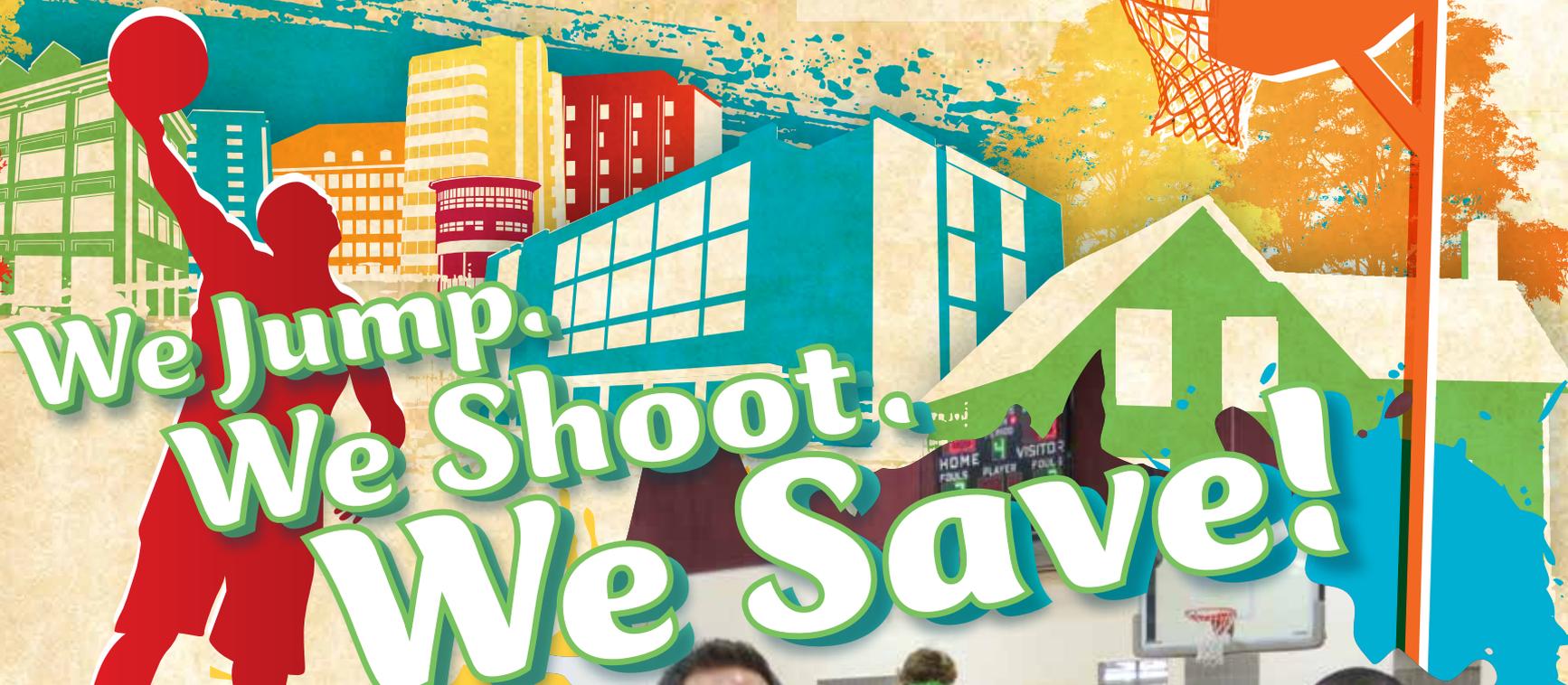




American Heart Association®



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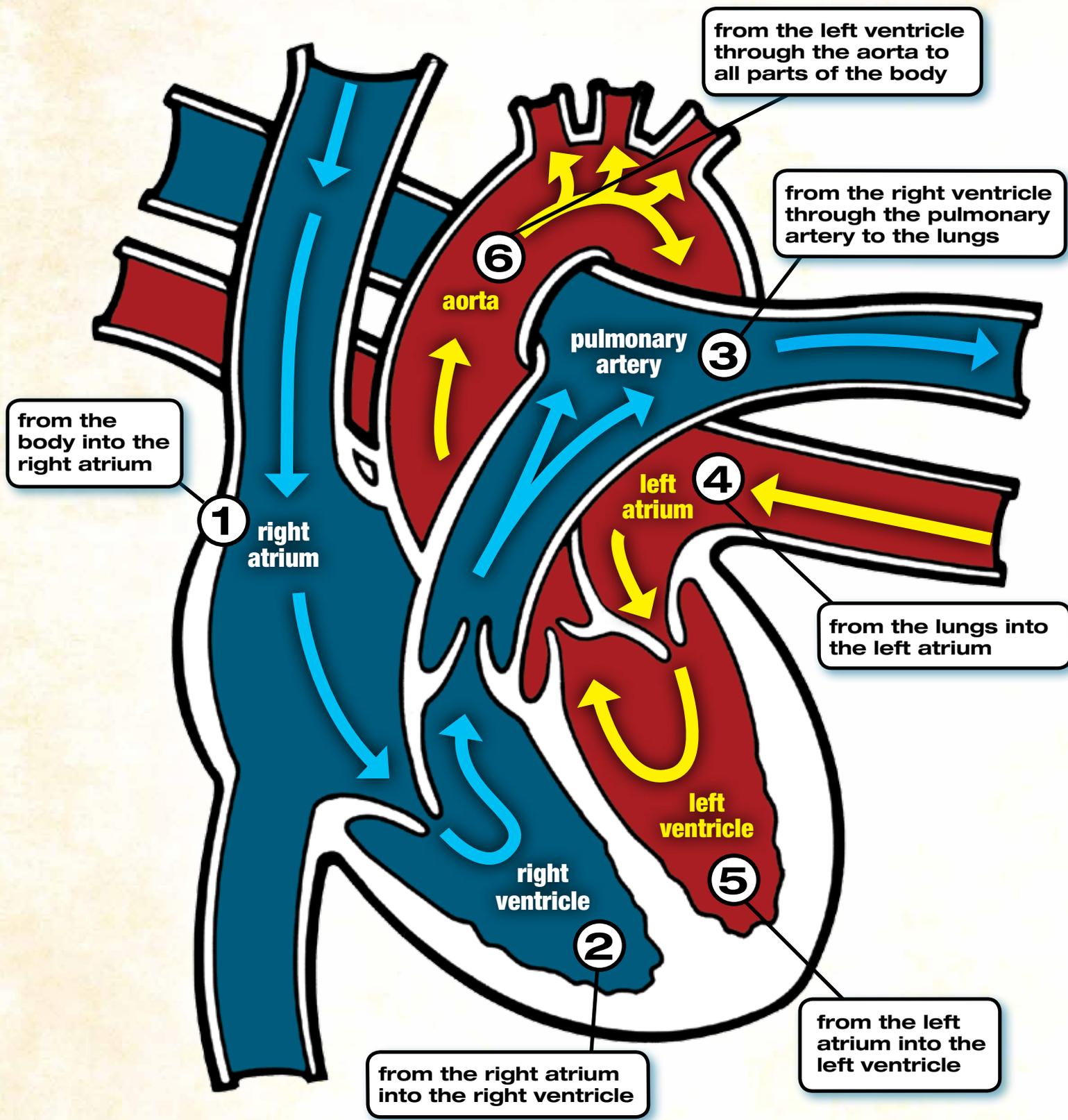
American Alliance for Health, Physical Education, Recreation and Dance

AAHPERD is a proud program partner of Jump Rope For Heart and Hoops For Heart.

## Middle School Teacher's Resource Guide

## How Your Heart Works

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



## The Incredible Cardiovascular System

Your heart is incredible! The human heart is a unique muscle that has both mechanical and electrical components. Without both the contractions of the heart muscles that pump blood throughout the body and the electrical impulse that initiates and controls those muscle contractions, the entire body (and the brain) cannot function.

It all begins with electricity. Electricity in the body, called bioelectricity, causes your heart muscles to contract and enables the heart to pump blood and nutrients throughout the entire body.

