



### TOPIC

# NFL PLAY 60 Kids Day Live Virtual Field Trip

### KEY LEARNING OBJECTIVES

In the following activities students will:

- Model the functioning of the heart.
- Describe how the heart functions as a pump.
- Calculate and measure heart rate.
- Set goals for target resting and active heart rates.

### OVERVIEW

Are you and your students ready to get moving? The American Heart Association (AHA) and the National Football League (NFL) working together with Discovery Education are headed to Atlanta for Super Bowl LIII to show kids how easy and fun it is to get active and heart healthy. In this Virtual Field Trip (VFT), students will learn about the techniques that NFL players use to stay fit and active.

During the VFT, representatives from the American Heart Association and NFL players will lead demonstrations and discussions on physical activity and nutrition. Students will discover how aerobic activity affects their heart and lungs, how strengthening activities develop muscles, how nutrition provides the energy needed to be active, and how certain foods and staying hydrated contribute to their good health. Students will see that physical activity is fun and can be done anywhere and at any time during their day.

Teachers, students, and parents can share photos and descriptions of their experiences on social media by using the hashtag #GetMovingPLAY60.

### BEFORE THE VFT

#### ACTIVITY 1: PUMP POWER!

In this activity, students will learn about how the heart functions as a pump as well as the different parts of a pump and what they do. Students will build a model of a heart using a jar, a balloon, and two straws and use it to demonstrate understanding of how a heart functions during exercise.



## MATERIALS

Per group:

- Wide-mouth plastic jar (such as a peanut butter jar)
- Water
- Red food coloring
- Balloon
- Craft scissors
- Wooden skewer
- 2 straws
- Paper towel (for clean-up)
- “Parts of a Heart” Student Worksheet

Engage students with fun facts about the heart:

- Your body contains about enough blood to fill a soccer ball.
- Your heart moves that fluid all around your body more than once a second.
- The heart beats more than two billion times in a person’s lifetime.

During the VFT, presenters refer to “getting your heart pumping” and getting “pumped up.” To put this in context, introduce students to the idea of a pump. Ask the following questions. You can use the information provided to guide students’ thinking about the concepts.

### **Are you pumped for the Super Bowl?**

What does it mean to be “pumped” anyway? Why do we say that? Does being “pumped” about something exciting have anything to do with using a pump to move liquids? Think about the water you get from the faucet at your home. A device called a pump moves water into your home. The pump keeps the water at a constant pressure. When you turn the faucet, water comes out every time. If the pump fails, the water will no longer come out of the faucet. Many other devices such as spray cans act as pumps, too. Is there something in our bodies that acts as a pump? You guessed it—the heart! Just before the Super Bowl, we are going to join real NFL players to learn about how they keep their hearts pumping to stay fit and active.

### **How does the heart work?**

During the VFT, you will learn different ways to get your heart pumping. Your heart acts as a pump to move blood around your body, but it’s a lot more complicated than most manmade pumps. That’s because it has to pump blood first one way and then the other. The heart pumps blood from the lungs to the rest of the body. This blood has oxygen that cells need. When your body’s cells use the oxygen, it must be replaced. The body then pumps blood back to the lungs. Here, the blood absorbs more oxygen, and the cycle continues. All that happens during a single heart beat cycle!



### **Why does the heart need to be healthy?**

The VFT is going to be the biggest day in heart health. But why does your heart need to be healthy? If your heart is not healthy, it cannot pump enough blood around your body. That means your body's cells would not get enough oxygen. Over time, your body would be more likely to get diseases. The **PLAY 60** activities will help keep your heart healthy, and over the years, they will help to keep you healthy too!

### **How can we see the heart working?**

During the VFT, you will learn fun activities that keep your heart healthy. Your heart is very complicated; however, you can understand how it works by making a simple model. You'll be able to see what's happening to the heart when you're resting, and you can compare this with what's happening to the heart during the Heart Healthy Countdown, the **PLAY 60** Heart Health Super Plays, and other fun activities!

Explain to students that in this activity, they will build a model of the heart as a pump. Their model will show how the heart actually pumps blood!

Provide materials for each group. Students should work in small groups. Inform groups that they will have 30 minutes to create their heart model. At the end of 30 minutes, direct groups to answer the journal questions in their notebooks. You could also choose to use these questions during a class discussion. It is recommended that you practice the procedure for making the heart model before the lesson. You may also wish to demonstrate the procedure for younger or struggling students, complete the challenge simultaneously to model each step, or provide printed copies of the procedure for student use throughout the activity.

