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| Topic | Health |
| Phenomenon | Circulation |
| Experiment | Pulse and breathing |
| Available material | 1 balloon 2 experiment containers illustration of heart and blood circulation illustration of the organs in the body 1 measuring cup 1 stethoscope |
| Additional material | 1 needle stopwatch or watch with a second hand water |
| Preparation for experiment | You will need a place where the children can run around or at least jump or run in place. Inflate the balloon once so that it is stretched, then fill the empty balloon with water and tie it off. The experiment is ideal for performing outdoors (water splashes!). Fill one of the experiment containers with water. |

Research question

What job does the heart do? How is blood transported through our body?

Description

Help the children to feel their own heartbeat and pulse and those of the others too (as long as they agree!), using their hand or the stethoscope. Explore together how physical effort affects the pulse, heartbeat, and breathing. To do this, count the pulse rate and breaths for half a minute, once when resting and then once after the children have exercised vigorously for a while (jumping, running). What has changed?

Suggest that a child tries to “pump” as fast as the heart by scooping 40 – 50 measuring cups of water from one experiment container to another in half a minute. Support the child by counting!

The prepared balloon is intended to represent the heart. Stick the needle somewhere into the balloon. Encourage the children to rhythmically press the balloon, “imitating the heartbeat”. What happens?

Explanation

Within our body, the heart is located in the left part of the chest, and primarily functions as a “blood pump”. The heart pumps the blood to the cells in the body and supplies all the tissues with nutrients and oxygen. In addition, it pumps blood through the lungs so that they can continue being “loaded up” with new oxygen. Every time the heart beats, a surge of blood is pumped at high pressure – like a little flood wave – through the arteries, which have elastic walls. The pressure wave (the pulse) can be felt at various parts of the body, for example, on the inside of the wrist near the thumb or in the neck under the lower jaw. The pulse rate is more or less the same as the heart rate. A child's heart beats faster than an adult's. The blood vessels are a circulatory system, with the blood passing through the heart several times a day. This means that the heart transports several thousand liters of blood a day through our body. The number of liters of blood in our own body can be estimated as follows: $(\text{body weight} \times 8)/100$. So a child who weighs 30 kilograms has roughly 2.4 liters of blood in its vascular system.

During exertion, the heart beats faster and breathing speeds up too.

Further ideas

Do you or the children know any expressions that relate to the heart? What are they actually trying to express?