

IMPORTANCE OF PHYSICAL FITNESS DURING THE AGEING PROCESS

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Review paper

Abstract

In the world, more than 50% of 60-year-olds are obese. Obesity is a disease with serious cardiovascular risks. Obesity grows with the increasing age of a person. In addition, sedentary lifestyle causes muscle mass to decrease faster. Strength, aerobic capacity and flexibility are related to the muscle mass. Obesity and physical inactivity cause a decrease of the cognitive and functional capacity. For these reasons, ageing has a negative influence on the neuromuscular system, which increases the risk of falls in elderly people. Many researchers have recommended physical activity in which people enjoy themselves and therefore think in a way that increases their motivation. This motivation will decrease psychosocial aspects such as depression and anxiety, among others. Furthermore, physical activities should be cooperative and done in groups because this way they increase the perceptive and socio-emotional capacity of an older person. Most physical trainers and personal trainer need more information about methods and prescriptions in order to adequately carry out the training.

Key words: ageing, physical fitness, training, health

Introduction

Ageing is a natural and an inevitable process (Amarya, Singh, & Sabharwal, 2014) associated with a lack of adjustment in the immune system (Aparicio, Carbonell-Baeza, & Delgado-Fernández, 2010), affecting all living organisms and representing progressive degenerative changes in most physical and physiological functions (Trifunovic & Ventura, 2014). Declination of cognitive capacity is also a characteristic of the ageing process (Watsford, Murphy, & Pine, 2007). According to physical fitness, this is a reliable predictor of life expectancy in elderly women (Stojanovic, Hodzic, Stojanovic, & Stojanovic, 2013). The association between physical fitness and physical activity and the benefits this provides for elderly people has been explained in great detail in several studies (Landi, Onder, Carpenter, Cesari, Soldato, & Bernabei, 2007). In addition, the elderly people do not enjoy complete well-being due to the fact that they suffer from physical limitations which are commonly found in old age (Yeom, Fleury, & Keller, 2008). Thus, physical inactivity and sedentary lifestyles are both causes of negative health consequences (Ikezoe, Asakawa, Shima, Kishibuchi, & Ichihashi, 2013). Consequently, The American College of Sport Medicine (ACSM) and The American Heart Association (AHA) recommend regular practice of physical activity in order to produce health benefits in the elderly (ACSM, 2013; Chodzko-Zajko et al., 2009).

Physical fitness and ageing

The relationship between health and physical fitness consists of various factors such as body composition, muscular strength and endurance, agility, balance and flexibility (Ruiz-Montero, Castillo-Rodríguez, Mikalacki, & Delgado-Fernández, 2015). It is common knowledge that

ageing causes drastic reduction in physical fitness (Auyeung, Kwok, Lee, Leung, Leung, & Woo, 2008). Loss of muscular strength ranges between 12%-14% per decade in people over the age of 50 (Hurley & Roth, 2000). Overall strength decreases with the ageing process; however, lower body strength is often more affected than upper body strength (Candow & Chilibeck, 2005). This is one of the most common risk factors for falls in the elderly (Deandrea, Lucenteforte, Bravi, Foschi, La Vecchia, & Negri, 2010). Similarly, handgrip strength decreases at the same time as ageing (Lauretani et al., 2003). This phenomenon is important because some authors confirm a higher prediction of mortality in elderly people with low strength in lower body and hand-grip strength (Newman et al., 2006). Hence, a moderate intensity level of effort in terms of muscle-strengthening exercises is generally recommended. The exercise might, also, be practiced at a higher level of intensity and under the supervision of a fitness specialist (Franklin, Whaley, & Howley, 2000). Moreover, it is necessary to highlight that the aerobic exercise is a very important component of physical fitness and might improve other components through exercises with large muscle groups working dynamically (Tumiati et al., 2008). One of the most important physiological changes in the ageing process is the reduction of an aerobic process (Fleg et al., 2005). Similarly, several cross-sectional and control trial studies have demonstrated a decrease in the peak of oxygen consumption (VO₂) between 5%-10% per decade (Hawkins & Wiswell, 2003). This reduction in VO₂ is not constant, although it is more apparent in men than it is in women. Furthermore, the decrease of VO₂ over the age of 60 is due to a reduction in maximum cardiac output and arterial-venous oxygen difference reduction (Weiss, Spina,

Holloszy, & Ehsani, 2006). Ageing also has a negative influence on the neuromuscular system, which increases the risk of falls in elderly people (Howe, Rochester, Jackson, Banks, & Blair, 2007). Likewise, a poor balance can be a common risk among elderly people and it is necessary to distinguish between static or dynamic balance. The first type of balance indicates body posture while standing still, while the second, dynamic balance is the reaction speed of muscles when faced with different conditions of stability (Takeshima et al., 2014). Dynamic balance related to body posture decreases with the ageing process (Madhavan et al., 2009). Finally, the flexibility has often been treated as a physical fitness condition linked to the prevention of injuries and physical training (Kinser, Ramsey, O'Bryant, Ayres, Sands, & Stone, 2008). Flexibility allows people a range of movement through joints (Robles, Vernetta, & López-Bedoya, 2009). The range of movement of each joint depends the degree of ageing (Doriot & Wang, 2006). Flexibility decreases with age but this reduction is not lineal. Moreover, flexibility levels in women are always higher than in men, being

20%-40% more flexible than men after the age of 60, even in female childhood (Araujo, 2008).

Conclusion

According to the recommendations made by ACSM (Nelson et al., 2008), the elderly should do a minimum of 30 minutes of moderate intensity aerobic exercise five days a week or a minimum of 20 minutes of high intensity aerobic activity three days a week. 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. Health-related physical exercise consists of aerobic capacity, muscle strength, balance and flexibility (Takata et al., 2012) and each of these aspects of physical fitness may be improved through specific training and exercises (Binder et al., 2002). A combination of flexibility, balance and strength exercises with elderly people is associated with a reduction in the risk of falls (Tinetti et al., 2003).

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VAŽNOST TJELESNOG FITNESA TIJEKOM PROCESA STARENJA

Sažetak

U svijetu, više od 50% 60-godišnjaka je pretilo. Pretilost je bolest s ozbiljnim kardiovaskularnim rizicima. Pretilost raste s povećanom dobi osobe. Uz to, sjedilački način života uzrokuje brže smanjenje mišićne mase. Snaga, aerobni kapacitet i fleksibilnost povezani su s mišićnom masom. Pretilost i tjelesna neaktivnost uzrokuju smanjenje kognitivnog i funkcionalnog kapaciteta. Iz tih razloga, starenje ima negativan utjecaj na neuromuskularni sustav, što povećava rizik od padova kod starijih ljudi. Mnogi istraživači preporučili su tjelesnu aktivnost u kojoj ljudi uživaju i stoga razmišljaju na način koji povećava njihovu motivaciju. Ta motivacija će smanjiti psihosocijalne aspekte poput depresije i tjeskobe, između ostalih. Štoviše, tjelesne aktivnosti trebale bi biti kooperativne i vršene u skupinama jer će na taj način povećati opažajni i socio-emocionalni kapacitet starije osobe. Većina fizičkih trenera i osobnih trenera treba više informacija o metodama i receptima u svrhu adekvatnog provođenja treninga.

Ključne riječi: starenje, tjelesni fitnes, trening, zdravlje

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