The cardiovascular system is the network that delivers blood to every part of your body. The heart distributes oxygen-filled blood and nutrients to the body through the arteries. Oxygen-depleted blood then travels back to the heart through the veins and is pumped into the lungs. When you inhale, the oxygen absorbed by your lungs is transferred into the blood, oxygenating it. This oxygen-packed blood is then sent to the heart, which pumps the blood throughout the body.

The pulmonary veins are the only veins that carry oxygenated blood. All other veins in the body carry deoxygenated blood. The pulmonary veins transfer oxygenated blood from the lungs to the heart's left atrium where it is moved to the left ventricle and distributed through the aorta to the arteries. Unlike veins, arteries carry only oxygenated blood. This oxygen-rich blood is carried by the arteries to every muscle and organ in the body.

After blood circulates through the body and all its oxygen is used up, it returns to the heart through the veins. Oxygen-poor blood flows into the heart through the vena cava and enters the right atrium. The blood then moves into the right ventricle and finally to the lungs to be refilled with oxygen.

### Vocabulary Definitions

- **Pulmonary Vein:** The pathway that transports newly oxygenated blood from the lungs to the left atrium of the heart.
- **Left Atrium:** The left upper chamber of the heart that receives newly oxygenated blood from the lungs. This blood is then transferred to the left ventricle.
- **Left Ventricle:** The left lower chamber of the heart that is also called the “workhorse” of the heart. It is the thickest muscle of the heart and produces the strongest contraction. The left ventricle pumps oxygenated blood to all the organ systems in the body.
- **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.
- **Vena Cava:** The pathway that returns oxygen-poor blood from the muscles and body systems to the heart.
- **Arteries:** Avenues that transport oxygenated blood from the aorta to the body's tissues.
- **Veins:** Avenues that transport deoxygenated blood from the tissues back to the vena cava.

### Did You Know?

- Your heart pumps about 2,000 gallons of blood each day.
- Your heart beats about 4,000 times each hour, 100,000 times each day, and 35 million times in a year. That's more than 2.5 billion heartbeats in the average lifetime.
- If all the blood vessels in the body were lined up end to end, they would stretch about 60,000 miles!

### Congenital Heart Defects and Heart Disease

Congenital heart defects are different from heart disease, which is commonly caused by lifestyle habits and genetics. A congenital heart defect is an abnormality present at birth that prevents the heart from working correctly.

There are many kinds of congenital heart defects: tiny holes in the heart, irregular heartbeats (arrhythmias, also called dysrhythmias), and abnormal heart valves to name a few. These defects are usually identified early in life and can often be fixed or treated with corrective surgery and medicine. Unlike cardiovascular disease, congenital heart defects are not caused by risk factors such as tobacco use, diet, physical inactivity and genetics.

## Activity

### Activity: Build Your Own Heart

**Source:** Lorianne Miklaszewski and Beth McAllister, physical educators at Southeastern Randolph Middle School in Ramseur, N.C.

**Learning Expectations:** Students will be able to work in small groups to create a heart sculpture that is anatomically correct. Lesson can also be integrated into art or home economics class.

#### Equipment Requirements:

- Diagram of anatomically correct heart to use as an example.

**Standards:** This activity meets AAHE Standard 7.

**Introductory Activity:** Review the anatomy of the heart and the following vocabulary words: anatomical, aorta, left ventricle, right ventricle, left atrium, right atrium, superior vena cava, inferior vena cava. Then initiate a discussion using the following questions:

- How does the heart function?
- What are you doing now to ensure you have a healthy heart when you are older?

#### Directions:

1. Inform students that they will be creating an anatomically correct heart sculpture out of a type of healthy food. Students can use any kind of food they wish. Suggested materials include fruit, vegetables, pasta, etc.
2. Divide students into small groups of 2-4 to plan their projects. Students will share their finished projects with the class.

**Teaching Hints:** This lesson can be spread out over multiple days. The day after the introductory activities, students can either bring in their food materials to create their heart sculpture in class or they can work in groups at home. If you plan to use dairy products or another food that can spoil, make sure students have access to a refrigerator to store their heart sculptures.

**Discussion:** What was the most compelling part of this activity? How does this activity bring the issue of taking care of your heart back to reality?



# Heart Disease and Warning Signs

## What You Should Know About Heart Disease

Heart disease, also called cardiovascular disease, is the No. 1 cause of death for Americans. Cardiovascular disease refers to any condition that negatively affects the heart's ability to efficiently pump blood or the body's ability to transport blood. Plaque buildup and stiffening of the arteries, abnormal heart rhythms, heart failure, heart valve problems, heart attack and stroke are all examples of cardiovascular disease.

Heart disease is often preventable through healthy lifestyle choices. Many people with heart disease enjoy full and healthy lives after making the decision to give up tobacco, eat nutritious foods and increase physical activity. The most important thing your students can do is to start now because it will be a lot easier to form heart-healthy habits for life if they start at a young age.

## Risk Factors for Heart Disease:

- **Tobacco use:** Smoking destroys the lungs' ability to absorb fresh oxygen, starving your heart and body of oxygen. 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.
- **Genetics:** Sometimes heart disease is hereditary. But there is still plenty you can do to lower your risk. If you have a family history of heart disease, it's even more important that you strive to live a heart-healthy life.
- **High blood pressure:** High blood pressure is often called the silent killer because it does not always cause symptoms. Yet it greatly increases the risk for heart attack and stroke. You are more likely to develop high blood pressure if you are inactive, have a poor diet, are overweight or obese, or have a family history of high blood pressure. That's why it is important to get moving and to eat a healthy diet.
- **Physical inactivity:** Exercise makes the heart and lungs stronger and able to work better. A physically inactive, or sedentary, lifestyle causes the heart to lose strength and contributes to plaque buildup in the arteries.
- **Poor diet:** A diet high in fat, sugar and sodium contributes to high blood pressure, high cholesterol, diabetes and unhealthy weight gain, all of which increase the risk of heart disease.
- **High cholesterol:** Cholesterol is affected by diet and heredity. High cholesterol can narrow or clog the arteries that send blood to the heart and brain, causing a heart attack or stroke.

## Heart Attack and Cardiac Arrest: What's the Difference?

A heart attack is not the same as cardiac arrest. A heart attack is when blood flow to the heart is blocked, and sudden cardiac arrest is when the heart malfunctions and suddenly stops beating unexpectedly. A heart attack is a "circulation" problem, while sudden cardiac arrest is an "electrical" problem.

A heart attack occurs when a blocked artery prevents oxygen-rich blood from reaching a section of the heart. Sudden cardiac arrest, however, is triggered by an electrical malfunction in the heart that causes an irregular heartbeat. With its pumping action disrupted, the heart cannot pump blood to the brain, lungs and other organs. Seconds later, a person loses consciousness and has no pulse. Death occurs within minutes without CPR and defibrillation.

The two heart conditions are, however, linked. Sudden cardiac arrest can occur after a heart attack or during recovery. Most heart attacks, however, do not lead to sudden cardiac arrest.

## Common Symptoms of 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

## Heart Disease and Warning Signs (continued)

### Facts About Heart Disease

- Nearly 84 million American adults have some form of cardiovascular disease. It is the top killer of American men and women.
- Cardiovascular disease takes the lives of more than 2,150 American each day. That's about one death every 40 seconds.
- Cardiovascular disease is not just a man's disease. In fact, heart disease is the leading cause of death among American women. Since 1984, more women than men have died each year from heart disease.

### 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 arrive within minutes to begin lifesaving 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.

## Activity

### Activity: Clean Out Your Arteries

**Source:** The National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Secondary Level*. Third Edition. Champaign, Ill.: Human Kinetics.

**Learning Expectations:** Students will develop an understanding of the relationship between physical activity and cardiovascular health.

