

## Lung function

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### Lung Function Impairment and Obesity

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There is mounting evidence that obesity may have chronic, adverse effects on pulmonary function. The aim of this study was to evaluate the relationships between the level of adiposity and lung function in healthy university students.

The cross-sectional study was conducted in 220 female and 160 male university students, aged 18–25 years. Anthropometric measurements and spirometry were performed on all participants. Body height, body mass, waist and hip circumferences were measured according to current anthropometric methodology. Bioelectrical impedance analysis (BIA) was used for estimating body composition. The data on the prevalence of chronic diseases, especially respiratory conditions and allergies, smoking and socio-economic status were collected by questionnaires. The percentage values of forced expiratory volume in 1 s (FEV1%) and forced vital capacity (FVC%) and the ratio of FEV1/FVC were compared with the anthropometric indexes: Body Mass Index (BMI), Waist to Hip Ratio (WHR) and Waist to Height Ratio (WHtR).

In females, the highest FEV1% and FVC% were noted in normal weight subjects than in underweight or overweight ones. In males, the inverse relationships between BMI and both FEV1% and FVC% were found. In addition, a significant negative correlation was found between percentage body fat and both FVC and FEV1. This association was strong and consistent in women and men.

All indicators of abdominal adiposity: waist circumference, WHR and WHtR were significantly associated with a decreased both FVC% and FEV1% and an increased ratio of FEV1/FVC. Similar results were obtained for women and men. The associations between visceral adiposity levels and spirometric parameters were consistent across sex and BMI categories. The adverse effect of obesity and abdominal obesity on lung function was stronger in group of smokers than among non-smokers.

Our data show that body composition and fat distribution are associated with lung function in students but abdominal obesity was the strongest predictor of lung function impairment. Differences may arise already at an early age and even with low degree of obesity.