Influence of Age on Lung Function Tests

Pruthi[1], N., & Multani[2], N.K.
[1]PG Student, Dept of Physiotherapy, Punjabi University, Patiala-147001, Punjab
[2]Professor, Dept of Physiotherapy, Punjabi University, Patiala-147001, Punjab

Abstract

Considerable attempts have been made in the previous studies to study the significant variables affecting the standards for ventilator function including age, height, sex, size of sample tested, racial and ethnic composition, criteria for normality, tobacco smoking, environmental conditions, altitude of residence etc. The present study was necessitated as very few studies have been conducted in northern India to study the effect of age on pulmonary function tests. Study was performed on 50 subjects under the age group of 25-75 years, further divided into 5 age groups: 25-35 years, 36-45 years, 46-55 years, 56-65 years and 66-75 years. This was a cross-sectional design, which was performed in the Department of Physiotherapy. The values of all lung function tests, namely, FVC, FEV_1, PEFR, FEV_1/FVC, SVC and MVV were found to be negatively correlated with age (r = -0.446, -0.495, -0.427, -0.312, -0.392 and-0.919, respectively). It was concluded the the lung functions significantly decline with age.

Key words: lung function tests, aging, decline

Introduction

Ageing process is associated with progressive constriction of the homeostatic reserve of every organ. The most important physiological changes associated with ageing are of respiratory system depicting the decrease in static elastic recoil of the lung, in respiratory muscle performance, and in compliance of the chest wall and respiratory system, resulting in increased work of breathing *(Janssens, 2005)*.

Lung functions decline throughout adult life, even in healthy persons. Cross sectional analysis have suggested that the decline may go faster after age 70. Normal aging results in changes in pulmonary, mechanics, respiratory muscle strength, gas exchange and ventilatory control. Increased rigidity of chest wall and a decrease in respiratory muscle strength with aging result in an increased closing capacity and a decreased forced expiratory volume in first second or FEV1 *(Knudson et al, 1983)*.

Culver and Butler (1985) reported that lung function does not necessarily decline in the linear fashion, once thought from age 18 or 20. Rather it may reach a maximum in the late 20s and then decline, but there is variability in older adulthood depending on lung capacity at the time of lung maturation. Therefore, the present study was conducted to examine the influence of age on lung functions.

Lung function tests are carried out to assess the functioning of the lung and routinely used in clinical practice *(Verma et al, 2002)*. Nevertheless, there are only a few studies that have established reference standards for pulmonary function with age, especially amongst Indian population.

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