

Peak expiratory flow (PEF) test

Measures how fast you can breathe out. This happens after taking a full breath in, and then blowing out as fast as you can into a peak flow meter. The best of three attempts is recorded. Peak flow scores can vary depending on age, height, and gender. PEF is measured in litres per minute. Normal adult PEF scores vary between 400 and 700 litres per minute.

Keeping a track of PEF values can indicate whether symptoms are getting worse, or if a particular trigger is causing symptoms.

PEF tests are used to monitor asthma sufferers. It can be used to indicate narrowing of airways, and as a comparison measurement before and after treatment.

Spirometry

Useful for diagnosing COPD and asthma. Spirometry measures:

- how much air you can blow out in a relaxed manner (this is called slow vital capacity or VC)
- the amount of air you can blow out in one second (this is called forced expiratory volume in one second, or FEV₁)
- the total amount of air you can blow out in one complete breath after taking a deep breath in (this is called forced vital capacity or FVC).

Spirometry shows if problems are obstructive or restrictive, or a combination of both. Combination patterns occur when both the total amount of air and how fast you can blow it out are reduced. This happens in severe emphysema, cystic fibrosis, or if someone is obese.

Grade of airflow obstruction from spirometry tests

Mild	FEV ₁ is 80% of the normal value. With mild COPD spirometry test results can be normal after taking medication.
Moderate	FEV ₁ is 50% to 79% after taking medication.
Severe	FEV ₁ is 30% to 49% after taking medication.
Very severe	FEV ₁ is below 30% of the predicted value after medication.

Limitations of PEF test and spirometry

The main source error is patient error in using the equipment, e.g. not blowing as hard, for as long as possible, or not putting their lips correctly around the mouthpiece.

Oximetry

A pulse oximeter is a device that is usually placed on a fingertip which uses light beams to estimate the oxygen saturation of the blood. The normal saturation for healthy individuals is 95% to 100% saturation, but may be lower in people with lung problems.

Limitation

Results are not as accurate as taking a blood sample especially at saturation levels below 80%.

Peak Expiratory Flow (PEF) – normal values, EU scale

