

Getting to Know: Circulatory

Have you ever watched a marathon? Runners in these races run for over 26 miles without stopping. Anyone who has ever run in a marathon knows that long-distance races like these require a great deal of training beforehand.

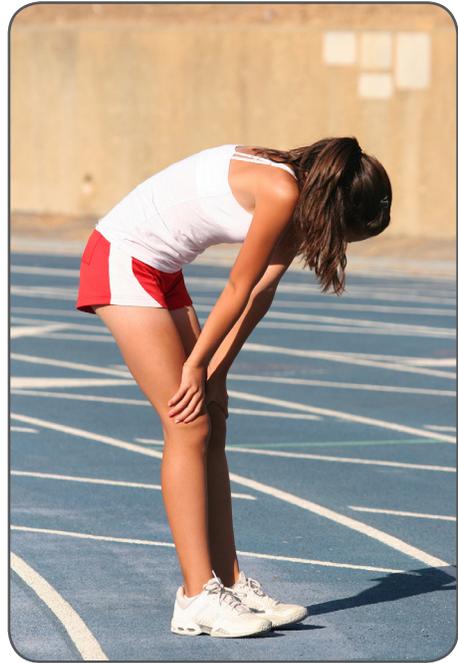
To provide the energy that a body needs to run, your cells need oxygen. That oxygen is pumped by your heart to the cells through the circulatory system. A person who is new to running may find that their heart starts to beat very quickly and they are breathing hard soon after they start to run. However, experienced runners can go for miles with a steady heartbeat and controlled breathing. Their hearts have become strong enough to provide the oxygen they need without overdoing it.

What is the purpose of the circulatory system?

The main purpose of the *circulatory system* is to carry food and oxygen to the body's cells and to carry carbon dioxide and wastes away from the cells. The path of the circulatory system through the body requires two loops. One runs between the heart and the lungs, providing oxygenated blood that can be used by the rest of the body. The second loop sends the oxygenated blood to the upper and lower portions of the body.

What are the components of the circulatory system?

The circulatory system includes the heart and all of the arteries, veins, and capillaries that carry blood through the body. The job of the *arteries* is to carry oxygenated blood away from the heart, whereas the job of the *veins* is to return blood to the heart once the oxygen has been used up. *Capillaries* are smaller vessels that branch away from arteries to reach every cell in the body. Oxygenated blood flows from the arteries to the capillaries to the cells, which are constantly receiving oxygen and nutrients and exchanging them for carbon dioxide and other wastes. The deoxygenated blood then flows through the capillaries to the veins and returns to the heart.



When you first start exercising, your heart has to work hard to pump the oxygen your body needs for energy.



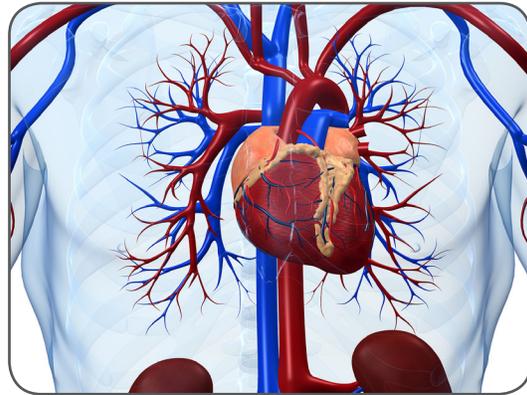
Misconception 1: Can blood actually be blue?

Blood is always red. Traditionally, veins are sometimes shown in blue to distinguish them from arteries, but they don't look that way in reality. The oxygen-poor blood that is in our veins looks blue when we see it through our skin, but it is actually a dark red color.

How does the heart work?

The *heart* is at the center of the circulatory system. It is the muscular pump that moves blood through the rest of the body. The heart beats many times per minute, each beat pushing blood through the body. The heart never stops beating for more than a fraction of a second, and it will continue to beat throughout a person's lifetime.

The heart is made up of four separate chambers. *Cardiac muscles* pump the blood through these chambers. The two chambers on the right side of the heart are the right atrium and the right ventricle. Blood that has returned from the body through the veins enters the heart here. The heart then pushes it through the pulmonary artery to the lungs, where oxygen is added to the blood.



The heart is at the center of the circulatory system.

The oxygenated blood then returns from the lungs to the heart through the pulmonary artery and enters the left atrium and ventricle. The blood flows through these two chambers and is then pumped to the rest of the body through the arteries.



Misconception 2: *The cells in the heart need oxygen, too. Do they get it from the blood being pumped through the heart?*

The heart gets the oxygen that it needs to function from coronary arteries that are located on the outside of the heart. The blood flowing through the inside of the heart does not provide it with oxygen.

What do I need to do to keep my heart healthy?

A healthy heart requires regular exercise and a proper diet. Some forms of heart disease are inherited, but you can take steps to reduce your risk. Exercising regularly will help to strengthen your heart. A good diet will ensure that your cells get the nutrients they need and will also keep your arteries free of substances like plaque, which can block blood flow and force the heart to work harder to supply the body with oxygen.



Misconception 3: *I know that when I exercise regularly, my muscles grow stronger. Can the heart also grow stronger?*

Your heart is like your other muscles: it can grow stronger through regular exercise, making it more efficient at pumping blood through your body.