Healthy Heart

Introduction: Walking is an excellent way to keep a heart healthy. The heart is a muscle and just like the other muscles, the more it is used (exercise), the healthier it will be. This muscle is special because it keeps the blood pumping throughout the whole body. The more we use our other muscles, the more oxygen they need. The heart pumps faster to bring more oxygen to the parts of the body that need it. This lesson will introduce students to how the blood travels through the different parts of the heart.

Grade Level and Subject: Grade 7 Science

TEKS: 1a, 2a, 2b, 2c, 2d, 4a, 4b, 6c, 9a, 9b

Materials:
- “The Beat Goes On” worksheet (found at the end of this lesson)
- Seconds timer (stopwatch)
- Beef hearts washed, cut into two lengthwise pieces to expose as many chambers as possible
- Diagram of the heart from science textbook
- Dish pan for each heart
- Sharp knife to cut hearts in two

Resources: Science textbook, local butcher or science supply catalog

Activity:

1. Introduce the lesson with the hand activity and focusing questions described below.
   Instruct students to lay their hand (palm side up) on their desk, and have students count how many times they can open and close their hand for one minute. Their hands should start getting tired after about 45 seconds. The students might start to wonder what they are doing. Be sure they record how many times they opened and closed their hand. Don’t stop! Let’s see if we can keep going a little longer. Ask students what their hand is doing (opening and closing). What part of the body might your hand represent? Which system of the body might use the heart?

2. Find the resting and active pulse rate.
   Place your index and middle fingers on your wrist or neck. Do not use your thumb. Hold your fingers in place until you feel the steady beating of your pulse. When the teacher says “go,” have students count the beats for six seconds. Multiply this count by 10 to find the number of beats per minute. First, the students should take their resting pulse rate. Then have them jog in place for one minute and take another pulse rate to compare the resting pulse rate and the active pulse rate.

3. Divide the class into cooperative groups of four by numbering off 1–4. Now, assign all roles shown below to a number:
   1 – Starters will point to the part of the heart the teacher identifies.
   2 – Getters will go to the supply table and get a heart for their group and return it.
   3 – Readers point to the part on the diagram.
   4 – Recorders record the observations of the group.
4. Go over the safety rules.

   **Teacher:**
   1. No sharp items left out during exploration.
   2. Make sure all students wash their hands immediately after exploration.
   3. Check with students about their feelings toward handling the heart. If someone does not want to touch it, they can just observe.
   4. Wash hearts prior to handling.
   5. If an accident occurs, one student will be directed to go for the nurse, if needed.

   **Students:**
   1. Listen to all instructions.
   2. Walk to and from the supply table.
   3. The heart stays on the table at all times.
   4. Wash hands immediately after the experiment, and use soap and water.

5. The teacher writes observation questions on the blackboard:
   - What did you see inside the heart? (Different chambers and muscles)
   - How did the heart feel when you touched it? (Smooth and rubbery)
   - How do the different regions of the heart compare? (More muscle around the lower chambers)

6. Getters will come to the supply table and get one heart for their group. The Starters will point to the part of the heart the teacher is identifying, and make sure that everyone sees it. The Readers will point out on the diagram which part the teacher is identifying. Students will be able to observe the heart chambers, the difference between the upper and lower chambers, the openings through which blood flowed, the muscular composition of the heart, and blood vessels on the exterior of the heart. Using the diagram, students will identify the chambers and the functions of each chamber. The Recorder will record the observations made by the group.

7. The students will compare their heart rates and use the beef heart to show the route the blood flows through the heart. They will average the heart rates among their group.

8. Discussion:
   - What did you find out?
   - How many hearts do we have?
   - Do you think the heart plays an important role in the circulatory system? Why? Does everyone agree?
   - What are some things we can do to make sure we keep our hearts healthy? (Exercise and diet)
   - Graph the average heart rates of each group on the blackboard.
   - Calculate the average for the class. Let students determine where they fall in comparison to the average.
   - List similarities of the beef heart to the human heart.

**Evaluation:** The students worked cooperatively in their groups and were actively involved. The students participated in discussion. The group observation report and worksheet were turned in.

*Courtesy The Franklin Institute Online, [http://www.fi.edu](http://www.fi.edu), from “The Heart: An Online Exploration” Enrichment Activities.*
The Beat Goes On

My Resting Heart Rate (when I’m calm and relaxed)

________ beats in 6 seconds x 10 = ______ beats per minute

My Active Heart Rate (after I’ve jogged in place for 1 minute)

______ beats in 6 seconds x 10 = ______ beats per minute

Group Average

Add group members’ heart rates and divide by the number of members.

Resting___________  Active_______________

Class Average

Add all groups’ rates and divide by the number of groups.

Resting___________  Active_______________