



Human Heart Model

OVERVIEW

In this activity, campers will learn about the human heart and explore how it functions as a pump for our blood.

TOPIC AREA(S)

Biology
Human Life Systems

GRADE LEVEL

Grade 5

QUESTIONS PRIOR TO THE LESSON/GETTING EXCITED

- The water in a public pool, how does it compare to that of standing water in a lake or pond? There is a pump to have water continuously circulating.
- What is one thing in our bodies that also needs to be constantly circulating?
- Why is it important to have blood circulating throughout our bodies?
- How does our body circulate blood throughout our body?

BACKGROUND INFORMATION FOR INSTRUCTORS (INCLUDE QUESTIONS W/ ANSWERS)

The human heart is a muscular organ, a part of the circulatory system that carries the necessary nutrient-rich and oxygenated blood throughout our body.

What is happening when our heart is beating? Before each beat, our heart fills with blood and then it contracts, similar to us squeezing our hand into a fist. In doing so, it drives the blood throughout our bodies. The human heart has pieces of tissue attached called heart valves which constantly open and close to regulate blood flow. When we hear our heart beating this is the sound of our tissue flexing in order to open and close these valves.

Our heart has two pumps, one on the right which receives blood from the body and pumps it to the lungs, and one on the left that does the opposite (receives blood from the lungs and pumps it to the body).

Blood is circulated throughout our bodies because we need oxygen delivered to our cells in order to live. Blood circulates our body through blood vessels which are also a part of the circulatory system and can be classified into either arteries or veins. Arteries deliver oxygen-rich blood from the heart to the rest of the body. Veins deliver deoxygenated blood from the body towards the heart.



The pumping that we will be doing on the balloon for our model heart mimics how the heart pumps in our bodies. The balloon on the straw works like the valves on our heart since it opens when we push down and closes as we release.

| RELEVANCE TO THE CURRICULUM | | | |
|--|--------------------------------|--|-----------------------------------|
| Grade 1 and 2 | Grade 3 and 4 | Grade 5 and 6 | Grade 7 and 8 |
| € Needs & Characteristics of Living Things | € Growth and Changes in Plants | € Human Organ Systems | € Interactions in the Environment |
| € Growth and Changes in Animals | € Habitats and Communities | € Biodiversity | € Cells |
| € Materials, Objects and Everyday Structures | € Strong and Stable Structures | € Forces Acting on Structures and Mechanisms | € Form and Function |
| € Movement | € Pulleys and Gears | € Flight | € Systems in Action |
| € Energy in Our Lives | € Forces Causing Movement | € Properties of and Changes in Matter | € Pure Substances and Mixtures |
| € Properties of Liquids and Solids | € Light and Sound | € Electricity and Electrical Devices | € Fluids |
| € Daily and Seasonal Changes | € Soils in the Environment | | € Heat in the Environment |
| | € Rocks and Minerals | | € Water Systems |



€ Air and Water in the Environment

€ Conservation of Energy and Resources
€ Space

MATERIALS (SPECIFY WHETHER PER CAMPER, GROUP OR CLASS)

1. Small Jar
2. 2 Bendy Straws
3. Balloon
4. Tape/Glue
5. Water
6. Red Food Coloring

SAFETY CONSIDERATIONS

Advise campers to not drink the fluid in the model. Paper towel should be kept nearby for any potential spillage.

PROCEDURE

1. A jar or glass is filled halfway with water combined with red food colouring.
2. The neck of the balloon is cut off and the top part of the balloon is stretched over the top of the jar so it is taught. (acting as a lid)
3. Using a sharp toothpick, poke 2 holes in the balloon on opposite poles of the lid (about an inch width apart from each other)



4. Push the straws through each hole
5. Use the neck of the balloon that was cut off earlier to cover one of the straws.
6. Place a cup under the open straw in order to catch any liquid.
7. Have campers push up and down on the balloon in the area between the two straws to mimic the contractions of the heart.

REFERENCES

<https://team-cartwright.com/heart-pump-model/>