### Equipment Requirements:

- Four hula hoops
- Eight cones
- 40 beanbags

**Standards:** This activity meets NASPE Standard 4 and AAHE Standards 1 and 3.

### Directions:

1. Divide the activity space into four quadrants. Place one hoop and two cones in each quadrant and place 10 beanbags in each hoop.
2. Divide the class into four teams. Students on Team A compete against Team B. Students on Team C compete against Team D. Assign each team to a quadrant and have teams play across (not diagonally) from each other.
3. Explain that each hoop represents an artery and each beanbag represents fat cells. The object of the game is for each team to clean the fat out of their team's artery through physical activity.
4. On the whistle, direct the students to run from their positions to their artery (hoop) and pick up a fat cell (beanbag), run the fat over to the opposing team's quadrant and place the fat in the opposing team's artery (hoop). Students must run clockwise around the perimeter of the activity space (half of the gym is best, if possible, for safety reasons) on the outside of the cones before they remove a new beanbag from their hoops.

5. After three to five minutes, stop and count beanbags to see which team has the least amount of fat cells in their artery (hoop). The team that performed the most work will end up with the least amount of fat (beanbags) in their artery. Remind students that physical activity helps keep their arteries clear of fat deposits and that the benefit may increase with regular physical activity.
6. Re-divide the fat (beanbags) evenly and repeat the activity. The goal of each team is to reduce more fat than they did in the previous round. This might be a good time to alternate team members, especially if students with disabilities are participating in the activity.

Discussion: Ask the students why one artery would end up with more fat than another artery (for example, lack of effort and physical activity). What can happen to the arteries if you don't keep them healthy? Have the students write down five specific activities that would help build cardiovascular strength and endurance and keep their arteries healthy.

## Be The Beat

As a physical educator you are in a unique position to encourage your middle school or upper elementary school students to learn Hands-Only CPR.

As part of your heart-health unit, you can invite a paramedic professional from your local fire and rescue department to give a presentation to your students on how to recognize sudden cardiac arrest and how to perform Hands-Only CPR.

When someone collapses and goes into cardiac arrest, these three simple steps can save their life:

1. Call 9-1-1 or direct someone else to call 9-1-1. Send someone to get an AED if available.
2. Push hard and fast on the center of the chest.
3. Use an AED as soon as it arrives.

### Why Hands-Only CPR?

When a teen or adult has a sudden cardiac arrest, survival depends on immediately getting CPR from someone nearby. Hands-Only CPR is as effective as traditional mouth-to-mouth CPR for sudden cardiac arrest that occurs at home, at work or in a public place. In fact, Hands-Only CPR can more than double, even triple, a person's chance of survival. It is also easy to remember. All you have to do pump hard and fast at a pace of 100 beats per minute.

How to perform Hands-Only CPR:

1. Place one hand in the center of the victim's chest. Place the other hand on top of the first and interlace your fingers.
2. Push hard and fast to the beat of the disco song "Stayin' Alive." Press down 2 inches into the chest.
3. Keep pumping hard and fast until an ambulance arrives or until an AED is ready to use.

There are only a few short moments between the onset of cardiac arrest and brain damage, so don't be afraid to act. Doing something is better than doing nothing.

For more resources and training for middle school students, visit [BetheBeat.heart.org](http://BetheBeat.heart.org).

### Survivor Stories

Here are stories from people whose lives were saved by people who knew CPR:

#### John Marvel

For a 52-year-old, I was in pretty good shape, worked out consistently, blood pressure and cholesterol under control. In October 2009, I had just started working out in the fitness center at work when I collapsed. I had a cardiac arrest and was down for the count. Luckily, Mark and Jeff performed CPR and saved my life. Their response was very quick, as was the emergency personnel who responded. A triple bypass and six days in the hospital later, I was at home recovering, thanks to Jeff and Mark.

#### Jamie Hobert

My dad, 64 years young, was saved in May 2010 by a Good Samaritan who saw him collapse during a massive heart attack. This individual performed Hands-Only CPR and saved his life. My dad did not come around until later, but those minutes before the medics arrived were crucial. Hands-Only CPR saved him AND his brain. After a quadruple bypass, he is recovering well! Spread the word — CPR is a lifesaver!

# The Effects of Stroke

Students need to know the effects of stroke as well as the importance of being healthy to help prevent stroke.

## Activities

### Activity: Learn F.A.S.T.

**Learning Expectations:** Students will learn the physical limitations that a stroke survivor may face. Common deficits include arm and leg weakness on one side (thus the weight), affected vision (thus the eye patch) and loss of balance.

### Equipment Requirements:

- Five to six dress shirts or T-shirts (larger sizes, preferably, to ensure they will fit all) or pants (for folding exercise)
- One roll of colored tape
- Three boxes (plastic crates) of items (weight of 5-10 pounds)
- Rope for tug of war
- Eye patches (one per student)

**Directions:** Set up an obstacle course that requires each team to walk a straight line, fold a pile of clothes and/or play tug of war with one arm and with an eye patch.

Divide the class into two teams. Ask each player to cover one eye with an eye patch and add a 5-pound weight to one of their arms or legs. Have the two teams start the obstacle course concurrently. Have each team member go through the obstacle course as quickly as possible. Only one player from each team can go at a time. The team that finishes first wins.

**Discussion:** After the activity, ask the students if they know how stroke can be prevented. Explain that 80 percent of strokes are preventable. They can be prevented by quitting smoking, being physically active and/or by decreasing high blood pressure and cholesterol. Then ask the students if they know how to spot a stroke F.A.S.T. Explain the meaning of F.A.S.T.

### F.A.S.T. stands for:

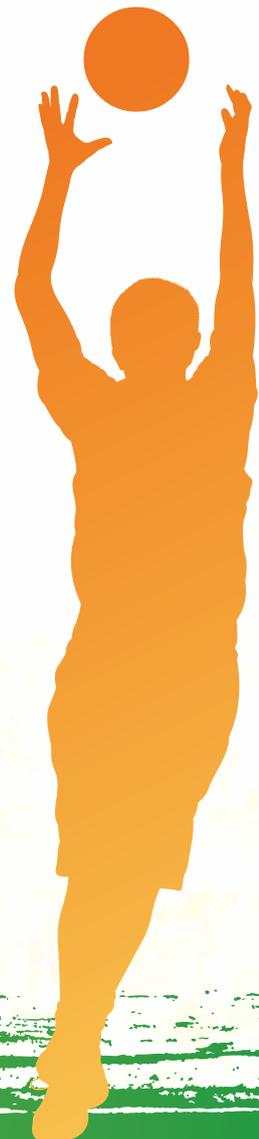
**Face Drooping** – Ask the person to smile. Does one side of the face droop or is it numb?

**Arm Weakness** – Ask the person to raise both arms. Is one arm weak or numb? Does one arm drift downward?

**Speech Difficulty** – Ask the person to repeat a simple sentence, like “the sky is blue.” Is the sentence repeated correctly? Are they unable to speak, or are they hard to understand?

**Time to call 9-1-1** – If the person shows any of these symptoms, even if the symptoms go away, call 9-1-1 and get them to the hospital immediately.

**Options:** Consider having the team try the course before without the impairment. Once they go through it with the impairment, they will have a better understanding of the life of a stroke survivor and some of the physical challenges that entails. Dress shirts and their buttons make the dressing obstacle more challenging to do with one hand. Visit a secondhand clothing store to collect dress shirts at low cost.



### Activity: Stroke Game Show

**Learning Expectations:** Students will learn what a stroke is, stroke warning signs, stroke prevention and how to promote both brain and heart health.

#### Equipment Requirements:

- Stroke Game Show PowerPoint
- Computer and projector to play game

**Introductory Activity:** Briefly review key stroke facts (use Game Show answer key as guide)

- F.A.S.T.
- Types of stroke and definition
- How to prevent a stroke
- Effects of stroke

**Directions:** Ask one student to volunteer as the scorekeeper. He/she will keep track of each person's score, and ultimately determine who wins the game.

The rules are very similar to Jeopardy:

1. Start with Stroke Warning Signs for 100.
2. The first student to raise his/her hand can answer the question (must be phrased as a question).
3. If the answer is correct, he/she receives 100 points. If it is incorrect, the next student to raise his/her hand can answer the question. If the student is correct, he/she gets 100 points.
4. The student with the correct answer can then select the next question (category and points).
5. Repeat until all of the questions have been asked and answered.
6. The student with the most points wins the game!



# Nutrition and Healthy Eating

## 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 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 ⅓ 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](http://www.cnpp-usda.gov/USDAfoodpatterns.htm) and select the “Estimated Calorie needs per day” for an age-specific calorie guideline table.

