans to be active every day.

- **Any physical activity is better than no physical activity.** Physical activity is basically just getting your body moving and using your muscles to do a lot of things. Sometimes your heart beats faster and you begin to sweat. But don't worry if you don't sweat because being active at any intensity is still good for your heart. You can take a walk, play a game of tag or participate in sports. All of it is good for you.
- **Being physically active can boost your concentration.** Are there ever times when it's tough to focus on certain things? Maybe your teacher asks you a question or someone at home wants you to talk about something and you just can't concentrate. Or maybe you get distracted a lot and it looks like you're not paying attention. Being more physically active can help. Each time your heart beats, blood travels through your body, delivering oxygen to your muscles and to your brain, which helps you do all kinds of things, like reading, writing, talking and riding a bike. When we are not physically active, our heart does not beat as often and not as much oxygen-rich blood travels to the brain. This is why it's hard to concentrate or focus on certain things. So for starters, if you want to concentrate better, participate in some amount of physical activity every day.
- **Exercise makes tasks easier and faster to complete.** What actually happens inside the brain when we are physically active? While scientists don't seem to know everything about what happens in the brain, we do know that we can perform tasks easier and faster after we have participated in some physical activity. We also have a better memory, think more clearly and are more alert. Most of this is because of the better blood flow to the brain, which delivers not only oxygen but nutrients from the foods we eat.
- **Physical activity helps you learn better.** Perhaps you already do great in school or maybe you could do a little better. Either way, we know being physically active can help. Most of us learn better when we are active, instead of just sitting around. Getting more blood flow to your brain can help you remember more, think more clearly and be more alert. Chances are, you'll do better on tests and you'll see your grades improve. Being physically active on a regular basis will also give you more energy, which means you can try harder and do better in school.

We know that moving gets more blood flow to our brain, which can help us concentrate, learn more and do better in school. But being active also helps you have a healthy body weight, build strong bones and muscles, sleep better, be in a better mood and do better in all kinds of sports and activities. Are you ready to make the commitment today to be more physically active and to become healthier?

Activity

Activity: Odds and Evens

Source: Mehrhof, J.H., Ermler, K., Worrell, V., & Brewer, J. (2007). *Never Play Leapfrog with a Unicorn*. Reston, VA: National Association for Sport and Physical Education

Learning Expectations: Students will learn to integrate the math concept of odds and evens while they remain physically active.

Equipment Requirements: None

Standards: This activity meets NASPE Standard 1.

Directions: Have each student find a partner. The partners line up facing each other on either side of the center line in the middle of the activity area. Students on one side are the "evens," while students on the other side are the "odds." The teacher calls out an even or odd number. The side that has their number called out chases the other side to their predetermined home line.

After playing the game three times, have students on one side of the center line move to the next person in line. Have the new partners shake hands and say "good luck" or "thanks for playing."

Discussion: Briefly review how physical activity helps the heart send more oxygen to the brain and improves cognitive skills.

Obesity and Heart Health

Talking with students about weight issues must be handled with extreme sensitivity. If you decide to talk to your students about obesity, focus on the fact that weight is an important factor in one's health. Keep the focus away from appearance to avoid hurting the self-esteem of any students. Avoid making suggestions about specific weight. Being healthy is about working toward a healthier lifestyle and focusing on positive habits (being physically active, making healthier food choices), not about achieving a specific weight.

Every person's body is unique. No two bodies are exactly the same size and shape. Although your body needs fat to help organs function properly, too much fat can increase the risk of heart disease, stroke, diabetes and other health problems. Nearly one in three American children are either overweight or obese, meaning they weigh more than is considered an ideal weight for their height.

What Causes Obesity?

- Large portion sizes: When we eat more calories than the body can burn off, or metabolize, the remaining calories are stored in the body as fat. Large portion sizes and overeating can lead to obesity.
- Poor diet: Eating foods low in nutrients and high in sugar, salt, saturated and *trans* fat contribute to an unhealthy body weight.
- Physical inactivity: Hours spent sitting in front of the TV or playing video games are hours the body is not using calories at an efficient rate. A sedentary lifestyle without a lot of movement contributes to a lower number of calories burned or used up. When combined with a diet high in processed foods and low in vegetables, fruits, lean proteins and dairy, calories accumulate in the body as fat.

