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Effects of Ageing in Physical Fitness

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Abstract

Ageing is a natural and inevitable process with degenerative changes in most of the physical, physiological and psychological functions. Furthermore, the ageing process has an impact on the physical of elderly people. Thus, the aim of this study is to provide to readers of information about effects of ageing and changes in physical fitness as one of the major causes of chronic diseases of ageing people. In addition, the association between physical fitness and physical activity in elderly shows health benefits in this population. In conclusion, the evolution of aging is essentially understood as a gradual accumulation of damage which produces the functional declination of any organism.

Keywords: Immune system; Organism; Physical fitness; Elderly

Introduction

Now-a-days, the clinical and medical context often uses elderly when referring to people over the age of 65 [1]. Ageing is a natural and inevitable process [2] associated with lack of adjustment in the immune system, "immunosenescence" [3-5]. There are cellular and molecular variations due to the ageing process produce an increase of infections and immune disorders [6]. Thus, chronic diseases are also related to the ageing process with a high incidence in the elderly population [7]. Interactions of external environmental variables and genetic factors are essential for the understanding of chronic diseases too [8].

Cellular and molecular variations due to the ageing process produce an increase of infections and immune disorders [6]. The increase of diseases and chronic inflammations associated with the ageing process is determined by senescent phenotype [9]. The tissue-residing senescent cells tend to accumulate and might produce a negative response in the secretory phenotype with pro-inflammatory characteristics. In addition, senescent cells abound in pathologies related to ageing such as degenerative or inflammatory disorders [10]. Senescent cells are triggered by telomere attrition related to tissues and ageing [10,11] or in response to diverse stress conditions [10,12] and the accumulation of DNA damage [12].

Physical Fitness

The main characteristic of ageing is a gradual and inevitable deterioration of physical capacities and degenerative diseases [13], commonly seen in the elderly [14]. Ageing process cause the decrease of physiological reserves, commonly known as homeostenosis [15].

The ageing process consists of two types of influences: negative (acceleration of ageing effects) or positive (delay of ageing effects). Therefore, knowledge of physical fitness evolution during the ageing process is necessary to guarantee a better understanding of elderly people and reduce their consequences [4]. Disability, somatic diseases and depression are common characteristics that appear in the ageing process without any connection between them [16].

The evolution of aging is essentially understood as a gradual accumulation of damage which produces the functional declination of any organism [17]. In addition, about 100.000 people die every day in the world due to age related causes [18].

According to the physical activity, is a very important component of physical fitness and improves the mobility [19], physical fitness [20] and muscular work capacity of elderly [21]. Moreover, a regular physical activity produces a reduction in inflammation and chronic diseases [22]. According to physical fitness in elderly, strength and aerobic capacity, the second shows a decrease of VO2 over the age of 60 which is due to a reduction in maximum cardiac output and arterial-venous oxygen difference reduction [23]. Furthermore, the aerobic capacity starts to decrease after the age of 40 with a loss of 30% after the age of 65 [24]. On the other hand, there is a reduction in maximal oxygen uptake of 0.5%–1.0% per year [25] and this has an influence on the physical fitness of healthy and sick elderly [26].

However, the loss of muscular strength ranges between 12%-14% per decade in people over the age of 50 [27]. Lower body strength is often more affected than upper body strength [28,29]. Regarding to the balance in elderly is usually poor and is considered as a risk of falls in elderly [30]. The balance, specially the dynamic balance, is related to body posture decreases with the ageing process [31]. Finally, the flexibility decreases with age but the reduction is irregular, being in women always higher than in men [32]. Thus, it is necessary a high intensity of physical exercise under the supervision of a fitness specialist to improve the strength in this population [33,34]. According to the same authors, a muscle-strengthening activity for an elderly person should have a frequency of a minimum of two days a week with 8-10 exercises involving most muscle groups. Flexibility and balance exercises might be performed for a minimum of two days per week.

Conflict of Interest

The authors declare no conflict of interests.

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