## 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 daily 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.

More than 75 percent of sodium in our diets comes from processed and restaurant foods. That means the high amount of sodium in the food supply leaves many kids and parents with little control over how much they consume. 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 excess sodium. We call them the Salty Six:

1. **Breads and rolls:** Bread items make the Salty Six because we usually eat them several times each day. Even though it may not seem like a piece of bread has a lot of sodium in it, it 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:** Everyone likes pizza, but the sodium in the cheese and toppings (like sausage and pepperoni) can make it 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. Try half a sandwich with a side salad instead.

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 many milligrams (mg) of sodium are in a single serving of a food. 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.

### Foods to Enjoy, Foods to Limit and Foods to Snack On

Food habits developed during adolescence are the ones most likely to carry into adult life. Heart-smart habits that you develop now can help you to live a long and healthy life. Below are a few healthy hints your heart will thank you for!

Enjoy more:

- **Fruits and Vegetables:** Your body needs the vitamins, minerals and fiber found in fruits and vegetables. Vitamins A, B, C and E support healthy skin, hair, energy levels and the immune system. Potassium is a mineral found in bananas and apples that keeps blood pressure at a healthy level. Variety matters, so eat a wide range of fruits and veggies.
- **Sleep:** Want to sleep in? You should! Your body needs plenty of sleep to rejuvenate spent energy stores and to build muscle strength. Growing bones and muscles means that your body is working overtime and needs as much rest as possible. Try to get at least 9 hours of sleep at night.
- **Exercise:** Physical activity is not just for people who are good at sports. Riding your bike, dancing, swimming, walking and running are all great examples of things you can do on your own or with friends without the pressure to perform.
- **Water:** Chronic dehydration is a big problem for adolescents. As your body grows, it needs lots of water every day. If you drink a lot of juice or soda, try substituting a glass of water and notice how much better you feel.

Strive to limit:

- **Unhealthy Snacking:** We all love to snack, but instead of cookies or potato chips, try to munch the heart-smart way. Healthy snack ideas include a fruit smoothie, popcorn, nuts or carrots and hummus. When snacking, it's easy to overeat. Portion size matters, even with some healthy snacks. An easy way to control portion size is to avoid eating straight from a large container. Instead, put food in a small bowl or on a plate.
- **Empty Calories:** Foods that lack nutrients contain "empty calories," meaning they do not contribute to your body's overall nutrition needs. Chips, cookies, French fries, cake and doughnuts are examples of foods that are high in calories but empty of nutrients.
- **Processed or "Fast" Food:** We are constantly exposed to processed foods and fast foods that have been precooked, packaged or premade. These include frozen dinners, macaroni and cheese, cheeseburgers, French fries, pizza, canned soups and snack foods. Processed and fast foods are often high in sodium, refined starches and fat. Whenever possible, replace processed foods with meals prepared by you or someone else.

Don't think your lifestyle habits need a change? Try listening to your body. Your body is always sending you messages about what's healthy or unhealthy. To better understand what your body is telling you, answer the following questions:

- How do you feel an hour after eating a bunch of unhealthy snacks in front of the TV?
- How do you feel after an hour of exercise?
- When you stay up late at night, even though you know you have to get up early the next morning, how do you feel the next day?
- When you spend the day being active outside, what is your mood like?
- What are some other ways the body tells you what it needs?

## Activity

### Activity: Nutrition Memory

**Source:** The National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Secondary Level*. Third Edition. Champaign, Ill.: Human Kinetics.

**Learning Expectations:** Students will identify what counts as one serving for different types of food. They will explain how many servings are recommended for each food group.

### Equipment Requirements:

- Ziploc bags (one for each set of memory cards)
- Various equipment, such as hula hoops, for skill-related movement
- Basketballs
- Jump ropes
- Tennis rackets and tennis balls
- Food servings memory cards (can be created from index cards by pasting a picture of the food on one side with the recommended daily serving amount on the other side)

**Standards:** This activity meets NASPE Standards 4 and 5.

**Introductory Activity:** Discuss why it is important to eat healthy portion sizes and the right number of servings for each food group.

### Directions:

1. Divide the students into groups. Give each group a set of cards to lay face down on the floor or a table. The students turn over two cards at a time.
2. Students take turns. If a student does not make a match, he or she must turn both cards face down. The goal is to match a food category with the appropriate suggested number of servings. For example, a picture of grains would match the card with “5 to 6 ounces (140 to 170 grams)” written on it. When students find a matching pair, they set them side by side away from the other cards. Repeat until all matches have been made.
3. When the students think they have matched all the cards correctly, the teacher has a key to check them. If any matches are wrong, the teacher tells students the number of correct pairs. The students then switch the cards around to find the correct pairs.
4. Set cards away from the students and ask students to power walk, jump rope, dribble a ball, bounce a tennis ball with a racket or use another skill-related movement to travel to the cards and return them to the group. A hula hoop with a variety of equipment placed inside it could be made available for students to choose what they want to use to travel to the cards.

**Discussion:** Have the students plan a meal with appropriately sized portions that match the American Heart Association’s recommended dietary requirements for children in their age group. Use the activity as a pretest and a posttest. The students can work as a group during the pretest and then individually during the posttest.



## You've Been Served: Fruits and Vegetables

Fruits and vegetables are nutrient-rich foods that are essential to healthy growth and development of children, especially preteens. These adolescents are entering a period of great physical development with the onset of puberty. Fruits and vegetables contain essential vitamins, minerals, antioxidants and fiber. The American Heart Association recommends preteens eat 1½ cups of fruit and 2 to 2½ cups of vegetables (6 servings) daily.

How much is one serving?

- 1 cup raw leafy vegetables
- 1 baked potato about the size of a small fist
- ½ cup of other vegetables
- 1 medium fruit (size of a baseball)
- ½ cup fresh, frozen or canned fruit
- ½ cup vegetable or 100 percent fruit juice (unsweetened)

Remember to:

- Drink no more than ½ cup of 100 percent fruit juice each day.
- Choose fruit that is packed in juice or water rather than syrup.
- Drain the liquid from the can and rinse the vegetables under running water when preparing canned vegetables. This removes some of the sodium used during the canning process.

### 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, plum, lemon, papaya, bell pepper, 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.

### Heart-Healthy Fruits and Vegetables:

- Asparagus – contains vitamin B6, which can lower homocysteine, an amino acid linked to heart disease
- Bell peppers – contain folate, which can lower homocysteine
- Carrots – rich in antioxidants that combat free radicals that can cause heart disease
- Tomatoes – contain lycopene, which has been proven to prevent heart disease
- Broccoli – has high levels of vitamin C, which can make you less susceptible to heart disease
- Garlic – contains phytochemicals that boost immunity and protect the heart against disease
- Onions – rich source of sulfur-containing phytochemicals that can reduce cholesterol levels
- Potatoes – high in potassium, which helps your body maintain healthy blood pressure
- Squash – contains several heart-healthy nutrients, including vitamin C, potassium, magnesium and folate

## Activities

### Activity: Frisbee Calorie Blaster

**Source:** The National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Secondary Level*. Third Edition. Champaign, Ill.: Human Kinetics.

**Learning Expectations:** Using physical activity and tossing skills, students will develop a sense of relationship between physical activity and calorie expenditure. Students will learn that reducing or expending 500 additional calories a day will result in a 1 pound of weight loss over a week.

#### Equipment Requirements:

- Small Frisbees, two per student
- 14 plastic bowling pins
- Floor tape or poly spots (optional) to mark the playing zone

**Standards:** This activity meets NASPE Standards 1 and 4.

**Introductory Activity:** Discuss with the class that moderate and consistent changes in diet and activity levels will result in positive changes in body composition. A healthy body composition can lead to many health benefits, including a healthier cardiovascular system, lower risk of diabetes, increased self-esteem, less strain on joints and more energy.

