Kinetic City Science Gym

The Pulse IS RIGHT

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Your Pulse

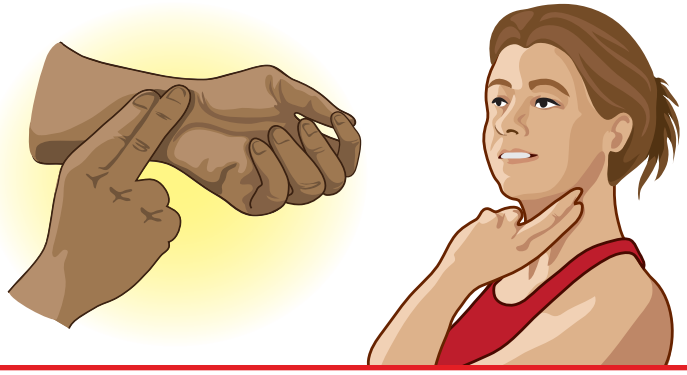
The pulse is the throbbing of blood vessels called arteries every time your heart beats. You feel a pulse by lightly pressing an artery against a nearby bone. There's one in your wrist, and another one in your neck (see pictures). If you press your index and middle fingers against that artery, you should feel a rhythmic throbbing. The throbbing comes from a pulse of pressure created each time your heart pumps blood.

If you count the number of throbs you feel in six seconds and add a zero to the end, you'll have the number of beats per minute. So if you count seven pulse beats in 6 seconds, your pulse is 70 beats per minute.

The harder your cells work, the more oxygen they need. What does that mean for your heart?

Range of Normal Pulse Rates

Your resting pulse rate is how many times your heart beats in a minute when you're relaxed and not moving around. A healthy resting pulse rate is between 60 and 100 beats per minute. Highly trained athletes may have slower rates. That's because their hearts have become so strong that they can pump a lot of blood per beat. So they don't have to beat as often. Also, if they do a lot of endurance exercises, they may have a higher density of red blood cells in their blood. So each drop of blood can carry more oxygen, and they don't need to send as much blood around to give their cells the oxygen they need. Miguel Indurain, a famous cyclist, has the lowest resting pulse rate ever measured in a healthy person: just 28 beats per minute!



Body size

Smaller animals usually have faster pulse rates. That's because it takes more force to push a given amount of blood through tiny blood vessels than through big ones, so the heart has to pump more to push it through. And also because smaller animals have to burn more energy per gram of body mass to survive, so they have to eat more, breathe faster and pump blood faster. This is why babies have higher heart rates than adults.

The pulse rate of a mouse is about 600—that's almost ten times faster than a person's! An elephant's pulse rate is less than 30, which is about half the rate of a typical person's.

Activity Instructions

Before You Start

How many times does your heart beat in a minute? How much do you think that can change?

What You Need

- A stopwatch or a regular clock or watch with a second hand.
- A pen to record your pulse rate.

Getting Ready

Warm up and stretch your muscles with your teacher or other adult group leader

How To Play

1. Find Your Resting Pulse Rate

Start out by taking your pulse rate while you are relaxed. It's easiest if you have a friend or your teacher hold the stopwatch while you measure your pulse.

Once you find your pulse, your friend or teacher will trigger the stopwatch and yell "GO!" After six seconds they should yell "STOP!"

Your job is to count your pulse beats between GO and STOP. The number should be between four and twelve. Once you've got it, add a zero to it (so you have your beats per minute) and write it in the first box of your Pulse Is Right data sheet.

2. Find Your Light Exercise Pulse Rate

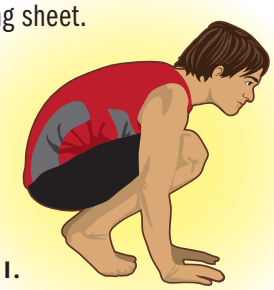
Stand up and get ready to run lightly in place. Have your friend or teacher time you for one minute. Then, immediately find your pulse and, with your friend's help, count the beats in six seconds, add a zero, and write it on your tracking sheet.

3. Relax!

Rest for two minutes and measure your pulse again. Write it on your tracking sheet.

4. Find Your Strenuous Exercise Pulse Rate

Now you are going to do an exercise called the Super Hero. The idea is to act just like Superman leaping up into the air. You crouch down low and jump has high as you can with your arms straight out over your head. When you hit the ground, go right into a crouch and jump up again. Do as many of these as you can, and then immediately measure your pulse again and add it to your tracking sheet.



1.

2.

What did you learn?

What happens to your pulse rate when you exercise lightly?

What happens to your pulse rate when you rest?

What happens to your pulse rate when you exercise strenuously?

Why do you think your pulse changes?

Save your data and try doing this activity in a few weeks, after you finish Science Gym.
Do you think participating in Science Gym could change your pulse?

Resting Pulse Rate:

_____

Moderate Exercise Pulse Rate:

_____

Resting Pulse Rate:

_____

Vigorous Exercise Pulse Rate:

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