

Pulse Check



Date: 6-11-12

Grade Level: 3-5

Professions: Cardiologist, Cardiovascular Tech, Doctor, Nurse, Pediatrician, Physical Therapist, Athletic Trainer

All HOTT lesson plans are designed with the purpose of increasing students' awareness of the variety of health careers that are available to them. If possible, invite the corresponding health professional into your classroom to discuss his/her occupation. If this is not an option, use the attached sheet(s) to share this/these career(s) with your students.

Purpose: The lesson provides students with the opportunity to learn about the circulatory system and conduct an experiment where they take their pulses after different types of activity.

Materials needed:

- Overhead projector
- A transparency of a heart - http://www.nlm.nih.gov/changingthefaceofmedicine/resources/pdf/beatting_heart/transparency_2.pdf
- Vocabulary List –attached
- Measuring Your Pulse Rate handout – https://cfmedicine.nlm.nih.gov/resources/pdf/beatting_heart/handout_2.pdf
- Wall clock with second hand or stop watch

Duration: 1 class period

Instructions:

- Tell the students that they will be conducting an experiment with their own hearts to identify how fast the heart beats during different types of activities.
- Using **Heart Transparency** show the parts of the heart (right atrium, right ventricle, left atrium, and left ventricle). Tell the students that the heart is the hardest working muscle in the body. It works all the time. The right atrium and ventricle push blood to the lungs to get oxygen from each breath. The left atrium and ventricle pumps the oxygen rich blood out to the body. *(Note: The names of the parts of the heart are not necessarily important for the student to remember, but are used to describe how the heart functions).*
- Show the students how to take their own pulses on the wrist or on the side of the neck. Explain that what they feel is the heartbeat, called a pulse, caused by the heart's pumping blood through arteries in the body.
- Use **Vocabulary List** to review the words: pulse and pulse rate.
- Have students practice taking their pulses during six-second intervals. Using a stopwatch or wall clock to track time, say, "START" to initiate the count and "STOP" when six seconds have passed.

- Distribute **Measuring Your Pulse Rate** handout and review, explaining that students will conduct multiple trials just as a scientist would do for an experiment. Have the students study the grid and point out that they will multiply their pulse counts by ten (adding a zero) so their pulse rate tallies will be for one minute.
- Have students work in teams of two to conduct three trials for each of the three different physical activities (lying down, walking, and jumping jacks). Ask the students to record their data on their handouts. Time the students to engage in each activity for three minutes before taking their pulses. Have students rest for one minute between activities. (*Note: Only two trials of the activities may be possible, depending on the class time available.*)
- When students have finished filling in their handouts, discuss the following topics and questions.
 - ◇ Does everyone have the same heart rate at rest? What about after the different activities? What does this mean? Explain that there is a wide range of normal heart rates.
 - ◇ Why is the heart rate different for the three activities? Remind students that the heart is a muscle and like other muscles, exercise makes the heart muscle stronger.
 - ◇ Ask what the students think their hearts are doing during the different activities. Remind students that the heart is part of the circulatory system where the arteries, veins, and capillaries work with the heart to deliver oxygen and nutrients to the whole body.
 - ◇ Explain there are many physicians who work with people's hearts. These doctors are called cardiologists. Some cardiologists work only with children and are called pediatric cardiologists. A pediatrician is a doctor who works with children. Introduce the related **Vocabulary List**.

References:

- http://www.nlm.nih.gov/changingthefaceofmedicine/resources/lesson_3_4.html
- National Library of Medicine, National Institute of Health

Vocabulary List

- **Blood vessels:** arteries, veins, and capillaries are all blood vessels.
- **Artery:** a blood vessel that carries blood away from the heart.
- **Vein:** a blood vessel that carries blood to the heart.
- **Capillary:** a very small blood vessel that connects an artery and a vein.
- **Heart:** a muscular organ that pumps blood to the lungs and the body.
- **Lungs:** organs that take in oxygen from the air and remove carbon dioxide from the body.
- **Circulatory system:** the system that carries blood around the body. It is composed of the heart, lungs, arteries, veins, and capillaries.
- **Pulse:** the beating of the heart that can be felt by pressing on an artery.
- **Pulse rate:** measurement of how fast the heart is beating.
- **Cardiologist:** a doctor who diagnoses and treats problems with the heart.
- **Pediatrician:** a doctor who treats children.