#### Directions:

1. Set up seven pins at each end of the activity space, five to 10 feet from the wall. Spread the pins evenly across the width of the space. Establish an area of four to six feet in front of the pins as the neutral zone, where no one may enter for the purpose of defense (guarding the pins). Mark a midcourt, or center, line. Floor tape or poly spots can be used if lines on the floor are not available.
2. Explain that the objective is to knock down the opposing team's pins by sliding the Frisbees across the floor before they eliminate your pins. Each pin represents 500 calories. By knocking down, or eliminating, all seven pins, students will eliminate 1 pound of body weight (3,500 calories). Students cannot cross the midcourt line at any time. Students must play offense, defend their pins and retrieve Frisbees to be successful.
3. Have students practice the Frisbee slide by sliding their Frisbees skillfully and carefully.
4. Divide the students into two teams. Have students scatter randomly in their half of the playing area. Evenly distribute Frisbees to each team. Have team members decide who will slide the Frisbees toward the other team's pins and who will guard their pins. Defenders may retrieve Frisbees but may not enter the neutral zone.
5. Play as many rounds as desired.

**Discussion:** Ask students to name activities they enjoy that would expend calories and promote healthy body composition. Ask how they could reduce the amount of calories consumed on a daily basis if they needed to improve their body composition. Have the students design a one-week plan that reduces 3,500 calories through a combination of reduced calorie intake and increased activity level. (They should use calorie charts or food labels and determine calorie expenditure for chosen activities.)

### Activity: Nutrition Addition

**Source:** Christine Twarozek, physical educator at Charter School for Applied Technologies in Buffalo, N.Y.

**Learning Expectations:** Students will be able to plan a menu for breakfast, lunch and dinner using information given and select the proper foods and portion sizes for each meal.

#### Equipment Requirements:

- Computer
- Created food portion sheet and calories
- Daily food plan

**Standards:** This activity meets AAHE Standard 4.

**Introductory Activities:** Discuss how portion size relates to calorie intake. The larger the portion size, the more calories consumed. When the body absorbs more calories than it can burn off, the remaining calories are stored as fat in the body. Give students a portion sheet and a calorie counter to familiarize themselves with the portion sizes and calories they will need to know for the completion of the lesson.

**Directions:** Have students create a daily food plan that includes portion sizes and calories for a healthy breakfast, lunch and dinner.

**Discussion:** Each student will present one meal to the class and describe their choice based on calories and portion sizes.

## Staying Tobacco Free

Smoking is the most preventable cause of death in the United States, with nearly one in five deaths caused by tobacco use. Middle school is often the time when kids first try smoking or are pressured by peers to try it. Make your students aware of the dangers of smoking and give them strategies to fight peer pressure.

Tobacco use has been linked to heart disease, stroke, lung disease and more than a dozen types of cancer. Of the various types of tobacco, cigarettes are the most harmful. Cigarette smoking reduces your body's ability to absorb oxygen, increases the risk of a blood clot that could lead to a stroke, raises your blood pressure and makes it difficult to breathe, especially when playing sports and being active. Other side effects are just plain gross: bad breath, smelly clothes and yellowing teeth. Even if you only smoke when hanging out with friends, you are still putting yourself and the people around you at risk.

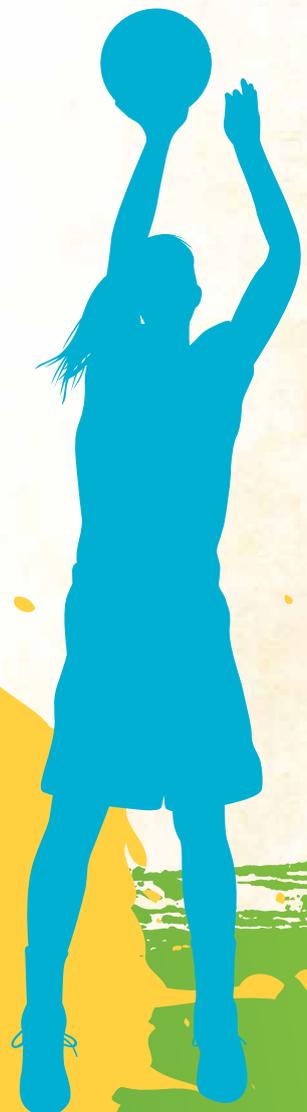
Unfortunately, addictive chemicals in cigarettes make it harder to quit. Even casual use of tobacco products contributes to addictive behavior. As the body builds up a tolerance to the effects of chemicals like nicotine, more and more is needed to satisfy the craving.

In addition to nicotine, tobacco contains poisonous chemicals that you would never dream of putting in your body. These poisons destroy your body over time, especially your heart and lungs. When you smoke, here is some of what you ingest:

- Acetone found in nail polish remover
- Hydrogen cyanide found in rat poison
- Urea found in pee and sweat
- Methanol found in antifreeze
- Cadmium found in batteries
- Hydrazine found in rocket fuel
- Toluene found in gasoline

Despite the scary facts about smoking and tobacco use, there is good news: No matter how long you have smoked, smoke-damaged organs begin to repair themselves as soon as you stop. There are also more ways than ever to kick the habit, from patches and gum to mobile apps and telephone quit lines. Even more encouraging, smoking is less popular than ever before. Most public areas and many workplaces are now "smoke-free."

Now that you know the facts about smoking, you have the power to say no. The choices you make also have the power to impact and inspire others. When you choose to stay tobacco-free, you are casting your vote for a long and healthy life. You can also encourage family and friends who use tobacco products to quit and to join you on the path to good health.



# Stress and Heart Health

## How Stress Affects the Heart

Stress can affect anyone who feels worried or overwhelmed, even kids. Academic and social pressures can create stress, as can family issues such as a divorce or the death of a loved one. But what is stress and how does it affect you?

Stress is the body's physical reaction to situations and circumstances that aggravate the sympathetic nervous system, our "fight or flight" response. Uncomfortable thoughts and dwelling on worrisome situations can also cause stress responses. Situations that may cause stress responses include taking a test, arguing with a friend or family member, doing something you've never done before or dealing with a situation of prolonged uncertainty.

Common physical symptoms of stress include:

- Headache
- Tight muscles
- Anger
- Forgetfulness
- Backache
- Exhaustion
- Depression
- Neck ache
- Trouble sleeping
- Irritation
- Stomachache
- Anxiety
- Impatience

Prolonged stress can cause high blood pressure, which is a leading contributor to heart disease and stroke. It also weakens the body's ability to fight disease. If you feel "stressed out" by something, try some healthy ways to manage your stress:

- Breathe slowly and deeply.
- Get on a regular sleep pattern.
- Avoid caffeine and sugar.
- Be physically active every day, which can help to relieve physical and mental tension.
- Talk positively to yourself (use more "I can" statements than "I can't" statements).
- Talk to a trusted friend or family member about how you feel.

## Getting Enough Sleep: Let's Catch Some Zzzzzzz's

Sleep plays a vital role in your 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 to middle 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

Scientists have made a clear link between sleep deprivation and obesity. Obesity is a medical condition in which a person has too much body fat. This excess body fat puts vital organs in danger, affecting your present and future health. Obesity increases the risk for high blood pressure, diabetes, strokes and heart attacks.

Establishing good sleeping habits now may help you prevent illness later in life.

Tips for establishing better sleep habits:

- Develop a routine for regular bedtimes and waking times, even on the weekends.
- Make your room as quiet and dark as possible.
- Sleep where it is well-ventilated and cool but not cold.
- Get regular exercise, but not too close to your bedtime.
- Avoid caffeinated drinks in the evenings.
- Remove electronic devices from your bedroom or at least turn them off.

### Vocabulary Definitions:

- **Stress:** The body's way of responding to a change that requires an emotional, physical or mental response or adjustment.
- **Chronic Disease:** A medical condition that persists for a long time.
- **High Blood Pressure:** Also called hypertension, high blood pressure occurs when the force of blood pushing against the walls of the arteries as the heart pumps is too high.
- **Diabetes:** The inability to properly make or use insulin, a hormone secreted by the pancreas that helps move sugar (glucose) into the cells of the body where it is used for energy.
- **Sleep Deprivation:** Not having enough sleep.
- **Restorative Sleep:** The sleep phase in which the body renews itself.

