

Respiration

Running Time: 26 Minutes

Nifty questions in this episode:

- How do our bodies get energy?
- How much surface area do your lungs have?
- Is your right lung bigger than your left lung?

Awesome answers:

- Our bodies get energy by combining oxygen with the food we eat.
- Our lungs have a surface area as big as a tennis court.
- Yes. The right lung is bigger so that the left lung can fit over the heart.

Experiments shown on the video:

BREATHE DEEP

Objective: To show how a human lung works.

- Cut 5 centimeters off the bottom of an empty 2-liter plastic bottle.
- Push a balloon into the top of the bottle and wrap the edge of the balloon over the spout of the bottle.
- Cut a section out of a large balloon to fit the bottom of the bottle and tape it to the bottle.
- Pull on the bottom balloon and watch the top balloon expand and contract like a lung.

More interesting stuff to do:

ALL AIR

Objective: To record the amount of water that is displaced by exhaling (the volume of air in the lungs).


- Fill a pan with water to a depth of 5 centimeters.
- Fill a 2-liter bottle to the top with water. Replace the cap.
- Place the bottle upside-down into the pan of water and support it with your hand.
- Remove the cap while the bottle is in the water.
- Place one end of a piece of rubber surgical tubing into the mouth of the bottle underwater.
- Exhale into other end of the tube.
- On the outside of the bottle, mark the new level of the water inside the bottle after each exhalation.
- Continue exhaling at different rates until the bottle is almost empty.
- Take the bottle out of the pan of water.
- Refill the bottle to each marked level and measure that amount of water into a graduated cylinder. Use this procedure to measure the amount of water displaced by exhaling, which is indicated by the markings on bottle.
- Each measurement equals the volume of air exhaled. (Note: 1,000 milliliters equals one quart)

TAKE A BREATHER

Objective: To recording your breathing rate after activities.

- Make a chart to record your findings — at rest, after exercising, etc.
- While resting, record the number of breaths you take in one minute.
- Repeat for two more trials. Average your results.
- Run in place for 30 seconds. Now count the number of breaths you take in one minute.
- Repeat for two more trials. Determine the average.
- The average breathing rate at rest is 16 breaths per minute (but this can vary).

Way Cool Scientist: Jane Robinson, Lung Scientist

 closed-captioned



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