

# HAVE A HEART

Your heart is a muscular organ that pumps blood around your body more than 1000 times a day; each trip takes less than one minute. Explore your pulse points.

**MATERIALS:** Paper; watch which indicates seconds; thumbtack or small ball of Plasticine; match or toothpick.

## DOING IT:

1. The first stethoscope, a hollow tube, was invented by a doctor in 1819. Roll a sheet of paper into a tube and listen to someone's heart, or use the old ear-on-chest method. There are two sounds during every heartbeat. The pattern is something like: lub-DUB . . . lub-DUB . . . lub-DUB . . .

The heart starts beating six months before you're born. During an average lifetime, it will beat almost 3 billion times. Your heart is about the same size as your fist. The right side of the heart takes blood from the veins and pumps it into the lungs; the left side takes blood from the lungs and pumps it around the body.

The rhythmic contraction of the heart is the "heartbeat". You can't hear a heartbeat, but you can hear the heart valves opening and slapping shut. The heart is in the middle of your chest. The bottom tip actually touches your chest wall; where it touches -- to the left of centre -- is where you can hear or feel the heart best. When the heart contracts (pumps), it forces blood out into the "arteries" (tubes that carry blood from your heart to all parts of your body). The walls of the arteries stretch. As the heart relaxes, the artery walls contract elastically to push the blood along. Each time the heart beats, the artery walls expand and contract once to produce one "pulse beat".

You can tell how fast your heart pumps by counting your pulse beats. A healthy, fit heart can do the same amount of pumping work with fewer beats than a weak heart. A person's resting pulse rate decreases with age (e.g. newborn baby, 130-150 beats/minute; 11 year old, 70-100 beats/minute; adult, 60-80 beats/minute).

**Topics:** Human Body; Sound.

2. Some arteries are too deep in the body to feel. Others are nearer the surface and can be felt by gently pushing on the skin above them. Try it! The inside of your left wrist, between the bone and tendon on the thumb side, is a good pulse point. Also try on each side of your throat, just under your chin. The correct way to take a pulse is to place three fingers on the spot. Never use your thumb because there's a large artery in the thumb; if you're trying to feel someone else's pulse, you might only feel your own.

3. Find at least one pulse point at each of these places: face, armpit, elbow, abdomen, hip joint, knee, ankle.

4. While you're sitting still, count the number of pulse beats in 15 seconds. Multiply this number by four to get resting pulse/minute. Try it twice. Do you get the same results each time? Do different people have different pulse rates?

5. How do different activities affect your pulse rate (make sure you rest after each activity so your rate returns to normal)? Take your pulse while sitting, standing, and lying down. Hop 25 times and take your pulse. Hop 100 times and take your pulse. Run on the spot or skip for two minutes and take your pulse. Can you change your pulse rate by imagining a time when you felt a strong emotion (e.g. excitement, fear)?

6. Make a pulse meter. Stick a match or toothpick into a thumbtack or ball of Plasticine. Place the device on your wrist. Move it around until you locate the spot with the strongest beat. The head of the match or toothpick will vibrate back and forth slightly with each pulse beat.