## Activity

### Activity: Breathing and Stress Management

**Source:** Allison Davis, American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD)

**Learning Expectations:** Students will be able to demonstrate control over their breathing. They will also demonstrate how to use breathing practices to reduce stress.

**Equipment Requirements:** Soothing music if desired.

**Standards:** This activity meets AAHE Standard 3.

**Introductory Activity:** Breathing is one of the only body functions that is both voluntary and involuntary. Discuss what happens when students feel stress. How do they feel inside? What happens to their breathing when they are stressed? Did they know that breathing exercises help to calm the nervous system and improve thought clarity?

**Directions:** Have students sit comfortably on the floor or in chairs, if in a classroom, and close their eyes. Instruct students to focus on their breathing and to notice if it is fast or slow, deep or shallow. Explain that they will learn three breathing practices to help manage stress.

- 1. Sigh Breath:** Tell students to slowly breathe in through the nose until their lungs are completely filled with air. Then exhale out through the mouth in a sigh until their lungs are completely empty of air. Repeat three to five times.
- 2. Four-Count Breath:** Students take a cleansing breath in and out through the nose. Beginning on their next inhale, students will breathe in slowly for a count of four. Students will then exhale slowly for a count of four. Repeat five to 10 times.
- 3. Thought Speedometer:** Instruct the students to take a cleansing breath and to focus on how they feel when they exhale. With their eyes closed, students will visualize a speedometer in a car. Ask the students to picture the needle on the speedometer at a place that represents how fast their thoughts and emotions are right now. Do they feel like their thoughts are moving at 120 miles per hour, 90 mph or 60 mph? Tell students they can slow down their internal speed by focusing on their exhale. Each time they exhale, tell them to visualize the needle on the speedometer falling until they feel calm and relaxed.

**Discussion:** We all experience times in our lives when we are frustrated, angry, upset or under pressure. Learning how to manage our stress level is critical to heart health. Elevated stress levels contribute to high blood pressure, physical inactivity, overeating and other factors that increase the risk for heart disease and stroke. Our heart rate is connected to breathing and to the nervous system. When we consciously breathe calmly and slowly, the heart slows down and we feel more relaxed and calm.

# Physical Activity and Heart Health

## Your Target Heart Rate

Your heart rate, or pulse, is the number of times your heart beats per minute. How fast or slow your pulse is determines how much fuel your body is using to send oxygen and nutrients throughout the body. When you exercise, your target heart rate lets you know whether you're doing too much or not enough.

First, you have to know how to take 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 heart beats in one minute.

Your resting heart rate is the number of times your heart beats per minute when it is at rest. For the most accurate resting heart rate, take your pulse when you wake up in the morning. 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 lower than 60 is common for people who get a lot of physical exercise. 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.

Your maximum heart rate is the highest number of times your heart can contract in one minute without dangerously over-exerting itself. As a general guideline, your maximum heart rate is 220 minus your age for boys and 226 minus your age for girls. For a 12-year-old boy, that means the maximum heart rate is 208 beats per minute.

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 maximum heart rate. So if your maximum heart rate is 208, that means your target heart rate is 104 to 176 beats per minute.

When you consistently exercise within your target heart rate, you increase your body's anaerobic threshold. The anaerobic threshold is the point during exertion that the body switches from oxygen as its primary source of energy to burning stored sugar and fat. The fitter you become, the more efficient your body becomes at taking in oxygen. Exercising inside your target heart rate zone keeps your body moving at a pace that will continue to build strength and endurance.

## Activities

### Activity: Find Your Target Heart Rate Zone

**Source:** Allison Davis, American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD)

**Learning Expectations:** Students will be able to calculate their maximum heart rate and target heart rate.

#### Equipment Requirements:

- Pencil and paper
- Calculator (if needed)

**Standards:** This activity meets NASPE Standard 2.

**Introductory Activity:** Explain how to find the pulse and how to count the heart beats per minute. Explain the importance of the target heart rate zone in establishing a successful exercise plan. At the low end of your target heart rate zone, you may barely break a sweat. At the high end, you are pushing yourself to around 85 percent of your physical fitness ability. The space between these two areas of effort represents the ideal range of exercise needed to maintain physical fitness and a healthy weight.

**Directions:** To find their target heart rate zones, students first need to identify their maximum heart rates. Have students subtract their age from 220 (for boys) or 226 (for girls). This calculation will give them an estimate of their maximum heart rate.

To find the target heart rate zone, have students multiply their maximum heart rate by 50 percent and 85 percent to find the low and the high end of their 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

**Teaching Hints:** This activity can be integrated with a more physically active lesson to allow students to connect the awareness of physical exertion with their target heart rate zone.

Discussion: Your target heart rate can tell you a lot about your body: how fit you are, how much you've improved over time or if you still need to recover from a tough workout or practice. As you become fit, you're able to go farther and faster while still supplying adequate oxygen to your muscles because your heart becomes stronger and works better.

### Activity: Heartbeat Stations

**Source:** The National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Secondary Level*. Third Edition. Champaign, Ill.: Human Kinetics.

**Learning Expectations:** Students will participate in a variety of activities to understand how physical activity at varying intensity levels influences their heart rate, perceived exertion and amount of time they are able to maintain the activity.

#### Equipment Requirements:

- Heart rate monitors (if available) or a wall clock with a second hand
- Pencils (one per student)
- Cones, jump ropes, basketballs, agility ladder
- Stopwatch
- Heartbeat Stations Score Sheet

**Standards:** This activity meets NASPE Standard 1, 3 and 4.

**Introductory Activity:** Discuss intensity and time with students. Intensity is the level at which a person performs an activity. Intensity for aerobic activity can be correlated with heart rate and can affect the time a person participates in an activity. Students who choose to walk, jog or play sports at a high intensity level that may be above their target heart rate range will not be able to continue for as long as they would have if they had worked at a lower intensity level.

**Directions:** Make a Heartbeat Stations Score Sheet for students by creating a table with three columns: activity, predicted heart rate range and actual heart rate (see table below). Define intensity and ask students to predict which aerobic fitness activities have greater intensity.

As a warm-up, have students consecutively participate in four activities (walking, power walking, jogging and sprinting) for 60 seconds each, performing an active rest (such as marching in place) for 15 seconds between activities. Set up an aerobic fitness circuit with activities that vary in intensity: walking through cones, jumping rope, jogging around the gym, dribbling a ball, running an agility ladder and so on.

Divide students into groups and assign each group a station. After the students complete each station, have them measure their heart rate, either with heart rate monitors or by counting their pulse over the course of six seconds and adding a zero to that number. Have the students record their heart rate on the Heartbeat Stations Score Sheet. Continue to rotate groups through the stations until they complete all stations.

**Teaching Hints:** Play music to motivate the students as they try each station activity. Play music in timed intervals (2 minutes) to signify station changes.

Discussion: Have each student explain which of their predictions of intensity at the start of the activity were correct and why. Ask students to identify the stations at which their hearts beat the fastest and slowest and at which they had the highest and lowest perceived exertion and explain why. Ask students how their activity time might be affected at these stations.

Have the students design three to five stations at home using personal equipment or equipment borrowed from friends with permission. Students can draw the stations and share ideas with the class.

#### Sample Heartbeat Stations Score Sheet

Activity	Predicted Heart Rate Range	Actual Heart Rate
Walking through cones		
Jumping rope		
Jogging around the gym		
Dribbling a ball		
Running		
Agility ladder		

### Activity: Your Heart Rate

**Source:** Shannon Loveridge, physical educator at Community Leadership Academy in Commerce City, Colo.

**Learning Expectations:** Students will be able to demonstrate they know how to measure their target heart rate after one minute of activity at each station. They will be able to determine whether their heart rate falls within their target heart rate zone.

#### Equipment Requirements:

- Pencil and paper
- Calculators (if needed)
- Stopwatch

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

**Introductory Activity:** Discuss where to find the pulse on the neck or wrist and how to take the pulse. Review how to calculate the target heart rate (see Your Target Heart Rate).

