Spirometer transcript

Welcome to this video tour of the Spirometry application. The World Health Organization ranks lung disease as one of the top three causes of death in the world. This is a startling figure. Most of us take the act of breathing for granted and are probably unaware that one person dies every 10 seconds because of impaired lung function.

Spirometry is a simple technique used to measure the dynamic function of lungs. And this application, which is based on data collected from over 7,000 healthy human subjects, will allow you to explore how lung function changes with age, height and gender.

To use the spirometer, you must first enter the age, height and gender of your subject. Age and height are selected by adjusting the sliding bars and gender by clicking on the appropriate button. Once you have entered these parameters, activate the spirometer recording by clicking on the ‘Start’ button.

At the start of the reading, the subject takes in a deep breath, filling the lungs completely. The subject then empties the lungs as quickly as possible by expiring forcefully and sustaining this expiration for at least six seconds, until no more air can be forced out of their lungs. The spirometer plots the volume of air blown out of the lungs and how this changes over time.

The lung function values recorded by the spirometer are the ‘Forced Expired Volume in One Second’, also called the FEV1, and the ‘Forced Vital Capacity’, also called the FVC. The FEV1 is the volume of air expired in the first second of the forced expiration and the FVC is the total volume of air expired from the lungs. These values are then used to calculate what percentage of the total air blown out of the lungs was measured in the first second of the forced expiration.

If the percentage expired in the first second is less than 70% of the total expired air, this indicates that there is a problem with the lungs. The ability to expel air efficiently is impaired. In other words, the airways of the lungs are obstructed.

You can record the output of the spirometer by clicking on the record button. You can also export the output in a form that can be entered into a spreadsheet by clicking the ‘Export data’ option.

To use the spirometer to see how lung function varies with age, height and gender, enter the spirometry application.