

Breathing Our Way to Well Being



Knowledge
Through
Entertainment

FILM

- ▶ **Elli's Little Corona Lesson – Totally Mad!**
- ▶ **Knietzsche and Health**
- ▶ **Youth & Corona**

KEY OBJECTIVES

- 1 **Understand how the human lung functions through a simple home-made lung model**
- 2 **Practice simple and effective breathing exercises to improve lung capacity**
- 3 **Understand and experience the connection between breathing exercises and emotional well being**
- 4 **Observe what happens to our lungs during an infection**

INTRODUCTION

The lungs are an essential organ to all mammals, our respiratory organs that are vital to the breathing process and necessary to acquire life-giving oxygen.

Our breathing system has 2 functions:

- Ventilation - the movement of air into and out of the lungs
- Gas exchange - this is where gases are exchanged between tiny sacs called alveoli and blood

Under the lungs is the diaphragm, which is a muscular sheet separating the lungs from the abdomen. Your diaphragm moves up and down to increase the space in your chest.

Breathing is so central to life that it is no wonder humankind long ago noted its value not only to survival but to the functioning of the body and mind and began controlling it to improve well-being.

TOPICS

Biology health wellbeing yoga
meditation

KEYWORDS

Lungs lung capacity
breathing exercises health
physical wellbeing
emotional wellbeing

LEVEL

Primary School Secondary School

RESOURCE TYPE

Demonstration

INTENDED AUDIENCE SIZE

50

MODE OF DELIVERY

Small group Live online

TIME FOR ACTIVITY

40 min

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GUIDING QUESTIONS

- Put your hand on your stomach. What do you notice? When you breathe in you should feel your stomach expand. Why do you think your stomach expands when you breathe in? What happens when you breathe out?
- What are some things you can do to keep your lungs healthy?
- What organs do you think are involved as we breathe?
- How do we breathe when we are calm, relaxed and happy? How do we breathe when we are anxious or stressed?
- Do you think the reverse might also be possible - manage our emotions through breathing patterns?

MATERIALS/PREPARATION

- A plastic bottle
- A straw
- An elastic band
- Scissors
- 2 medium size balloons
- Play dough/Modelling Clay or anything similar

TASKS/PROCEDURE

PART 1: MAKING A FAKE LUNG

- 1 Carefully cut your bottle to about half the size.
- 2 Tie a knot at one end of one balloon and cut off the fat end.
- 3 Stretch the balloon around the bottom of your plastic bottle.
- 4 Put a straw through the neck of the other balloon and secure tightly with the elastic band but not so much that you crush the straw. The air must flow through, so test it with a little blow through the straw to see if the balloon inflates.
- 5 Put the straw and the balloon into the neck of the bottle and secure with the play dough to make a seal around the bottle - make sure that again, you don't crush the straw.
- 6 Hold the bottle and pull at the knot on the balloon at the bottom. What happens? You should find that the balloon inside the bottle inflates, and as you let go the balloon inside deflates.



This fake lung demonstrates how our lungs work. Air is taken in through the mouth and nose, passes down the windpipe and into our lungs. The diaphragm at the bottom of our chest moves down to create more space. As we breathe out the diaphragm raises again. The knotted balloon represents the diaphragm and the balloon inside the container the lung. As the knotted balloon is pulled it creates more space inside the bottle. Air then comes down the straw and fills the balloon with some air to fill the space! When you let go of the knot the space no longer exists, so the air from the balloon is expelled making it deflate. Inside the lungs are networks of tubes which allow air to pass through. Air is warmed, moistened and filtered as it travels through the mouth and nasal passages. It then passes through a network of tubes, eventually reaching tiny sacs called alveoli, which is where gas exchange occurs.

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PART 2: BREATHING OUR WAY TO HEALTH

Let us now be mindful and observe our lungs at work, by trying some commonly used breathing techniques that will improve our lung health and help us manage our emotions too - Posture is important for breathing: hold yourself straight, without stiffness, shoulders back, sitting or standing. This body posture facilitates the free play of the respiratory muscles (of the diaphragm and between the ribs). Good posture enables your body to breathe properly on its own.

