



# Lung Function Tests



Changi  
General Hospital  

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SingHealth

# What are lung function tests?

Lung function tests help to establish how well the lungs work.

The most frequently performed test is *spirometry*. This test measures how well one can move air in and out of the lungs. The *lung volume* and *diffusion capacity* tests are two other commonly performed lung function tests. They measure the volume of air that the lungs can hold when one breathes and how well the gases breathed in moves from the lungs into the bloodstream respectively.

Other lung function tests such as the *impulse oscillometry*, *maximal respiratory pressures*, *maximal voluntary ventilation* and *fractional exhaled nitric oxide* are performed to check breathing mechanics or measure airway inflammation.

## Why are lung function tests done?

The tests help to determine the cause of respiratory symptoms that you may be experiencing. They are also used to diagnose and assess the severity of certain chronic lung conditions such as asthma and chronic obstructive pulmonary disease, and track the progress and monitor the response after treatment has been given, especially when the tests are repeated at intervals. Occasionally, the tests may also be used to assess your fitness before surgery.

## What can I expect from lung function tests?

### Preparation for the tests

Avoid the following before your test:

Day of test	<div><div>▶ Smoking</div><div>▶ Exercise</div><div>▶ Wearing tight clothing that may restrict your breathing or movement</div></div>
8 hours before the test	Alcohol
2 hours before the test	Heavy meals

On the day of your test, please wear comfortable, loose clothing that will not restrict your breathing or movement.

You may also need to stop taking certain medications before your test, depending on the clinical questions your physician would like to address from the test. Different medications stay in your body for varying periods of time and have to be stopped at different intervals before the test.

Duration before the test	Medications to avoid	Examples
48 hours	Inhaled beta-agonists – Ultra-long acting	Indacaterol (Onbrez & Ultibro Breezhaler)  Olodaterol (Striverdi & Spiolto Respimat)  Vilanterol (Anoro, Relvar & Trelegy Ellipta)
	Inhaled anticholinergics – Long acting	Glycopyrronium (Seebri & Ultibro Breezhaler)  Tiotropium (Spiriva & Spiolto Respimat)  Umeclidinium (Incruse, Anoro & Trelegy Ellipta)  Aclidinium
24 hours	Inhaled beta-agonists – Long acting	Formoterol (e.g., Symbicort, Flutiform)  Salmeterol (e.g., Seretide)
12 hours	Inhaled anticholinergics – Short acting	Ipratropium bromide (Atrovent)
6 hours	Inhaled beta-agonists – Short acting	Albuterol or Salbutamol (Ventolin)

*Note: It is important to check with your doctor if it is safe for you to stop these medications before discontinuing them for the test.*

## During the tests

The tests are not painful. The clinical physiologist will teach and guide you through the tests. Please follow instructions from the attending staff and put in your best effort.

### ▶ Spirometry

You will be required to use maximal effort to blow out and breathe in through the equipment. After baseline spirometry readings have been taken, you will be asked to administer four sequential puffs of a short-acting inhaled medication, usually the *Salbutamol* (*Ventolin*) inhaler, which works by opening airways. You will then be asked to repeat the spirometry assessment 15 minutes later, to establish if the airflow into your lungs improves after taking the *Salbutamol* inhaler.

### ▶ Lung volume test

There are different methods to measure your lung volume. One of these methods is *body plethysmography*, where you will be seated in a sealed, clear cubicle while breathing in and out into a mouthpiece. Your lung volume will then be assessed based on the changes in pressure inside this cubicle. Alternatively, in the gas *dilution* method, you will be asked to breathe in harmless gases. The change in concentration of the gases will be measured to estimate your lung volume.

### ▶ Diffusion capacity test

You will be asked to breathe in harmless gases and measurements will be taken to evaluate the diffusion capacity of your lungs.

Depending on the lung function tests ordered by your doctor and the ease with which you perform the tests under guidance, the entire duration of the tests could take between 20 to 60 minutes.

## What can I expect after the test?

After the test, you can resume the medication(s) that you have stopped for the purpose of the test unless your doctor has given you other prior instructions. You can also go back to your usual diet and activities.

You will be given a follow-up appointment to discuss the test results and your condition with your doctor.

## What are the possible risks?

Lung function tests are generally safe tests.

Single-use mouthpieces and special filters for each individual will be prepared to prevent transmission of germs between individuals using the equipment.

For tests such as *spirometry*, *maximal respiratory pressures* and *maximal voluntary ventilation*, some temporary shortness of breath, light-headedness or coughing may be experienced during the test as these involve forceful blowing and rapid breathing.

## Can I undergo the test if I am not feeling well?

You should not proceed with the test if you have a fever, runny nose or acute illness. Please call the CGH Appointment Centre at (65) 6850 3333 to reschedule your appointment.

It would also be advisable to undergo the tests about four weeks after you have recovered from a cold or respiratory tract infection as your test results could be affected. Please check with your doctor if you have any questions.



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### **CGH Appointment Centre**

For appointments and enquiries,  
please call: (65) 6850 3333

Operating hours:  
8.30 am to 5.30 pm (Monday to Friday)  
8.30 am to 12.30 pm (Saturday)  
Closed on Sunday & Public Holiday

For more information, please visit [www.cgh.com.sg](http://www.cgh.com.sg)



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