

Effect of aging and anthropometric measurements on nerve conduction properties – A Review

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Abstract

Aging is a process that is often accompanied by physiological changes. These physiological changes include slowing in muscle contractility, alteration in muscle metabolism and neuromuscular junction, and reduction in nerve conduction velocity (NCV). Age has been widely accepted to have an influence on nerve velocity. It is well established that there is a decline in muscular performance with advancing age. Nerve conduction studies (NCS) are the most sensitive and reproducible measure of peripheral nerve functions. Nerve conduction studies (NCS) are performed to diagnose the disorders of the peripheral nervous system. These enable the clinicians to differentiate the two major groups of peripheral diseases: demyelination and axonal degeneration. These also help in localizing the site of the lesions. Majority of the available literature mentioning effects of age and anthropometric factors on nerve conduction measures have been referred in the present review. Various studies referred to are based on the data on healthy subjects. The references were further supplemented by systematic search on pubmed, google and Pedro with keywords age, temperature, height and nerve conduction. Several specific studies that had been dealt on anthropometric measures and nerve conduction on normal subjects were also included in this review. A total of fifty five research studies dealing with age, anthropometric measurements and nerve conduction properties have been found in the literature reviewed up to 2011.

KEY WORDS: nerve conduction velocity, anthropometric, Nervous System

Introduction

Aging describes changes that occur with advancing age. Normally physiological capacity of various systems attains a maximum level in 3rd decade of life between the late teens and thirty years of age. After 35 years there occurs a decline in physiologic and performance measures. Different systems change at different rates in different people. Chronological age does not necessarily correlate with biological age. For example, an 85 year old may be active and independent where as 65 year old may have many problems. With age there is decline in energy, faculties and tissues. Visible signs of aging include graying and

coarseness of hair, loss of elasticity and dryness of the skin.

Age- related changes in musculoskeletal system

Age related changes in muscle system are directly related to limited mobility and increase of falls in the elderly. Aging is associated with decrease in total muscle cross-sectioned area amounting to approx 40% between the ages of 20 and 80 years. *Cummingham et.al in 1989 and 1982* conducted study on young and elderly men and found that this reduction in muscle cross-sectioned area is accompanied by increase in non contractive structures such as fat and connective tissue. Thus, the girth or volume of the muscle band on