### **Procedure for Building a Heart Model**

1. Fill the jar about halfway with water. You use water because it is a fluid, like blood.
2. Add a few drops of the red food coloring. This is to mimic the color of blood.
3. Use the scissors to cut the balloon just below its neck where it starts to widen. You will have two pieces of balloon- one large and one small. You will use these pieces of the balloon as parts of your heart model.
4. Take the larger (oval) part of the balloon and stretch it tightly over the neck of the jar, so that it cannot slip off. This step creates a closed space out of the jar to model a chamber of the heart.
5. Use the wooden skewer to carefully make two small holes in the stretched piece of balloon. Your holes should be a couple of inches apart toward the rim of the jar. These holes will be used to hold the straws in place, so don't make them too big.
6. Poke one straw through each of the holes. The straws will allow the water to move in and out of the jar just like the blood vessels in your heart.
7. Make sure that the straws fit tightly in the holes, and that there are no tears in the balloon. If there are tears, or the straws don't fit tightly, your "heart" will not pump the "blood" very well.
8. Take the small piece of the balloon that you cut off earlier. Place this piece over the end of one of the straws. This piece serves to keep water from moving back down the straw like your heart valves.

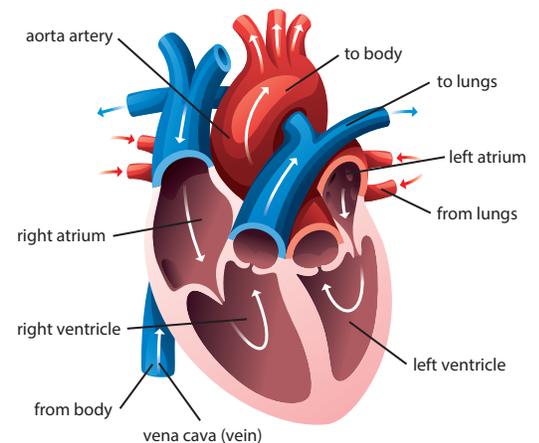
9. Tape the piece of balloon on the straw so that half of it covers the end of the straw. The other half should be sticking out beyond the end of your straw.
10. The model is complete. To mimic the action of the heart, press the center of the stretched balloon.

After students have completed their models, ask them to record their observations and participate in the class discussion. Photos of their models can be shared on social media by using the hashtag #GetMovingPLAY60.

## CLASS DISCUSSION

To help students connect the activity to the workings of a real heart, hold a brief discussion. Explain that NFL players such as those they will meet in the VFT must have healthy hearts. Show students a simple diagram of the heart, and distribute the “Parts of a Heart” student worksheets. Students don’t need to memorize the diagram; however, they should be able to recall that the heart consists of four chambers, connected to large blood vessels. Be sure to point out the valves of the heart. Encourage students to ask questions about how the heart works and how their model is related to the function of the heart. If necessary, prompt discussion with questions such as:

1. What did you observe when you pressed the balloon on the jar? [water comes out of the straws]
2. What would happen if you pressed the balloon several times rapidly? [water would come out of the straws faster]
3. What does the piece of balloon taped to the straw do? [prevents water being sucked back into the jar]
4. In what ways is your model like a real heart? [it has a chamber filled with liquid, it pumps liquid out through tubes, it has a valve so that liquid can go only one way]
5. How can you use your model to show what happens during increased activity, like if you were participating in **PLAY 60** exercises? [the balloon could be depressed rapidly, causing water to move through the straws faster]



After a brief discussion, instruct students to complete the worksheet.

### Answer Guide for Student Worksheet

#### What does the jar represent?

The jar represents a chamber of the heart.

#### What do the straws represent?

The straws represent blood vessels coming out of the heart.

#### What does the piece of balloon taped to the straw represent?

The piece of balloon taped to the straw represents a heart valve.

#### What does the water represent?

The water represents blood flowing to and from the lungs.



**Write a sentence explaining how your model mimics the action of a heart.**

Answers will vary but may include: Pressing the piece of balloon covering the neck of the jar increases pressure inside the jar, like the heart muscle contracting. This causes water to move out of the straws, like blood moving away from the heart through blood vessels. The piece of balloon taped the straw acts like a heart valve, preventing blood from moving through a blood vessel.

**Describe two ways in which your model is different from a real heart.**

Answers will vary, but may include: a heart is more complicated, we used water instead of blood, the heart works on its own, the heart is made of muscle, etc.

