



Heart and Lungs

OVERVIEW

This program will introduce students in grades 3-5 about how heart and lungs. This will be done through a series of activities and discussion. Students will learn about blood circulation and the important roles the heart and lungs play in getting blood to the entire body. This program provides the opportunity for students to participate in unique activities aimed to capture the students' attention and create an understanding that will stay with them for life.

Objectives

1. To introduce students to the circulatory system and how it works.

Estimated Time- 45 minutes to 1 hour

Evaluation

1. Students should be able to name a few parts of the heart and the pattern in which blood flows throughout the body.
2. Students should be able to explain basic functions of the heart and lungs.

I. Supplies

- i. Tutu's House materials: experiment handouts
- ii. Other supplies: scissors, tape, paper, pins

II. Welcome and Introduction

- i. Healthy Heart Talk
 - a. Question: Where is our heart?
-Mid center of chest cavity
 - b. Question: What does our heart do? (use heart poster)
- It is a muscle that pumps blood with oxygen to our muscles and organs and takes the used up blood with no oxygen back to our lungs to get more oxygen.

- c. The heart and blood vessels (arteries=oxyggen goes out to body, veins=deoxygenated blood returns to heart) make up the **CARDIOVASCULAR SYSTEM**
- d. Question: What is the direction of blood through our heart?
 - from the body into the atrium, out of the ventricles to the lungs for oxygen, then to the body

III. Lecture/discussion of material

- a. The Heart is a very important part of the Circulatory System
 - the job of the circulatory system is to supply every part of the body with oxygen and food
 - to do this, the heart pumps blood through all the blood vessels in your body
- b. The heart
 - has four chambers
 - it squeezes about every second (also called contracting)
 - Blood comes in through the veins and leaves through the arteries
- c. The circulation of blood
 - The heart has two sides (right and left)
 - 1) blood without oxygen in it goes into the right side
 - 2) blood is then pumped to the lungs where it picks up oxygen
 - 3) blood then returns to the left side of the heart
 - 4) blood is pumped out by the heart to the rest of the body

IV. Heart Facts

- i. Healthy Heart Facts
 - a. Our hearts work really, really hard, even when we are sleeping
 - b. Measure of how hard our heart is working is called **HEARTRATE=beats/minute**
 - c. Question: Our hearts work the hardest when?
 - moving a lot, exercise
 - d. Our hearts slow down when?
 - sleep, rest
 - e. Pumps 1,400 gallons every day (280 x 5 gallon jug)
 - f. Pumps more in 1 minute than if you turned on a faucet full blast
 - g. Our hearts weigh less than one pound
 - h. Pumps 40 million times in one year with enough force to lift us 100 miles above the earth
 - i. Question: What is our heart rate?
 - Everyone measures heart rate with a 10 second count, add a zero
- ii. Cardiovascular system Facts
 - a. has 100,000 miles of blood vessels leading out to body and back to heart (176,000,000 x 3 foot twine)
 - That's four times around the earth!

V. Circulation Obstacle Course

i. Set Up/ Materials

- tape or four large objects, balloons (even number of red and blue)
- a. Set up four objects in a large area (could use tape on the floor)
- b. Set up objects in a diamond shape with enough room for kids to run between objects
 - top: represents the brain
 - left: represents the lungs
 - bottom: represents the rest of the body
 - right: represents the heart
- c. Have the a red and blue balloon for each student participating
- d. divide the blue balloons between the brain and rest of the body and put all the red balloons at the lungs
 - The start line is behind the heart
- d. Tell students that each of them represents a red blood cell which carries oxygen to the brain and the rest of the body
 - show the red balloon: when they have this balloon, they are carrying oxygen
 - show the blue balloon: when they have this balloon they are not carrying oxygen, they are carrying carbon dioxide and other wastes that you breathe out
- e. Divide students into two teams
 - each team will see if they can circulate throughout the body fastest
 - they must supply the brain and the rest of the body with blood and take back the carbon dioxide and waste to the lungs to be exhaled
- f. Steps of the obstacle course
 - 1) start at the heart with a red balloon
 - 2) run to the brain where you will put down the red balloon and pick up the blue one
 - 3) go back to the heart and make sure you touch it (or get inside it if it is tape on the ground) so you can be pumped to the lungs to get more oxygen and get rid of the carbon dioxide
 - 4) run to the lungs and put down the blue balloon, pick up the red one
 - 5) run back to the heart so you can be pumped to the “rest of the body”
 - 6) from the heart run with the red balloon to the “rest of the body”
 - 7) put down the red balloon and pick up the blue one then run back to the heart
 - 8) one last trip to the lungs is needed to put down the blue balloon and pick up the red one

- 9) return to the heart and hand off your red balloon to the next teammate in line
 - 10) repeat obstacle course till every team member has gone through once
 - 11) when one team has finished make sure to fix the balloons so all the red are at the lungs and the blue at the brain and the rest of the body
 - 12) time the other team and see which red blood cells can circulate the fastest!
- g. Remind students that if they have a blue balloon, they must give it to the lungs and get a red one before they can take it to the brain or the rest of the body

VI. Evaluation and Reflection

- i. Evaluation
 - a. Heart Word Game
 - handout (page 36, activity sheet 5)
 - crossword puzzle summing up facts about the heart and how it works
 - b. Did you learn anything new?
- ii. Reflection
 - a. Heart Message
 - handout (page 19, activity sheet 1)
 - fill in the blank with provided word and find out the heart message
 - b. Is it fun to learn about the circulatory system and how it works?
 - Did you like what you did today?

STANDARDS COVERED

SCIENCE – This is an excellent activity for a science lesson of the circulatory system, but that is not covered in science until gr. 5.

Standard 4: Life and Environmental Sciences: STRUCTURE AND FUNCTION IN ORGANISMS: Understand the structures and functions of living organisms and how organisms can be compared scientifically

HEALTH

Standard 1: CORE CONCEPTS: Understand concepts related to health promotion and disease prevention

PHYSICAL EDUCATION

Standard 3: ACTIVE LIFESTYLE: Participate regularly in physical activity

Standard 4: PHYSICAL FITNESS: Know ways to achieve and maintain a health: enhancing level of physical fitness

DOE Benchmarks

3-5.1.2 – Describe the importance of physical activity and exercise as part of a healthy lifestyle