**Directions:** Set up eight stations around the gym with specific exercise equipment:

1. Frisbees
2. Jump cup stacks
3. Paddle and wiffle ball
4. Scooters and cones
5. Bowling pins and tennis balls
6. Hula hoops
7. Inflatable or rubber footballs
8. Jump ropes

Divide the students into small groups. When the teacher says “go” the students use the equipment to increase their heart rates in any way they would like as long as it is appropriate and safe. After one minute, the teacher says “stop” and the students find their pulse on the carotid or radial artery. The students then count how many heartbeats they feel in six seconds and then multiply that number by 10 to get the number of beats per minute. Students record their heart rate results as they rotate through all eight stations. At the end of eight stations, students use their previously calculated target heart rate zone (from the activity “Find Your Target Heart Rate Zone”) to fill out a paper assessment and answer whether their heart rate at each station was within their target heart rate zone.

**Discussion:** Let students know they don’t have to participate in organized sports or work physically hard to raise the heart rate enough to stay physically fit. Physical activity of any kind is beneficial, whether it’s riding a bike or walking to school. Exercising within your target heart rate zone helps strengthen your heart and reduce your risk of cardiovascular disease.



## Get Moving for Your Heart

One of the best ways to keep your heart strong and reduce your risk of heart disease and stroke is to stay physically active. Physical activity strengthens the heart and promotes a robust cardiovascular system. Exercise also increases your life span, makes you feel better and helps reduce your blood pressure and cholesterol. The American Heart Association recommends kids your age get at least 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.

There are plenty of ways to get the recommended amount of physical activity every day. Walking, running, swimming, riding your bike or jumping rope are just a few ways to stay active. Here are more fun ways to get 60 minutes of exercise each 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 outdoor games like Frisbee or volleyball.
- Go on a nature walk or a hike with your family.
- Try different types of exercise to improve your fitness, like yoga, skateboarding or dancing.
- Take activity breaks while you watch TV.
- Keep a workout log to track your exercise each day.

Bottom line: It doesn't matter how you move as long as you're physically active. So get up and get moving!

## Activities

### Activity: Shoot for the Stars

**Source:** Tyler Cathcart, physical educator at The Watson Institute in Sewickley, Pa.

**Learning Expectations:** The student will be able to use the four elements of a good basketball shot at least three out of five times. The students will identify the four elements of a good shot while practicing in groups of three.

### Equipment Requirements:

- Basketballs
- Basketball hoops
- Poly spots
- Cones

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

**Introductory Activity:** Introduce the four elements of a good basketball shot using the mnemonic device BEEF:

- **B:** Balance (feet are shoulder width apart, with knees slightly bent)
- **E:** Eyes on the basket and bring the ball above eye level
- **E:** Elbows in
- **F:** Follow through

**Directions:** Randomly place poly spots within shooting distance of the basketball hoops. Divide the students into groups of three. As practice, students will "shoot" the ball to one of their partners using the BEEF cues.

Each group then lines up behind a cone. The first person in each line dribbles out to a poly spot and takes a shot at the basket. If the shot is made, the student picks up the poly spot and brings it back to place under the cone. The next person in line then takes a turn. After all the poly spots are picked up, the game is over and the students check their heart rate.

**Discussion:** Review the importance of heart rate and why cardiovascular fitness is needed to live a heart-healthy life. Also discuss the importance of working together as a team and how physical activities can be a lot more fun when you do them together.

### Activity: Fitting in Fitness

**Source:** The National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Secondary Level*. Third Edition. Champaign, Ill.: Human Kinetics.

**Learning Expectations:** Students will understand the importance of staying active most days of the week and will be encouraged to track their activity levels. They will recognize physical activities that are aerobic (with oxygen) and anaerobic (without oxygen). Students will identify strategies that facilitate an active lifestyle.

#### Equipment Requirements:

- One to six basketballs
- One to three footballs
- Four to six tennis rackets and balls
- Four to six steps (for step aerobics)
- Four to six hockey pucks or balls
- Upbeat music and stereo

**Standards:** This activity meets NASPE Standards 1, 3 and 4 and AAHE Standards 1 and 3.

**Introductory Activity:** Frequency describes how often a person performs a physical activity. The recommended frequency for aerobic activities is daily, but keep in mind that some aerobic activity is better than none if doing it daily is a challenge.

**Directions:** Set up seven stations indoors or outdoors that will help your students participate in seven different activities (for example, basketball, tennis, jogging, walking, Frisbee, football, soccer, dance, hockey, step aerobics). Include a combination of activities that are predominantly aerobic (moderate intensity) and predominantly anaerobic (vigorous intensity). Set up stations that appeal to your students and that represent activities they most enjoy, both in physical education class and outside of class. Number the stations 1 to 7.

Remind the class that the surgeon general recommends people participate in physical activity most days of the week. Explain to students that with aerobic exercise, the muscles use oxygen to produce energy. Tell students that aerobic activities give the heart and lungs a continuous workout. Walking, biking and jogging are aerobic activities. Explain that aerobic activities should be done most or all days of the week. Anaerobic exercise is also good for them. Anaerobic activities use muscles in a more intense way, as in sprinting or weightlifting. Anaerobic activity is done in short, fast bursts, which means the heart cannot supply blood and oxygen as fast as muscles use it.

Tell students that the seven stations they will move through represent the seven days of the week. But explain that there are good reasons to take a day off, such as after intense anaerobic physical activity to let the body recover. Let them know this activity will give them strategies to stay active most days of the week.

Describe what activity students will do at each station. At the basketball station, for example, students could play one on one, two on two or three on three, depending on the number of students at a station. They could practice running layups, dribble in and out of cones, side shuffle as they pass, practice ball-handling drills and so forth. At the jogging station, students could run in pairs on a designated path or anywhere within sight of the teacher.

Divide students into pairs. Tell the pairs to go to a station, with each station limited to three pairs. Start the music. Allow students to participate in an activity at their station until the music stops at a predetermined time. Students at more intense (anaerobic) stations may need to take active rests (such as walking in place). When the music stops, students rotate to the next station and then stretch. When the music starts again, students begin the new activity.

After rotating to several stations, allow students to create their own stations to demonstrate to the class. Perform the activity again using the new student-created stations.

**Teaching Hints:** By changing the activity at each station, you can reinforce the lesson that there are many types of physical activities for students to choose from on their own time.

**Discussion:** Conduct a question-and-answer session. What makes an activity aerobic? What activities did we do that were aerobic? What makes an activity anaerobic? What activities did we do that were anaerobic? What activities would be the easiest to participate in outside of class? What strategies for staying active and healthy were most useful to you and why? How can you fit in aerobic and anaerobic activities throughout the week to make sure you get enough exercise?

## Be an Advocate!

As teachers, you are in a unique position to help influence students and their parents. And educating America's households about ways to live healthier and longer can be very rewarding.

### Our Future

The rate of childhood obesity has tripled in the past three decades and is now the No. 1 health concern among parents in the United States, topping drug abuse and smoking. Among children today, obesity is a leading risk factor for a broad range of health problems, including heart disease, stroke and other cardiovascular diseases, as well as high blood pressure, type 2 diabetes and elevated blood cholesterol levels. There are also psychological effects: Obese children are more prone to low self-esteem and depression.

Excess weight at a young age also has been linked to higher and earlier death rates in adulthood. Perhaps one of the most sobering statements regarding the severity of the childhood obesity epidemic came from former Surgeon General Richard Carmona, who characterized the threat as follows: "Because of the increasing rates of obesity, unhealthy eating habits and physical inactivity, we may see the first generation that will be less healthy and have a shorter life expectancy than their parents."

### Our Present

Adult obesity rates have risen dramatically in recent years. Today over 144 million Americans, or 66 percent of adults age 20 and older, are overweight or obese. Additionally, 71 million, or 33 percent of adults, are classified as obese.

Obesity and being overweight is defined by Body Mass Index (BMI), a measure of body fat based on a person's height and weight. An adult who has a BMI between 25 and 29.9 is considered overweight. An adult who has a BMI of 30 or higher is considered obese.

Obese Americans now outnumber overweight Americans, which means that individuals who are above a healthy weight are significantly above a healthy weight. Some experts project that by 2015, 75 percent of adults will be overweight, with 41 percent obese.