After students have completed their worksheets, review responses with the class. Challenge the class to identify which answers they can reach consensus on, and what new questions emerge. Encourage students to refer back to their notes during and after the VFT, and if possible, retain the heart models for use after the VFT.

## AFTER THE VFT

### ACTIVITY 1: SET YOUR HEART RATE GOALS

In this activity, students will focus on the essential role of the heart during aerobic activity. They will learn how to measure and calculate heart rate and how to set goals for resting and active heart rates.

**Materials:**

- “Heart Rate” Student Worksheet

On your board or chart paper, write the phrase “aerobic activity.” Have students brainstorm what they think it might mean, and record responses. You can use the question and information below to lead students in a discussion.

**What did the presenters in the VFT mean when they said “aerobic activity”?**

The word “aerobic” is related to oxygen. Oxygen is what we breath to survive. The body needs a constant supply of oxygen. When you’re active or exercising enough, your body requires a higher amount of oxygen. Your heart rate also increases. When that happens, it is considered to be aerobic activity.

Ask students if they know how to tell if their heart rates are increasing [measure pulse]. Demonstrate how to detect the pulse in the wrist using the index and middle fingers. Help each student locate his/her pulse. Distribute the “Heart Rate” student worksheets, and explain to the class that you will be teaching them how to calculate their own resting heart rate. Then, they will test their skills by calculating the heart rate of a peer.

**What is a resting heart rate?**

Your resting heart rate is how fast your heart beats when you are not exercising or in need of more oxygen. Find your pulse on your wrist. You are going to count the number of times you feel your pulse in 15 seconds. I will tell you when to start and when to stop. Record the number on your



worksheet. Multiply that number by four. The result is your heart rate. Your resting heart rate will probably be between 70–100 beats per minute.

Now, you and your partner will take turns measuring each other's pulse. Find the pulse on your partner's wrist. You are going to count the number of times you feel his/her pulse in 15 seconds. I will tell you when to start and when to stop. Record the number on your worksheet. Multiply that number by four. Your resting heart rate should be about the same when your partner measured it as when you measured your own. However, your resting heart rate may not be the same as your classmate's.

To have students feel the difference between a resting and an active heart rate, have them participate in a Play60 activity from the VFT, as suggested below. Students will then measure their pulse again to calculate their active heart rate.

#### **What is an active heart rate?**

Your active heart rate is how fast your heart beats when you are exercising or in need of more oxygen. We are going to practice the activity demonstrated in the Virtual Field Trip, and then we are going to measure our heart rates again. Starting with the “breakdown” position—feet slightly spread, knees bent, head up, arms at side in running position. Jump up and down for 30 seconds, while shouting “**PLAY 60.**” I will tell you when to start and when to stop. Count your pulse again for fifteen seconds. Record it on your worksheet, and then calculate your heart rate by multiplying by 4.

Now that students know how to calculate resting and active heart rates, they can learn one way to set target heart rate goal. It is important to emphasize that every person is different and requires different levels of exercise to stay healthy.

#### **What is your target heart rate?**

That activity got your heart pumping, right? Your heart rate should have increased, but how much should your heart rate increase after you exercise? To set a goal for your target heart rate during exercise, you calculate a percentage, or part, of your maximum heart rate. First let's calculate your maximum by subtracting your age from the number 220 on your worksheet. Then, subtract your resting heart rate from your maximum heart rate. That is one way to determine your target heart rate goal for moderate exercise.

Use this opportunity to connect students learning about heart rate with the challenge they completed in building a heart model. Bring the models back out for the students to use during the following discussion.

#### **What do the presenters mean when they say “getting your heart pumping”?**

The heart is already pumping all the time. You usually can't feel it, unless you take your pulse. From your investigation, you know that the heart rate increases as a result of exercise. If you exercise hard, you may feel your heart pumping in your chest. This is what people mean by “getting your heart pumping.” Use your heart model to demonstrate to your partner how your heart pumps during rest and during exercise.



## ACTIVITY 2: HEALTHY HEART RESOURCE

In this activity, students will dig deeper into how a healthy heart enables aerobic activity. They will create a resource to explain to peers to how a healthy heart improves quality of life by enabling aerobic activity. The resource should focus on helping kids organize their time to ensure that they get the recommended 60 minutes of daily activity.