Follow Your Breath

Simply observe your respiratory movements: be aware of each inhalation and exhalation. Focus on the sensations you feel as air passes through your nose and throat or on the movements of your chest and belly. When you feel your thoughts drift (which is natural), you can redirect your attention to your breath.

Abdominal Breathing

Breathe "through your stomach" as much as possible: start by inflating your belly by inhaling, as if to fill it with air, and then swell your chest. As you exhale, first "empty" your stomach, then your chest. This type of breathing is easier to observe and test while lying down, with one hand on your stomach.

Rhythmic Breathing

Near the end of each inhalation, pause briefly while mentally counting "1, 2, 3" and holding the air before exhaling. This counting while you are not breathing can also be done after exhaling or between each inhalation and exhalation. It is often recommended for anxious patients to calm anxiety attacks because it induces a beneficial slowing of the breathing rate.

Alternate Nostrils

You will use your right hand only to do this exercise. You can hold it as in this Picture:



Think Reassuring Thoughts While Breathing

With each breath, think soothing thoughts ("I am inhaling calm").

With each exhalation, imagine that you are expelling your fears and worries ("I am exhaling stress").



- 1 Close the right nostril with your right thumb and breathe in slowly through the left nostril
- 2 Close the left nostril with the ring finger and little finger
- 3 Breathe out through the right nostril
- 4 Breathe in deeply through the right nostril
- 5 Close the right nostril with your right thumb
- 6 Breathe out through the left nostril

Now breathe in through the left and continue steps 2 to 6. You can continue to do this 5-10 times until you feel relaxed.

Please refer to the picture to see how it is done. In case you would like to see a video demonstration of alternate nostril breathing, there is a link given in the resource section.

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FOSTERING DISCUSSIONS

- 1 **How do we breathe unconsciously? Is it deep or shallow? Which type of breathing engages the diaphragm more?**
- 2 **Breath as the manifestation of vital residing in the body**
- 3 **How do you think deep breathing helps with managing stress?**
- 4 **Do you think we can see results immediately with breathing exercises? Does it require discipline as with physical exercises?**
- 5 **Do we need to do this along with a healthy diet and lifestyle?**
- 6 **What happens when our lungs get affected – maybe due to a severe infection of covid-19 or due to a habit, like smoking?**

POSSIBLE EXTENSIONS

- Try doing the experiment with a larger bottle and larger balloons. Does it change how the inside balloon reacts?
- Try pushing the membrane (the balloon) in. What happens to the balloon inside the bottle?
- The model you built is of one lung. We have two lungs in our body. If you want to explore more, you can build a similar model representing both lungs. For this, use a 2-liter soda bottle cut in half and attach the diaphragm balloon to the bottom like before. Then build an upside down Y-shaped trachea using straws taped together so that they are airtight. Tape two balloons on the ends of each straw in your Y shape. Then place it inside the bottle. Use clay or tape to secure the long end of the straw to the top of the bottle. Pull on the diaphragm balloon to see both lungs inflate! (Picture below)
- A yoga teacher can explain more complex breathing techniques - Pranayamas



ACTIVITY

Materials needed:

- 1 clean mask (surgical/N95/Cloth)
- A small bowl of clean water

Procedure - Ask the students to put on their mask and try breathing through the mask. They should be able to manage just fine. Now ask them to dip their mask in clean water, shake out the excess water, wear it and try breathing through it again. Is it the same or is it more difficult?

Habitual smoking or a severe infection can damage the walls and linings of the air sacs in your lungs. As your body tries to fight it, your lungs may become more inflamed and fill with fluid. This can make it harder for them to swap oxygen and carbon dioxide, making it difficult to breathe.

SAFETY INSTRUCTIONS

Adult supervision might be required to cut the plastic bottle and the balloon.

AUTHORS AND SOURCES

Designed by Yoshida Menon and Preveena Nandakumar,
Science Educators, India