Facts About Obesity

- There are more obese and overweight Americans today than people at a healthy weight. In fact, almost 70 percent of adults are either overweight or obese.
- Over 12 million (16.9 percent) of U.S. children ages 2 to 19 are obese.
- Obesity can cause depression, anxiety and low self-esteem.
- Obesity doesn't just affect how we look. It can also shorten our life span and place us at higher risk for heart disease, diabetes, stroke and certain types of cancer.
- Obesity is preventable! The choices you make every day can put you back on a healthy path. Start by choosing to eat healthy foods or to watch less TV and exercise more. When we consistently make healthy decisions about food and regular exercise, we can more easily maintain a healthy body weight and stay heart-healthy for life.

Take Action for a Healthy Life

- Eat fruits and vegetables at every meal and skip the fried vegetables (like french fries). Frying adds unnecessary calories and fat.
- Drink more water. Water is a healthy alternative to soda and fruit juice, and your body needs it. In fact, many people experience chronic dehydration without realizing it. Water helps you feel healthier.
- Avoid snacking while watching TV. It can be easy to forget how much you're eating when your attention is focused on something else.
- Get out and play! You can be an ambassador for health in your family and encourage your whole family to get outside and exercise together.

Activity

Activity: Heart Health Concepts

Source: Ginger Aaron-Bush, physical educator at Valley Elementary School in Pelham, Alabama

Learning Expectations: Students will understand the heart rate increases when physical activity increases. Students will gain an appreciation for physical activity and recognize the health benefits physical activity provides.

Equipment Requirements:

- Model or poster of the heart
- 8 hula hoops
- 2 decks of playing cards
- 50 poly spots (at least five different colors)
- 50 2-inch x 2-inch pieces of construction paper matching poly spot colors
- Music

Standards: This activity meets NASPE Standards 1, 3, 4, 5 and 6.

Introductory Activity: Define cardiovascular fitness as the ability of the lungs to provide oxygen to the blood and the heart to transport oxygenated blood to the entire body. Define endurance as the ability of the body to sustain an activity for an extended period of time. Discuss physical activities that are good for the heart. Children who engage in free play and bursts of running or jumping are being physically active and that counts!

Directions:

- 1. Card Aerobics:** Show students the four different symbols in a deck of cards: hearts, spades, clubs and diamonds. Place eight hula hoops in the corners and around the perimeter of the gym. On a board or signs placed throughout the gym, write: Hearts = Galloping; Spades = Skipping; Clubs = Jumping; Diamonds = Jogging. Place playing cards inside the hoops. Students will move to one hula hoop and pick up a playing card. They look at the board or signs and use the correct locomotor skill to travel to a different hoop. The student will place the old card in the hoop and pick up a new card and repeat. At the end of the activity, have students find and feel their pulse.
- 2. Crazy Colors:** Place different colored poly spots throughout the gym. Place cards of a different color under each spot. While music is playing, students will skip (jog, jump, gallop) to a poly spot, lift it up and see the color of the construction paper piece. Students place the poly spot back on top of the colored paper and then move to a spot that matches the colored paper. Repeat. After 45 seconds of playing, stop the music and have students check their pulse.

Discussion: What is cardiovascular fitness? What activities are good exercises for your heart? How did your heart feel after participating in our activities today? When is your heart getting stronger: when you are doing an activity that causes your pulse to be slow or when your pulse is fast? Why?



Physical Activity and a Healthy Heart

When you exercise, your heart rate increases. Regular physical activity keeps your heart in shape so that it can work better. Being physically active makes your heart pump strongly even when you're resting. This is why many people who exercise frequently have slower resting heart rates. Their hearts are so strong that they can pump all the blood the body needs with fewer beats.

