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Title: The effect of body composition on pulmonary function

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Body: Background: The pulmonary function test (PFT) is the most basic test methods to diagnosis lung disease. The purpose of this study was to research correlation of the body mass index (BMI), the fat percentage of the body mass (Fat%), the muscle mass, the fat-free mass (FFM) and the fat-free mass index (FFMI), waist-hip ratio (WHR) on the forced expiratory volume curve. Method: Between March and April 2009, a total of 291 subjects were enrolled. 152 men and 139 female (mean age: 46.3±9.92) were measured the FVC, FEV₁, FEF₂₅₋₇₅ from the forced expiratory volume curve by the spirometry and the body composition by the bioelectrical impedance method. Correlation and multiple linear regression between body composition and pulmonary function were used executed. Result: BMI and Fat% had no correlation with FVC, FEV₁ in male, but FFMI is positively correlation. In contrast, BMI and Fat% had correlation with FVC, FEV₁ in female, but FFMI had no correlation. Both male and female, FVC and FEV₁ had negatively correlation with WHR (male FVC r=-0.327, FEV₁ r=-0.36; p-value<0.05) (female FVC r=-0.175, FEV₁ r=-0.213; p-value<0.05). In a multiple linear regression of considering body composition at total sex group, FVC was explained FFM, BMI, FFMI in order (R²=0.579, 0.657, 0.663), FEV₁ was explained only Fat% (R²=0.011), FEF₂₅₋₇₅ was explained muscle mass, FFMI, FFM (R²=0.126, 0.138, 0.148). Conclusion: The BMI, Fat%, muscle mass, FFM, FFMI, WHR have significant association with pulmonary function but R² (coefficient of determination) were not high enough for explaining lung function.