Your Heart and How It Works

Your heart is a muscle. It is slightly larger than your fist and weighs less than a pound. Your heart pumps blood to the lungs and to all parts of your body.

Structure of the heart

Your heart muscle has three layers. The thickest layer is called the myocardium. It is surrounded by a fiber-like bag called the pericardium. The inside of the myocardium is lined by a thin layer called the endocardium.

Heart chambers

The normal heart has four chambers. A wall divides the heart into a right side and a left side. Each side of the heart is divided into two chambers. The upper chamber is called the atrium and the lower chamber is called the ventricle. These chambers are separated by valves.

Valves

The valves allow blood to flow only in one direction. Valves control the flow of blood through the heart, to the lungs and to the rest of the body. Types of valves:

- **Tricuspid valve** separates your right atrium from your right ventricle.
- **Pulmonic valve** separates your right ventricle from your lungs.
- **Mitral valve** sits between your left atrium your left ventricle.
- **Aortic valve** controls blood flow from your left ventricle to the rest of your body.

Blood vessels

Blood vessels carry blood to and away from the heart. Vessels that carry blood from the heart to the body are called arteries. Vessels that carry blood from the body back to the heart are called veins.
**Function of the heart**

Your heart acts as a double pump. Blood enters the right atrium and flows into the right ventricle. The tricuspid valve prevents the blood from flowing back into the atrium. The blood then flows out of the right side of the heart to the lungs through the pulmonic valve, to pick up oxygen. The oxygen rich blood from the lungs goes into the left atrium of the heart. Blood flows from the left atrium into the left ventricle through the mitral valve. The mitral valve prevents blood flowing back into the atrium. Then the blood flows out of the left ventricle to the rest of the body through a large artery, called the aorta. The aortic valve prevents blood from flowing back into the ventricle.

As blood moves through the body, oxygen is used. Blood then returns to the right side of the heart through your veins. This process occurs with each heartbeat.

**Blood supply in the heart**

Your heart muscle needs a constant supply of oxygen. Oxygen is carried to your heart through the **coronary arteries**. Two main coronary arteries, a right and a left, supply the heart muscle with blood. These arteries are located on the surface of the heart. They divide into many smaller branches that go into the heart muscle. Your heart muscle is supplied with oxygen-rich blood through these small arteries.
Your heartbeat

Each heartbeat has two phases. The resting phase is called **diastole**. The pumping phase is called **systole**. During diastole, blood from the atria fills the ventricles. During systole, the ventricles pump blood to your body or lungs.

The work of the heart changes with your body’s needs. For example, when you exercise, your body needs more blood and oxygen. Your heart pumps harder and faster to deliver more blood to the body. When you sleep, less blood and oxygen is needed and your heart slows down.

Normal conduction

There are specialized cardiac cells that create an electric stimulus or impulse, which causes the heart muscle to beat. These electrical impulses travel from the upper chambers to the lower chambers over this conduction system. The diagram shows how the impulse travels over the conduction system.

- Normal heartbeats begin at the **SA node**, which acts as the heart’s “pacemaker.”
- The electrical impulse spreads across the **right atrium** and the **left atrium**.
- The impulse travels through the **AV node** to the Bundle of HIS.
- The **Bundle of HIS** divides into a left and a right bundle branch. The impulse spreads through these bundle branches into the **purkinje (purr-kin-gee) fibers** in the ventricles.

You may hear these words to explain your heartbeat:

- A heartbeat that beats too fast is called **tachycardia** (tak-i-card-ee-a)
- A heartbeat that beats too slow is called **bradycardia** (braid-i-card-ee-a)
- Heartbeat may be irregular, and not have a constant rhythm

Summary

Your heart’s main functions are to receive oxygen-poor blood from your body and to pump oxygen-rich blood to nourish the body. To do this well, your heart need to be strong with a regular heartbeat. Your heart needs working valves to control blood flow and blood vessels to transport blood to all parts of the body. Take good care of your heart so that it can take care of you. Talk with your doctor to learn more about taking care of your heart.

Talk to your doctor or health care team if you have any questions about your care.

For more health information, contact the Library for Health Information at 614-293-3707 or e-mail health-info@osu.edu.

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