How Does Your Heart Rate?

Lesson 2 of 3

Grade Level: K-4
Subject: Life Science
Prep Time: <10 minutes
Activity Duration: 45 minutes
Material Category: General Classroom

National Education Standards:				
Science	**Mathematics**	**Technology**		**Geography**
		ISTE	**ISTA**	
2a, 7b	15, 17			

Objective:

The students will observe the changes in the body, specifically the heart, while performing physical activities. The students will record the observations as well as actual pulse rate on a worksheet. The students will measure their heart rate pulse, in beats per 15 seconds.

Materials:

- Watch with a second hand
- A bell
- Transparency of tally sheet "How Does Your Heart Rate?"
- A basketball for each pair of students
- Student sheets

Related Links:

How Does Your Heart Rate?
http://www.lessonplanspage.com/ScienceHowDoesYourHeartRate24.htm

Listen To Your Heart Beat
http://www.iit.edu/~smile/bi9305.html

Straight From The Heart
http://www.iit.edu/~smile/bi9514.html

How Does Your Heart Rate?

Student Sheets

Name: _____

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Materials

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- A basketball for each pair of students
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Procedure

1. Your teacher will demonstrate how to measure your heart rate. This is also known as your pulse.

2. You take your pulse by counting the beats for 15 seconds. You should take your pulse two times to make sure it is accurate.

3. Your teacher will have some students to come to the front of the classroom to demonstrate how to find his or her heart rate. This will enable them to help to make sure everyone is doing it correctly. You may wish to place a small pen marking on your wrist so you can easily find the area again.

4. Think: "Do you think your pulse would be different if you were to exercise?"

5. Your teacher will go over the directions of data collection sheet with you. You will use the sheets when you work with your partner.

How Does Your Heart Rate?

Directions:

1. Put your name on your paper.
2. Predict your resting heart rate
   I predict my resting heart rate is: _____
3. Calculate your resting heart rate
   My resting heart rate is: _____
   My partner's resting heart rate is: _____

How Does Your Heart Rate?

Student Sheets

Name: _____

	Dribbling Basketball	**Running in place**
My predictions		
My partner's prediction		
My heart rate		
My partner's heart rate		

1. What happened to my body, as I became more active?

2. What did I observe?

3. Why did my heart rate increase with exercise?

How Does Your Heart Rate?

Teacher Sheets

Pre-Lesson Instructions

This lesson will be done in pairs. After each pair has collected their data, they will participate in class discussion using the teacher's tally sheet.

Make sure exercise materials and a large area are available for student use. If area to be used is the classroom, students should move desks to the sides of the room.

Make a transparency of tally sheet for group discussion during closure.

Background Information

The oxygen we breathe passes through the lung (via tiny air sacs) into capillaries. This oxygen-rich blood (red) then goes to the heart where it is redirected to the various parts of the body. T he vessels that transport this oxygen-rich blood are called arteries. These arteries branch out into progressively narrower vessels called capillaries. Digested food and oxygen pass through the capillaries into the cells. These same capillaries then take up carbon dioxide and other products from the cells. From here the (blue) blood travels through veins back to the heart where it is redirected back to the lungs to release the carbon dioxide and pick up more oxygen.

Please note that this activity is only set up to show the path of oxygen and carbon dioxide. It does NOT take into account all the other products carried by the blood. You could easily adapt this activity to account for those parts, however.

Guidelines

1. Read article “I Have The Heart Of A Rocket”.

Presentation: (~10 minutes)

1. Demonstration: "Look carefully as I show you how to measure your heart rate, also called your pulse, by using only my two fingers." Identify the pointer finger and middle fingers as those to be used to measure pulse. Explain that the thumb cannot be used. Show area on wrist to measure pulse.

2. Walk around room to be sure all students can see the area on the wrist where the pulse can be taken.

3. Pulse should be taken by counting the beats for 15 seconds. Tell the students they should take their pulse two times to make sure it is accurate.

Guided Practice: (~10 minutes)

1. Ask class what fingers we should use to find our pulse. [pointer and middle]

2. Ask a student to come to the front of the classroom to demonstrate how to find his or her heart rate. Allow a variety of students to demonstrate how to find their pulse. This will enable them to help others if they are having difficulty. Some students may wish to place a small pen marking on their wrist so they can easily find the area again.

3. After the last student has taken his/her pulse, ask the class, "Do you think your pulse would be different if you were to exercise?"

4. Go over directions of data collection sheet with students.

- Put your name on your paper
- Predict what you think your resting heart rate will be and write it down.
- Measure your resting pulse rate, then write down you actual pulse rate.
- Write down your partner's resting pulse rate.
- Predict what you think your pulse rate will be for each activity and write it down.
- Tell students that after measuring their pulse rate, they should write down some observations they made about their body when they were exercising. [heart beats faster, breathing harder/faster, sweat] They should also write down one reason why they think their heart rate increases during exercise.

Independent Practice: (~ 15 minutes)

1. Distribute data collection sheet to each student.

2. Have students predict then measure their resting pulse rate. You may wish to do this twice to get an accurate reading.

3. Have students fill in their predicted pulse rates for each activity.

4. Explain to students that each partner will do an activity until the bell has rung, measure their pulse rate then write down their findings. The partners will then switch activities. {*Note to teacher: time students to do the activity for one minute. After the one-minute bell, tell students to get ready to take their pulse. Time them for a 15-second interval. Allow the students at least one minute before beginning the next activity to ensure an accurate reading}

5. During the one minute wait time between activities, the student should be recording observations they have made on the effects the activity has had on the body.

6. Circulate among the room, assessing students and providing help as needed.

Discussion/Wrap Up:

1. At the prearranged signal, students are to prepare to share their findings in a class discussion. Discuss the students' predictions and observations.

2. Using the tally sheet overhead, record some of the students' predictions and actual measurements. To do this, use the same ten students and record their predictions for each activity and their actual pulse rate.

3. Once all data is recorded, ask students if they felt their predictions were accurate. Ask them why they were correct/incorrect.

4. Ask the students which activity had the highest and lowest heart rates and why they think that is. *Highest - running/ lowest - dribbling basketball*

5. Ask students, "Why do you think our heart rate increased with the amount of activity?" *To bring more oxygen to the body*

6. "How does this relate to what we have learned about the circulatory system and the heart?" *Our heart has to work harder and faster so that it may bring oxygen and nutrients to working parts of our body. It is also removing waste such as carbon dioxide.*

*Note to teacher: You may ask students about their breathing while exercising. This can lead into a tie-in for a lesson on the respiratory system.

How Does Your Heart Rate?
Data Tally Sheet

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Prediction for Dribbling ball										
Actual Heart Rate										
Predictions for Running in place										
Actual Heart Rate										

For which activity did our heart rates increase the most?