Sounds of the Heart

Key Questions
- What is a stethoscope used for?
- What sounds does the human heart make?
- How does exercise change the sounds of the heart?

Materials
For each student
- one 20-ounce plastic bottle (pop bottle)
- 60 cm length of vinyl tubing

For every two students
- stethoscope
- plastic cup with small amount of rubbing alcohol
- cotton balls

Objective
Students will investigate the sounds of the heart, construct a stethoscope, and investigate the workings of valves.
For the class

- masking tape
- paper
- scissors
- craft knife (for teacher’s use only)

Advance Preparation

Collect one 20-ounce plastic bottle for each student. Using the craft knife, make a small starter slit in the bottle about one-fourth of the way up from the bottom and parallel to the top.

Procedure

Part One: Make a simple stethoscope

1. Roll up a piece of 8 1/2" x 11" paper into a 1" tube. Place one end to your ear and place the other end on a classmate’s chest. Can you hear the heart?

2. Make a more modern version of a stethoscope. Carefully cut off the top portion of a plastic bottle beginning at the pre-cut slit to make a funnel shape. Place a piece of vinyl tubing into the mouth of the "funnel" and secure it with masking tape. Have students write their name on a piece of tape and attach it to the funnel.
3. Carefully hold the vinyl tubing to your ear and hold the "stethoscope" against various objects in the classroom (aquarium, clock, wall). Listen to the sounds. Does the stethoscope help you hear sounds better?

4. Listen to your own heartbeat. Move the stethoscope around and find the place where it is the loudest. To hear your heart easier, get rid of any background noise, run in place, or do some jumping jacks. Take your stethoscope home and listen to the heart beat of your family members and pets.

The stethoscope's diaphragm is a thin, plastic disc. When the students listen to the tapping or their heart with the stethoscope, the diaphragm vibrates. The vibrating diaphragm causes the air molecules in the stethoscope tubes to vibrate, and the tubes carry the sound vibrations to the listener's ear.