



Make a Heart Valve

How does your heart move blood in one direction?

Description

Your heart pumps blood throughout your body in one direction. How does your heart control the direction blood flows? In the first part of this two-part activity, make a model of a heart valve that keeps blood flowing in one direction.

Age Level: 10 and up



How does your heart move blood in one direction?

Materials

- drinking straw
- disposable gloves
- various balloons
- tape
- scissors
- drinking cup of water



Time

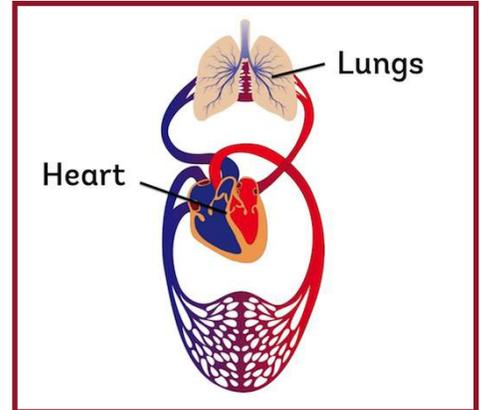
Preparation: 5 min
Activity: 20 min
Cleanup: 5 min

Safety

If you have a latex allergy, use a vinyl or nitrile glove and balloon instead of ones made of latex.

Step 1

Your heart moves blood through your body from your heart to your lungs to get oxygen and release carbon dioxide, then from your lungs to your heart, next to your organs that need oxygen, then from your organs to your heart again, next from your heart to your lungs again. As your blood travels to so many parts of your body, how does your heart make sure the blood flows just one direction?



Step 2

Your heart contains a series of “one-way” valves that control the direction your blood moves. Using a straw, balloons or disposable glove, scissors, and tape, make a one-way valve that lets you blow air through the straw to make bubbles in water, but doesn’t let you suck water up through the straw to drink. Try to meet this challenge before continuing on to the next slide.



Step 3

There are a few ways to meet this challenge. One way is to cut a very small hole in the top of a balloon. Then, insert one end of the straw through the the hole you just cut in the balloon. Slide the balloon over the straw so that the larger part of the balloon covers the end of the straw.



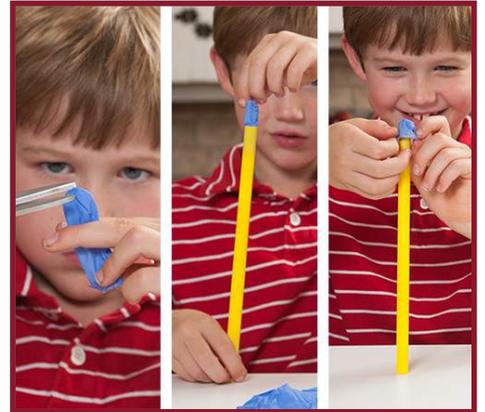
Step 4

Insert the balloon into the water. Try to blow bubbles in the water and drink from the straw. Is it just as easy to blow bubbles as it is to drink from the straw?



Step 5

Another way is to make a small cut in the fingertip of a disposable glove, then insert that tip of the glove into the straw. Fold the other end of the glove over and tape it to the straw.



Step 6

Put your lips over the glove, and try to blow bubbles in the water and drink from the straw. Is it just as easy to blow bubbles as it is to drink from the straw?



What's Going on?

"Blood absorbs oxygen from your lungs and carries the oxygen to every cell in your body. Blood also picks up carbon dioxide from cells and returns it to your lungs to be exhaled. Your blood absorbs oxygen again from your lungs, and the process repeats.

Many one-way valves in your heart and veins—similar to what you made—make sure blood travels in only one direction through your body. When blood is forced in one direction, it opens a valve to let blood flow through. When blood is pushed in the opposite direction, it closes a valve so blood cannot flow through the wrong way."

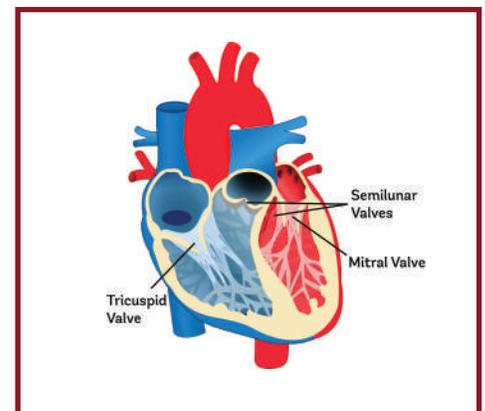


Heart murmurs

"The doctor can listen to your heart with a stethoscope. A healthy heartbeat makes a "lub-dub" sound. This is the sound of the valves in your heart opening and closing.

In some people, the doctor hears a different sound called a "heart murmur." A heart murmur can be caused by heart valves that aren't working properly. Some heart valves may not close all the way, which lets blood flow both backward and forward, instead of just forward.

Some heart murmurs don't cause serious problems, while others need more medical care. Engineers are developing artificial heart valves for people with serious valve problems."



Learn More



For more info and other activities, visit:

LawrenceHalofScience.org/do_science_now/diy_human_body

Credits



This project was supported by the National Institutes of Health (NIH) Science Education Partnership Award program under award number 5R25OD010543-02. Any opinions, findings, conclusions, or recommendations expressed in this program are those of the author and do not reflect the views of NIH.



THE LAWRENCE
HALL OF SCIENCE

This activity from the DIY Human Body app allows families to investigate and learn about the human body at home or on the go! The app features thirteen hands-on investigations, as well as images & videos.

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