How do you get a strong heart? Exercise! Physical activity is one of the best ways to make sure your heart stays strong for life. Being active every day reduces your risk of heart disease later on. Plus, when your heart pumps faster and more efficiently, more oxygen is delivered to the brain and your memory and concentration improve.

Aerobic exercise, such as walking, running or jumping rope, benefits your heart by making it pump faster than your resting heart rate. Anaerobic exercise, which includes strength and flexibility exercise, helps your muscles become lean, strong and flexible. Both types of exercise are good for the body and the heart.

In addition to strengthening your cardiovascular system, physical activity has other benefits. Did you know:

- Physical activity reduces tension, stress and anger and increases feelings of well-being and happiness.
- Exercise increases your body's ability to fight off infections.
- Physical activity helps to manage blood pressure. High blood pressure is one of the leading risk factors for heart disease and stroke.
- Being physically active reduces the risk of heart disease by as much as 40 percent!
- Staying active keeps up your energy levels and promotes optimism and enthusiasm.

How do you know if you are exercising hard enough to help your heart? One way is by calculating your target heart rate. When you exercise, your target heart rate lets you know whether you're doing too much or not enough. Your target heart rate is the desired range reached during aerobic exercise that allows your heart and lungs to receive the most benefit from a workout. Your target heart rate is 50 to 85 percent of your heart's maximum effort (maximum heart rate). Remember, your heart is a muscle and must work hard to become stronger.

How to Calculate Your Target Heart Rate

- While sitting or lying down, take your resting heart rate by counting the number of beats for one minute.
- Then calculate your maximum heart rate, which is the highest number of times your heart can contract in one minute without dangerously over-exerting itself. Subtract your age from 220 (for boys) or 226 (for girls). This calculation will give you an estimate of your maximum heart rate.
- Multiply your maximum heart rate by 50 percent and 85 percent to find the low and high end of your target heart rate zone:
 - Maximum heart rate \times .50 = low end of target heart rate zone
 - Maximum heart rate \times .85 = high end of target heart rate zone
- Notice the difference between the two numbers. Your target heart rate is often between 100 and 170 beats per minute. If your pulse while exercising is more than 200 beats per minute, take a rest because your heart may be working a little too hard.



Activity

Activity: What Does It Take to be a Superhero

Source: Sarah Pruitt, physical educator at Black's Mill Elementary School in Dawsonville, Georgia

Learning Expectations: Students will be able to demonstrate proficiency in muscular endurance, strength, cardiovascular fitness and flexibility. Students will be able to demonstrate an understanding of the components of fitness and food groups.

Equipment Requirements:

- Resistance bands
- Small hand weights
- Push-up bars
- Modified pull-up bar
- Stretching posters
- Small chairs
- Food group posters
- Additional cardio equipment, if preferred, such as kickboxing DVDs or Koosh balls

Standards: This activity meets NASPE Standards 1, 2 and 3 and AAHE Standards 1, 3 and 5.

Introductory Activity: Students enter the gym and go to their assigned warm-up station. The warm-up consists of 12 exercises. The teacher plays warm-up music with set starts and stops. Students become familiar with exercising when the music is playing and then rotating to the next station when the music stops.

Directions: Superheroes in the movies usually possess some magical aspects that make them superhuman. You can be a true superhero by staying in shape and eating right. Students will participate in the following stations arranged in a circuit format:

- **Cardio Mission:** Students will participate in aerobic activities such as short rope jumping, walking or jogging.
- **Operation Muscular Strength:** Activities include resistance bands, small hand weights or curl-ups.
- **Muscular Endurance Rescue:** Options for students include push-ups, pull-ups, modified pull-ups, plank dips and chair dips.
- **The Force of Flexibility:** Students perform a variety of stretching exercises, including balance stretch, v-stretch, shoulder stretch and triceps stretch.
- **Plate Power:** A teacher-prepared nutrition activity brings together food groups and fitness components. Each student throws a beanbag at an example of a healthy food posted on a board. The group then participates in the exercise that corresponds to that food item.

Discussion: Survey students on their knowledge about the components of fitness and the five food groups.

