**Circulatory System Information**

Did you give your friends valentines and little heart-shaped candies on Valentine's Day? Do you ever cross your heart when making a promise that you really, really mean? Or turn on the radio to hear a guy singing about his broken heart?

We see and hear about hearts everywhere. A long time ago, people even thought that their emotions came from their hearts, maybe because the heart beats faster when a person is scared or excited. Now we know that emotions come from the brain, and in this case, the brain tells the heart to speed up. So what's the heart up to, then? How does it keep busy? What does it look like? Let's find out.

**Working That Muscle**

Your heart is really a muscle. It's located a little to the left of the middle of your chest, and it's about the size of your fist. There are lots of muscles all over your body — in your arms, in your legs, in your back, even in your behind.

But the heart muscle is special because of what it does. The heart sends blood around your body. The [**blood**](http://kidshealth.org/kid/talk/qa/blood.html) provides your body with the oxygen and nutrients it needs. It also carries away waste. (Remember cellular respiration?)

Your heart is sort of like a pump, or two pumps in one. The right side of your heart receives blood from the body and pumps it to the lungs. The left side of the heart does the exact opposite: It receives blood from the lungs and pumps it out to the body.

**We Got the Beat**

How does the heart beat? Before each beat, your heart fills with blood. Then its muscle contracts to squirt the blood along. When the heart contracts, it squeezes — just like you may squeeze water in your hands when you are in a pool in order to squirt a friend in the face. That's sort of like what your heart does so it can squirt out the blood. Your heart does this all day and all night, all the time.

**Heart Parts**

The heart is made up of four different blood-filled areas, and each of these areas is called a chamber. There are two chambers on each side of the heart. One chamber is on the top and one chamber is on the bottom. The two chambers on top are called the **atria**. If you're talking only about one, call it an **atrium**. The atria are the chambers that fill with the blood returning to the heart from the body and lungs. The heart has a left atrium and a right atrium.

The two chambers on the bottom are called the **ventricles**. The heart has a left ventricle and a right ventricle. Their job is to squirt out the blood to the body and lungs. Running down the middle of the heart is a thick wall of muscle called the **septum**. The septum's job is to separate the left side and the right side of the heart.

The atria and ventricles work as a team — the atria fill with blood, then dump it into the ventricles. The ventricles then squeeze, pumping blood out of the heart. While the ventricles are squeezing, the atria refill and get ready for the next contraction. So when the blood gets pumped, how does it know which way to go?

Well, your blood relies on four special valves inside the heart. A valve lets something in and keeps it there by closing — think of walking through a door. The door shuts behind you and keeps you from going backward. These valves all work to keep the blood flowing forward. They open up to let the blood move ahead, then they close quickly to keep the blood from flowing backward.

When you go for a checkup, your doctor uses a stethoscope to listen carefully to your heart. A healthy heart makes a lub-dub sound with each beat. This sound comes from the valves shutting on the blood inside the heart.

**It's Great to Circulate**

You probably guessed that the blood just doesn't slosh around your body once it leaves the heart. It moves through many tubes called [arteries, veins](http://kidshealth.org/kid/word/a/word_arteries.html), and capillaries which together are called **blood vessels**. These blood vessels are attached to the heart. The blood vessels that carry blood away from the heart are called **arteries**. The ones that carry blood back to the heart are called **veins**. A **pulse** is the swelling of an artery each time the heart pumps more blood into it.

**Capillaries** are the smallest blood vessels. Some of them are about the diameter of a hair. The exchange between the blood and the cells takes place while the blood is in the capillaries. Oxygen and nutrients diffuse from the blood into the cells for cellular respiration. Carbon dioxide and other wastes diffuse from the cells into the blood.

The movement of the blood through the heart and around the body is called **circulation**, and your heart is really good at it — it takes less than 60 seconds to pump blood to every cell in your body.

Your body needs this steady supply of blood to keep it working right. Blood delivers oxygen to all the body's cells. To stay alive, a person needs healthy, living cells. Without oxygen, these cells would die because cellular respiration can not occur. And if that happens, a person could die.

The left side of your heart sends that oxygen-rich blood out to the body. The body takes the oxygen out of the blood and uses it in your body's cells. When the cells use the oxygen, they make carbon dioxide and other stuff that gets carried away by the blood. It's like the blood delivers lunch to the cells and then has to pick up the trash!

The returning blood enters the right side of the heart. The right ventricle pumps the blood to the lungs. In the lungs, carbon dioxide moves from the blood to the inside of the alveoli and then is sent out of the body when we exhale. What's next? An inhale, of course, and a fresh breath of oxygen that can enter the alveoli and then enter the blood to start the process again. And remember, it all happens in about a minute!

**Diseases and Disorders**

* A **heart attack** occurs when blood flow to a part of your heart is blocked for a long enough time that part of the heart muscle is damaged or dies. Your doctor calls this a myocardial infarction.

Most heart attacks are caused by a blood clot that blocks one of the coronary arteries. The coronary arteries bring blood and oxygen to the heart. If the blood flow is blocked, the heart is starved of oxygen and heart cells die.

A hard substance called plaque can build up in the walls of your coronary arteries. This plaque is made up of cholesterol and other cells. A heart attack can occur as a result of plaque buildup.

* A **heart murmur** is an extra or unusual sound heard during a heartbeat cause by the heart valves not closing properly. Murmurs range from very faint to very loud. Sometimes they sound like a whooshing or swishing noise.

They are very common in many children and may not lead to any serious problems. More severe heart murmurs may require surgery.

* **Hypertension** is the term used to describe high blood pressure. Blood pressure is a measurement of the force against the walls of your arteries as your heart pumps blood through your body.

[High blood pressure](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001502/) increases your chance of having a stroke, heart attack, heart failure, kidney disease, and early death