

## **Topic: Human Biology**

### **What is Your Lung Volume?**

<http://www.sciencekids.co.nz/experiments/lungvolume.html>

Do you think you're fit and healthy? Let's test your lung volume to find out. Just how much air can your lungs hold? With the help of a few simple household objects, some scientific know how and a dash of curiosity you can make this experiment look easy.

#### **What you'll need:**

- Clean plastic tubing
- A large plastic bottle
- Water
- Kitchen sink or large water basin

#### **Instructions:**

1. Make sure the plastic tubing is clean
2. Put about 10cm of water into your kitchen sink.
3. Fill the plastic bottle right to the top with water.
4. Put your hand over the top of the bottle to stop water escaping when you turn it upside down.
5. Turn the bottle upside down. Place the top of the bottle under the water in the sink before removing your hand.
6. Push one end of the plastic tube into the bottle.
7. Take a big breath in.
8. Breathe out as much air as you can through the tube.
9. Measure the volume of air your lungs had in them.
10. Make sure you clean up the area to finish.

#### **What's happening?**

As you breathe out through the tube, the air from your lungs takes the place of the water in the bottle. If you made sure you took a big breath in and breathed out fully then the resulting volume of water you pushed out is equivalent to how much air your lungs can hold. Having a big air capacity in your lungs means you can distribute oxygen around your body at a faster rate. The air capacity of lungs (or VO<sub>2</sub> max) increases naturally as children grow up but can also be increased with regular exercise.

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### **Test Your Dominant Side**

<http://www.sciencekids.co.nz/experiments/dominantside.html>

Check out this cool experiment that will teach you more about how your body and brain work together. Test your dominant side by completing a series of challenges. Which hand do you write with? Which foot do you kick with? Do you have a dominant eye? Do you throw with one side of your body but kick with the other? Are you ambidextrous? Answer these questions and much more with this fun science experiment for kids.

#### **What you'll need:**

- A pen or pencil
- Paper or a notepad to write your findings on
- An empty tube (an old paper towel tube is good)
- A cup of water
- A small ball (or something soft you can throw)

#### **Instructions:**

1. Write 'left' or 'right' next to each task depending on what side you used/favored.
2. When you've finished all the challenges review your results and make your own conclusions about which is your dominant eye, hand and foot.

#### **Eye tests:**

1. Which eye do you use to wink?
2. Which eye do you use to look through the empty tube?
3. Extend your arms in front of your body. Make a triangle shape using your fore fingers and thumbs. Bring your hands together, making the triangle smaller (about the size of a coin is good). Find a small object in the room and focus on it through the hole in your hands (using both eyes). Try closing just your left eye and then just your right, if your view of the object changed when you closed your left eye mark down 'left', if it changed when you closed your right eye mark down 'right'.

#### **Hand/Arm tests:**

1. Which hand do you use to write?
2. Pick up the cup of water, which hand did you use?
3. Throw the ball, which arm did you use?

## Foot/Leg tests:

1. Run forward and jump off one leg, which did you jump off?
2. Drop the ball on the ground and kick it, which foot did you use?

## What's happening?

So what side do you favor? Are you left handed or right handed? Left footed or right footed? Is your right eye dominant or is it your left?

Around 90% of the world's population is right handed. Why most people favor the right side is not completely understood by scientists. Some think that the reason is related to which side of your brain you use for language. The right side of your body is controlled by the left side of your brain, and in around 90% of people the left side of the brain also controls language.

Others think the reason might have more to do with culture. The word 'right' is associated being correct and doing the right thing while the word 'left' originally meant 'weak'. Favoring the right hand may have become a social development as more children were taught important skills by right handed people and various tools were designed to be used with the right hand.

Around 80% of people are right footed and 70% favor their right eye. These percentages are lower than those who are right handed and this could be because your body has more freedom of choice in choosing its favored foot and eye than that of its favored hand. In other words, you are more likely to be trained to use your right hand than your right foot and even more so than your right eye.

It's not strange to find people who favor the opposite hand and foot (e.g. left hand and right foot), and some people are lucky enough to be ambidextrous, meaning they can use their left and right sides with equal skill.

Try testing others and coming to your own conclusions about what side the human body favors and why.

Extra: Are you more likely to be left handed if one of your parents is left handed? What are some of the possible disadvantages for left handed people? (Tools, writing materials etc) Do left handed people have an advantage in sports?

Interesting fact: In 2009, only 7% of the players in the NBA were left handed while in 2008 around 26% of MLB pitchers were left handed.

Is it better to be left handed in some sports than others? What do you think?