

Lung Function Tests

Lung function tests provide an easy way of measuring the function of the lungs without the need to physically examine the lungs themselves. Lung function or breathing tests are important investigations which:

- Help diagnose suspected lung disease;
- Help in planning treatments and decide whether treatments should be continued, changed, or are no longer needed.

How does it feel to perform lung function tests?

Most lung function tests are straightforward and only involve fairly simple breathing tasks like rapid breathing. This may occasionally be tiring and make you feel a bit puffed, but is usually not uncomfortable.

Types of lung function tests

Spirometry and Flow Volume Curves

Common lung conditions, such as asthma and emphysema, cause problems by narrowing the airways (bronchial tubes) resulting in shortness of breath. Narrowed airways are difficult to breath through - the greater the narrowing, the more difficult that breathing becomes.



Spirometry and flow volume curves are tests which are of great value for measuring exactly how much narrowing is present.

These tests involve taking a full breath in and blowing out with best effort into a device called a spirometer. Measurements are made which indicate the speed at which the lungs can be emptied and filled with air. The test is performed whilst seated, and usually takes 10 to 20 minutes. It is sometimes carried out before and after inhaling a reliever drug such as VentolinTM or BricanylTM to measure the effect of these drugs. In this case, your doctor may ask you not to take your usual reliever medication for a few hours prior to the test.

Carbon Monoxide Transfer Test

This is a test which may seem complicated but which really isn't. The basic function of the lungs is to get oxygen into the bloodstream and carbon dioxide out. For this to happen, these gases must cross the very thin lung membrane which separates the blood flowing through the lungs from air breathed into the lungs. The carbon monoxide transfer test

measures how easily gases pass through this membrane. This valuable information is used to assess the severity of lung conditions such as emphysema and pulmonary fibrosis where the function of the membrane may be impaired.

The test is quick and easy to do. It takes about 15 minutes and involves taking a deep breath of a special gas mixture from a spirometer, breath holding for about 10 seconds, and breathing out again.

Bronchial Provocation Test

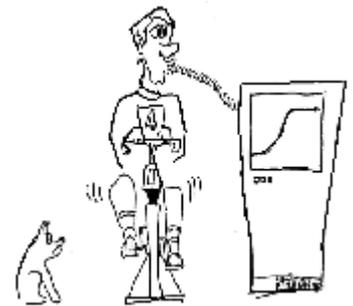
Asthma is a condition where the airways are very sensitive and become narrow when exposed to certain irritating substances. The bronchial provocation test is used to diagnose asthma and measure its severity.

The test measures how much narrowing occurs after inhalation of small amounts of sprays containing either histamine or methacholine. Between five and eight different strengths of spray (starting with the weakest dose) are inhaled during the test. Spirometry measurements are made a minute or two after each dose. It usually takes about 30 minutes to perform this test. If you are taking reliever medication, your doctor will ask you to stop using it for a few hours prior to the test.

Exercise Tests

In most cases, enough information can be obtained from lung function tests done while setting at rest. It is occasionally important to measure lung and heart function under the stress of exercise because some problems only show up during exercise.

Exercise is usually performed on a bicycle or a treadmill. During the test the pedal pressure or the treadmill speed are increased. Measurements are made including the amount of oxygen used, carbon dioxide produced by the body, the total amount of air breathed in and out, together with the heart and breathing rate. Breathing is measured through a mouthpiece. Most people are able to pedal for 10 to 15 minutes whilst others can last for half an hour. There is a wide range of values for different people.



Another type of exercise test is the 12-minute walk test. It is a very simple procedure where measurements are made of how far you can walk in 12-minute periods.

When you have an exercise test, be sure to bring comfortable clothing suitable for exercising, such as a tracksuit, and avoid having a heavy meal for 2-3 hours beforehand.

Skin Prick Tests

Allergies to substances such as animal danders, grass pollens, the housedust mite and some foods are very common. The skin prick test is used to identify allergies by placing a drop of fluid containing tiny amounts of allergens onto tiny scratches made on the forearm. As many as 20 or 30 different allergens at any one time can be tested in this way. A positive reaction occurs if swelling, redness and often itching is present around the scratch. Your doctor will ask you to stop using any antihistamine medicines for three days prior to these tests.

This brochure is one in a series produced by Lung Foundation Australia to provide information on lung disease, its treatment and related issues. The information published by Lung Foundation Australia is designed to be used as a guide only, is not intended or implied to be a substitute for professional medical treatment and is presented for the sole purpose of disseminating information to reduce lung disease.

Any information relating to medication brand names is correct at the time of printing. Lung Foundation Australia has no control or responsibility for the availability of medications, which may occasionally be discontinued or withdrawn.

Please consult your family doctor or specialist respiratory physician if you have further questions relating to the information contained in this leaflet. For details of patient support groups in Australia please call 1800 654 301.

Arterial Blood Gases

The main function of the lungs is to get oxygen into the bloodstream and remove waste carbon dioxide from the blood.

When the lungs fail to perform to their best, the amount of oxygen in the blood may be lower than normal and the carbon dioxide in the blood may rise above normal values. To measure these gases in the blood from an artery, a sample is taken from an artery usually at the wrist. It is important to tell the doctor or scientist doing this test if you are on any blood-thinning tablets or treatment prior to the test.

Home Oxygen Therapy Assessments

Some lung problems may cause blood oxygen levels to fall low enough to require the use of oxygen therapy at home. Assessments for home oxygen usually involve one or two measurements of arterial blood gases, and in some cases a brief exercise test.

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