



High Touch High Tech®

Science Experiences That Come To You

Power of the Pulse

Supplies

- flexible straw
- clear tape (Scotch)

Instructions

To begin this experiment, all you need to do is stand up and run in place. What do you feel? The faster you run in place, the faster your heart rate. The beat of your heart is called a *pulse*. Your heart is the center of the *cardiovascular system*. This system pumps blood throughout your body. Your pulse is the rhythmic throbbing of your heart as it propels blood through *arteries*. We also call the pulse our heartbeat.

After running in place, place your hand against your neck. Can you feel your pulse? Now place your hand on your wrist. Can you feel your heartbeat? The wrist and neck are the two places that you can best feel your pulse.

So, let's do an experiment so that you can SEE your pulse. You will need 1 flexible straw and clear tape.

Turn your hand so your palm is facing up. Place the back of your hand onto the table. Using your fingers, locate your pulse in your wrist. Do you feel your pulse? Place the side of the flexible straw across your wrist. Now use a piece of clear tape to secure the straw to your wrist.

What do you observe? The straw should move up and down with your pulse. Is it moving? If you can't see it, that means your pulse has slowed down, and you need to bring up your heart rate!

Try jogging in place again to increase your heart rate. Try again. Can you see your pulse? Great job!

The Science Behind It

Blood pumps throughout our bodies due to the *cardiovascular system*. Our heart is the key organ and center of the cardiovascular system. Veins and arteries are connected to the heart and help blood flow to every part of our body. Blood circulates oxygen, helps remove unwanted waste, controls body temperature, and helps fight infections. Without blood, humans could not survive. In fact, the majority of all animals have some form of a cardiovascular system. All vertebrates, which include mammals, birds, and amphibians, have blood in their bodies. Blood is vital to these animals.



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The heart controls the cardiovascular system. This hollow organ is a muscle that continuously pumps bloods. This is your heartbeat also called a pulse. The heart beats between 60-100 times per minute. If you move quickly, it beats faster. During sleep, the heartbeat slows down. In fact, the heart beats about 100,000 times every day! The heart has 4 different chambers, or sections. Two chambers receive blood from the body. The other two chambers release blood back into the body. Blood vessels, called arteries and veins, help with this exchange. *Arteries* carry blood away from the heart and into the body. *Veins* bring blood back into the heart. Arteries are much larger than veins because they are composed of more muscle. These blood vessels contain *valves* that prevent blood from moving in the wrong direction. The continuous movement of blood through the arteries, to the heart, and back out in the veins is a very necessary system to our lives.