### Our Solution

The good news? Obesity can be stopped — a few simple things can make a big difference. As a teacher, one way you can set a positive example while providing heart-healthy benefits is by starting a health-improvement initiative with your colleagues. Here are some examples:

- Set a plan to quit smoking. Quitting smoking is often associated with weight gain but it's far outweighed by long term health benefits.
- Start an exercise group or pair up as "workout buddies." Working as a team can be a powerful motivator.
- Take turns bringing healthy snacks to work. Prepackaged foods and snacks have more sodium and fat than fresh fruits and vegetables.
- Send home a letter to parents promoting the value of living healthier lives. Teachers and students who set a good example in the classroom might be the inspiration some families need at home.

### Healthy Resources

- See the e-booklet on the Event Resource CD, "Understanding Childhood Obesity"
- Visit [heart.org/gettinghealthy](http://heart.org/gettinghealthy) and [mylifecheck.heart.org](http://mylifecheck.heart.org)



## 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 levels. 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.

Recently, researchers found that about one in 10 premature deaths worldwide is caused by lack of exercise. And inactivity is a major cause of obesity, which is defined as weighing 20 percent or more above a person's ideal weight. Obesity places stress on many of the body systems required to maintain homeostasis, or a healthy body composition.

Nearly one in three American children are either overweight or obese, meaning they weigh more than is considered an ideal weight for their height. Obese children score 40 percent lower on standardized tests than their more physically active peers. Being obese also increases the risk for heart disease, stroke, high blood pressure, diabetes and cancer. Unless physical activity starts at an early age, obese children are 70 to 80 percent more likely to become obese adults.

Your metabolism is the rate at which your body burns calories. Every person burns calories at a different rate, so no two metabolisms are exactly the same. Your metabolism is determined by a lot of factors: genetics, physical activity, height, weight and gender, with boys burning calories faster than girls. Your metabolism is how your body naturally regulates its fat-to-muscle ratio and provides all the organs of the body with the nutrients they need to function effectively. Your body gains weight when you consume more calories than your metabolism can burn off.

A major culprit in the rising rate of childhood obesity is physical inactivity. In fact, within the past two generations, all Americans (including children) have become 32 percent LESS physically active.

### 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: Body Image Museum Tour

**Source:** The National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Secondary Level*. Third Edition. Champaign, Ill.: Human Kinetics.

**Learning Expectations:** Students will understand the importance of staying active on most days of the week. Students will analyze the messages that the media places on body image and their impact on their own beliefs about body image. Students will examine strategies that promote an active lifestyle.

#### Equipment Requirements:

- Two magazines per group (magazines should include images of men and women being physically active)
- One large sheet of paper per group
- Glue sticks

**Standards:** This activity meets NASPE Standard 3.

**Introductory Activity:** Facilitate a classroom discussion on the messages being portrayed by the media in relation to body image. Specifically, focus the discussion on how the health-related fitness components are represented by various media sources.

**Directions:** Arrange the class into groups of four and explain that they will be going on a body image museum tour. Provide each group of four with two magazines of men and women being physically active. Explain to the groups that each will be making a collage representing images of people in various activity situations. Emphasize that the collages must include both genders.

After the collages are complete, ask the groups to place their collages in various parts of the room. Have each student pair up with a partner from the same group. Explain to the class that each pair will be touring the museum collages. Each pair should visit all the collages and complete the following questions:

1. Record your thoughts as you look at the collages. Write down five adjectives that describe your reactions to the pictures.
2. Discuss with your learning partner what you see in the pictures. What messages do you think the pictures send to readers? Think about obvious and less obvious messages.
3. Why do you think these specific images were chosen for display in the magazine?

**Discussion:** Facilitate a class discussion based on the students' responses to the activity. Throughout the discussion, emphasize that people come in different shapes and sizes. The important message is that everyone can benefit from regular physical activity to maintain or improve heart health and fitness.

### Activity: Health and Fitness Treasure Hunt

**Source:** The National Association for Sport and Physical Education (2011). *Physical Best Activity Guide: Secondary Level*. Third Edition. Champaign, Ill.: Human Kinetics.

**Learning Expectations:** Students will be able to recognize positive lifestyle choices and how they affect health and fitness.

#### Equipment Requirements:

- Task cards and equipment needed to perform the selected task
- Tasks may require jump ropes, tennis balls, floor mats, basketballs and basketball hoop.

**Standards:** This activity meets NASPE Standard 4 and 6.

**Introductory Activity:** Develop a group of Health and Fitness Treasure Hunt Task Cards that list either specific risky behaviors or health-enhancing behaviors along with fitness and motor skill activities that help students understand the relationship between physical activity and a heart-healthy lifestyle.

**Directions:** Have students form groups of two or three. Place the task cards face down in the center of the activity area. On the start signal, all students begin to jog around the perimeter of the activity area. On a signal, one person from each group runs to the center and takes a card, returns to the group and reads the card. The group members then perform the selected activity.

When they complete the activity, the group begins to jog. After they complete one lap, another member of each group returns the card to the center, places it face down and picks up another card. Continue the activity for five to 10 minutes.

**Discussion:** Ask students to share what specific risky behaviors and health-enhancing behaviors they encountered.

## You're the Cure: Advocate for Heart Health and Physical Activity

The American Heart Association advocates for public policy that promotes frequent quality physical education because the link between physical activity and cardiovascular health cannot be overstated. *You're the Cure* is the American Heart Association's advocacy initiative. Through organized outreach and communication to lawmakers, *You're the Cure* strives to protect physical education programs, school-based nutrition programs, and heart disease and stroke research.

The American Heart Association publicly supports policies that would:

- Require 150 minutes per week of physical education in elementary and middle school and 225 minutes per week in high school taught by a certified physical education teacher.
- Require all school districts to develop and implement a planned K–12 physical education curriculum that adheres to national and state standards for health and physical education.
- Offer regular professional development opportunities to physical education teachers that are specific to their field.
- Ensure physical education programs have appropriate equipment and adequate facilities.

Stand up for heart health and visit [yourethecure.org](http://yourethecure.org). Register to participate in a Lobby Day in your state, communicate with your congressional representative and learn about legislation that could support the eradication of childhood obesity, heart disease and stroke.



# National Physical Education and Health Education Standards

Throughout this kit, you will see standards referenced in the activities. These standards refer to the National Standards for Physical Education developed by the National Association for Sport and Physical Education (NASPE) and the National Standards for Health Education developed by the American Association for Health Education (AAHE) in association with other organizations. These standards provide a framework for achievable outcomes for students in grades K–12 and describe what students should know and be able to do to be considered physically educated. Adherence to the standards of physical education is critical in establishing a quality physical education program in your school.

## National Physical Education Standards:

- **Standard 1:** Demonstrates competency in motor skills and movement patterns needed to perform a variety of physical activities.
- **Standard 2:** Demonstrates an understanding of movement concepts, principles, strategies and tactics as they apply to the learning and performance of physical activities.
- **Standard 3:** Participates regularly in physical activity.
- **Standard 4:** Achieves and maintains a health-enhancing level of physical fitness.
- **Standard 5:** Exhibits responsible personal and social behavior that respects self and others in physical activity settings.
- **Standard 6:** Values physical activity for health, enjoyment, challenge, self-expression and/or social interaction.

## National Health Education Standards:

- **Standard 1:** Students will comprehend concepts related to health promotion and disease prevention to enhance health.
- **Standard 2:** Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.
- **Standard 3:** Students will demonstrate the ability to access valid information, products and services to enhance health.
- **Standard 4:** Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
- **Standard 5:** Students will demonstrate the ability to use decisionmaking skills to enhance health.
- **Standard 6:** Students will demonstrate the ability to use goal-setting skills to enhance health.
- **Standard 7:** Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.
- **Standard 8:** Students will demonstrate the ability to advocate for personal, family and community health.

For more information on the national standards of physical education and health education, please consult the following resources:

- **National Association for Sport and Physical Education** [aahperd.org/naspe/standards/nationalStandards/](http://aahperd.org/naspe/standards/nationalStandards/)
- **Centers for Disease Control and Prevention** [cdc.gov/HealthyYouth/SHER/standards/index.htm](http://cdc.gov/HealthyYouth/SHER/standards/index.htm)



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