### Materials:

- Worksheets from prior activities
- Access to the Internet
- White construction paper
- Crayons, Markers, or Colored Pencils
- “Healthy Heart Resource” Worksheet

Refer back to the prior activities. Ask students to look at the [AHA Recommendations for Physical Activity in Kids Infographic](#) and the [Recommendations for Physical Activity in Children](#) webpage. Students should work in small groups to summarize the information by recording key points about physical activity in children on their “Healthy Heart Resource” worksheet. Then, with their group members, students should brainstorm and list activities children can do in order to get 60 minutes of play a day.

Next, explain to students the concept of a Public Service Announcement/PSA. If possible, show example(s) of PSA videos, posters, or infographics to help them understand. Challenge students to create a PSA with their group members that helps peers organize their time so that they can live the **PLAY 60** ideal. Suggested formats might include:

- Brochure
- Poster
- Infographic
- Social Media Post
- “Commercial”/Video
- Short Speech

Students’ PSAs should explain the benefits of a heart healthy lifestyle and offer suggestions for how to achieve it or how to organize one’s life to allow for 60 minutes of exercise a day. Suggested content for the PSAs:

- Information about why it is important for children to get 60 minutes of exercise a day.
- A list of activities to help students meet their need to get 60 minutes of exercise a day.
- A guide to using the AHA/NFL PLAY 60 app to help students use the app to get 60 minutes of exercise a day.
- A list of apps or resources that can help students manage their schedules.

If time allows, have groups present their PSAs to the class or swap with another group. Discuss similarities and differences, and challenge students to articulate whether or not they feel these resources would be successful in helping children live the NFL PLAY 60 ideal. Students, teachers, and parents can share on social media by using the hashtag #GetMovingPLAY60.



## CORRELATING STANDARDS

[National Physical Education Standards](#)/ Standard 3: The physically literate individual demonstrates the knowledge and skills to achieve and maintain a health-enhancing level of physical activity and fitness.

[Health Education Standards](#)/ 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.

[Next Generation Science Standards \(NGSS\)](#)/ LS1.A. Structure and Function. In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

[Common Core State Standards](#)/ RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). WHST.6-8.9. Draw evidence from informational texts to support analysis, reflection, and research.

If you are looking for additional resources to extend the learning from this Virtual Field Trip, go online to join [NFL PLAY 60](#) and download resources to use in your classroom.

Also, invite your students' parents to check out the great videos and family activities to reinforce what students are learning in your classroom.

Always **encourage your students** to get at least 60 minutes of physical activity every day!

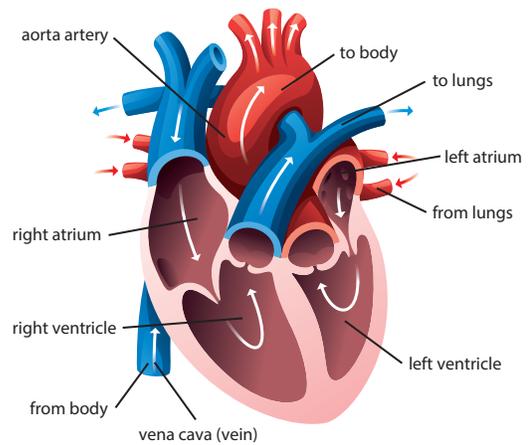
Visit: <http://www.aha-nflplay60challenge.org/>

Name \_\_\_\_\_

**Directions:** Draw a line from each part of your heart model to the part of an actual heart that it represents.



Include a black and white line drawing of a model of the heart made out of a jar, like that pictured below.



Write a sentence explaining how your model mimics the action of a heart.

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Describe two ways in which your model is different from a real heart.

1. \_\_\_\_\_
2. \_\_\_\_\_

Name \_\_\_\_\_

1. Enter your pulse and calculate your resting heart rate:

Number of Beats in 15 Seconds	Multiply by Four	Resting Heart rate:
	x 4 _____	

2. Enter your resting heart rate when your partner measured:

Number of Beats in 15 Seconds	Multiply by Four	Resting Heart rate:
	x 4 _____	

3. After activity, enter your pulse and calculate your active heart rate:

Number of Beats in 15 Seconds	Multiply by Four	Resting Heart rate:
	x 4 _____	

4. Calculate your maximum heart rate:

	Subtract Your Age	Maximum Heart rate:
220	- _____	

5. Calculate your target heart rate:

Maximum Heart rate:	Resting Heart Rate	Target Heart rate:
_____	- _____	



Name \_\_\_\_\_

Identify FIVE key points about physical activity in children:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

List activities children can do to get their 60 minutes of play in every day:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

