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THE INFLUENCE OF RESISTANT AND FUNCTIONAL TRAINING IN THE RUN OF THE ELDERLY

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ABSTRACT

A review of the literature that aimed to verify the results found regarding the methods of gait training for the elderly, its relevance for a healthy aging and improvement in the quality of life. The choice of the study was made since the scientific evidence demonstrates the great importance of identifying which methods can be used to promote adequate training for the elderly with regard to the necessary gait and balance used during the aging process, the study is closely related to the course research line, since it is the professional educator's performance in the various areas that can act within the quality of life process of the elderly. As a methodology, articles published in the Latin American and Caribbean Literature in Sciences and Health database (LILACS), Scientific Electronic Library Online (SCIELO), were evaluated in the year 2018. It is concluded that regular physical exercises have important benefits for gait and decrease of falls, as well as resisted exercises increase balance, functional mobility, physical and psychological dominance. The evaluation of gait is fundamental for the development of adequate training programs according to individual needs and for achieving positive results in the quality and life expectancy of the elderly.

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INTRODUCTION

Population aging is one of the largest and most relevant demographic and social changes worldwide. Among the main causes are chronic diseases, health conditions, communicable diseases among other factors related to the quality of life of the population, leading to a series of physiological changes which may lead to deficits in balance and gait alterations, predisposing functional limitations that require muscular strength and balance (BEZ, 2014; BIANCHI, 2015; FARIA, 2003). There are several factors that determine the risk of falls, intrinsic factors related to the individual, and extrinsic environmental factors (LIMA, 2012). The elderly present difficulties with unforeseen situations, as with the advancement of the age appear modifications like the reduction of the length of the steps and the rotations of the pelvis. These changes in gait occur in both physiological and emotional factors and may influence motor, postural, balance, pelvic rotation and joint mobility impairing gait velocity and

step width, leading to increased inactivity leading to decreased functional capacity of the elderly (BIANCHI, 2015). The total number of muscle fibers decreases causing atrophy, since these fibers of rapid contraction are responsible for the development of the force which implies in the smaller production of strength and muscular power, another cause of the functional loss of force includes the deterioration of the structures of the motor plate (PRADO, 2010). According to the same author, these changes are greater in the lower limbs than in the upper limbs, causing a significant decline in the individual's independence with a decrease in muscle strength in the lower limbs leading to a greater risk of falls, immobility, autonomy, well-being and quality of life of the elderly. Marching in the elderly has been investigated since 1940, considering the importance that the maintenance of mobility expresses autonomy and quality of life in the elderly. The speed of gait is what most changes with aging, and 5 this decline is related to the increased risk of falls, leading to loss of independence and institutionalization. Participation in regular physical activities is an effective intervention to prevent or reduce functional declines and their limitations in the aging process (BRANDALIZE, 2011; SÁ, 2012). These changes may occur progressively in adulthood,

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causing a reduction in the individual's physical and functional capacity, consequently leading to gait changes, such as loss of strength and muscle mass related to lower physical activity (BIANCHI, 2015, PRADO, 2010). Physical inactivity is directly related to these factors, so the goal of physical activity and to maximize functional capacity, muscle strength and flexibility, improving tone and preserving bone mass. With regard to gait we can say that it is defined as walking and moving one foot from the ground to the other, a complex motor act that requires coordination of the trunk, limbs, muscles and joints (BIANCHI, 2015). According to Gonçalves (2010), the sedentarism can aggravate the dependency of the elderly in this context. Falls are among the most frequent and disabling problems of the elderly, causing risk of fractures, abandonment of activities, modification of habits, immobilization and fear of falling. The gait assessment allows the identification of changes or instabilities with possible diagnosis, guidance for the elderly and their relatives on the risk of falls so that a method of training or re-education can be defined, being the most common method to evaluate the observation, which determines the quality of gait and its most common deviations (BIANCHI, 2015). Some methods of evaluation may be conducted to identify physiological and anatomical changes, which aim to assess the level of balance and gait quality (LIMA, 2012). According to Prado (2010) there is another test to evaluate individuals predisposed to falls or under treatment for mobility deficit, the test is Performance Oriented Mobility Assessment (POMA), which evaluates the risk factors for falls based on the number of chronic disabilities and the gait assessment. It was also observed that strength training and functional exercises, stretching and balance training improve gait speed. Functional incapacity also affects the motivation for the activity, the sense of control over the environment, the beliefs and the self-esteem of this population (BEZ, 2014). Sarcopenia is one of the phenomena that identifies the fragility syndrome associated with the risk of falls, fractures and hospitalizations. In addition to the inherent aspects of aging itself, sarcopenia is also determined by genetic predisposition, life habits among other factors, and gait speed was assumed to indicate sarcopenia, a condition of loss of strength and muscular function (BEZ, 2014). Functional training aims to minimize functional disability, and may also help reduce the emotional and social problems attributed to disability, and also to observe a progressive decrease in muscle mass. The fragility syndrome also includes reduced mobility, abnormal gait, muscle weakness, reduced exercise tolerance and unstable balance (BEZ, 2014; LUSTOSA, 2010). Resistance exercises are characterized by the performance of muscular contractions against some form of resistance, usually weights, and that has gained prominence, since this exercise modality contributes to the increase of mass and improvement of muscle strength (CAMAMARA, 2012).

Objective

Identify the best methods of training for walking for the elderly, providing healthy aging and better quality of life.

