

LUNG VOLUME KIT

BE-LUNGKIT

Lung Volume is a broad term that actually refers to several different respiratory measurements:

Tidal Volume - volume of air that is exhaled when breathing out normally.

Expiratory Reserve - volume of air that that can still be exhaled after having breathed out normally.

Inspiratory Reserve - additional volume of air that is available for strenuous activity. This is the volume of air that can still enter your lungs after taking a normal breath.

Vital Capacity - total useable volume of air.

Residual Volume - unusable volume of air. (Residual volume cannot be measured with this kit.)

Assembly

You can measure the lung volumes of an individual using this kit. To assemble it, please follow these instructions:

1. Insert the mouthpiece halfway through the opening of the volume bag. Secure the mouthpiece with the rubber bands.
2. While sitting, hold the bag on your knee and press a paper towel against it to force the air out of the bag. Start with the sealed end and push the air out toward the mouthpiece.

Measure Tidal Volume

1. Wipe the mouthpiece with a cotton ball dipped in alcohol to clean it.
2. Take a normal breath in, hold your nose and take a normal breath out into the lung volume bag mouthpiece. Slide a paper towel along the bag to push all the air to the lower end and measure the volume of air it contains. (The bag has liter and 1/10 liter graduations.) Record this as *tidal volume*.
3. Remove all the air from the lung volume bag by sliding the paper towel along its length.

Measure Expiratory Reserve

1. Wipe the mouthpiece with a cotton ball dipped in alcohol to clean it.
2. Take a normal breath, exhale normally, then hold your nose and breathe out as hard as you can into the lung volume bag mouthpiece. Slide a paper towel along the bag to push all the air to the end and measure the volume of air it contains. Record this as *expiratory reserve*.
3. Remove all the air from the lung volume bag by sliding the paper towel along its length.

Measure Vital Capacity

1. Wipe the mouthpiece with a cotton ball dipped in alcohol to clean it.
2. Breathe in the largest breath possible, hold your nose and breathe out as much air as possible into the lung volume bag mouthpiece. Slide a paper towel along the bag to push all the air to the end and measure the volume of air it contains. Record this as *vital capacity*.
3. Remove all the air from the lung volume bag by sliding the paper towel along its length

Calculate Inspiratory Reserve

The *inspiratory reserve* can be calculated by subtracting tidal volume and expiratory reserve from vital capacity.

A human's average total *lung capacity* (how much air the lungs can hold) is about six liters, although many factors - such as gender, height, altitude, working out, and smoking - can cause this to vary.