MATERIALS AND METHODS

A bibliographic survey was performed using a search strategy based on the descriptors: Aged, Aging, Quality of life, Sports Medicine. The abstracts of the retrieved articles were analyzed to verify compliance with the inclusion and exclusion criteria. Inclusion criteria were: articles published in Portuguese,

articles that contained in the title or in the abstract the descriptors presented and articles indexed in the following databases: Latin American and Caribbean Literature in Sciences and Health (LILACS), Scientific Electronic Library Online (SCIELO), evaluated in the period from May 10 to May 20, 2018. The following exclusion criteria were used: articles from non-indexed journals, publications of informative sites, theses, dissertations and articles that after evaluation and review did not meet the purposes of the research. Considering all bases, 22 articles were retrieved, of which 10 met the established selection criteria.

Literature review

March

The gait requires coordination of the trunk, limbs, muscles and joints, so that the gait can be described, the gait cycle is used, which begins when the heel of the reference member has contact with the ground and ends when the heel has contact (BIANCHI, 2015). In this case, it is important to note that the According to BIANCHI (2015), gait presents some variables such as step and step, step length and gait length, which can characterize and identify gait decline in aging. The Katz scale is used as a data collection instrument to evaluate the functional capacity to perform basic activities of daily living (GONÇALVES, 2010).

March of the elderly

In aging, the decrease in muscle strength is normative, being more evident after 60 years and with a higher incidence in females. Age-related muscle weakness affects the lower limbs in greater numbers, compromising muscle performance and some activities of daily living (ADLs) such as walking, maintaining balance, climbing stairs among other activities that are the first to be affected in aging by sarcopenia. Sarcopenia is one of the defining elements of the fragility syndrome according to the criteria of low muscular strength and low physical performance being associated with the risk of fractures, falls and functional disabilities (BEZ, 2014). The gait slows the elderly before the functional disability due to sarcopenia, it is understood that it is a result of the physiological aging and that the exposure of extrinsic factors can be aggravated and cumulative. Intrinsic (BEZ, 2014). The Performance Oriented Mobility Assessment (POMA) for the purpose of assessing the level of balance that involves the ability to maintain postural control under a variety of conditions by maintaining the position of the body under its support base, parked or mobile, as well as identifying and qualifying gait quality (BEZ, 2014). According to LIMA (2012) a functional evaluation can be constituted of some more cited items such as mobility, ADLs, in addition to evaluations of performance in the social and leisure environment. The prevention of falls in the elderly can be through exercise programs that aim to increase range of motion and muscle strength, improve the balance and gait of the elderly by regularly assessing their physical performance (LIMA, 2012). Still according to SÁ (2012), the variables found in exercise programs show significant gains for physical performance although they should be maintained until the end of the program, demonstrating a considerable reduction of falls in the elderly. Some of the effects of exercise programs in the elderly as a high-intensity muscle strengthening program consisting of concentric and eccentric exercises were confirmed by the

improvement index found in the speed of the tandem gait and functional mobility (FARIA 2003).

The influence of resistant and functional training on the runs of the elderly

The functional training consisting of walking exercises in plantar flexion, dorsiflexion, remain in alternation of one-way support, lateral gait, gait with increased hip flexion and Tandem gait, aims to minimize functional disability and can also collaborate in the reduction of emotional and social problems attributed to disability (LUSTOSA, 2010). The results of the program indicate an improvement in the capacity to perform.

Improvement of static unipodal balance by increasing

Support even if it does not prioritize the balance gain, flexibility of muscular force generates significant modifications in these variables reducing functional dependence. The results suggest that low-intensity exercises are capable of improving the physical capacity of the elderly and improving the balance making them more independent (LUSTOSA, 2010). The combination of different exercise models, such as strength training associated with aerobic exercises, balancing activities or exercises for coordination and stretching are considered effective in performance improvement and gait kinematics, high intensity functional exercises demonstrate greater effectiveness in gait performance when compared to a specific gait training with static balance training (BRANDALIZE, 2011). According to BRANDALIZE (2011) the high intensity exercises were superior for the development of gait speed and dynamic balance, and the combination of the two programs was efficient for the development of the static balance. It was observed that the stretching exercises could contribute to the performance of gait as evidenced by a higher gait speed, greater length of the steps and less time of support of the feet during the static position, thus suggesting greater stability and mobility for the elderly (BRANDALIZE, 2011). Resistance exercises are characterized by performing muscular contractions against some form of resistance, usually a program that uses weights, contribute to increase mass and improve muscular strength, aerobic capacity and balance, and can reduce or delay physical dependence and fragility (CAMARA, 2012). Loss of muscle mass is associated with aging and consequently disability, balance and gait disorders. Resistance exercises can be introduced into exercise programs that prevent sarcopenia and serve as a stimulus for muscle hypertrophy. These low to moderate intensity exercises suggest an increase in local total lean mass and an increase in isokinetic muscle strength (CÂMARA, 2012).

The CÂMARA points out (2012), the guidelines for resisted in the elderly should follow a frequency of at least 2 times a week with 8-10 exercises performed on nonconsecutive days using the largest muscle groups in both concentric and eccentric movements. Lower limb muscle groups should be prioritized as they are critical for maintaining balance, mobility, and preventing falls, while still improving the functional and motor performance of the elderly (CÂMARA, 2012). The objectives in gait training is to benefit the individual in the improvement of functional capacity, independence and safety with physical exercises and practice of the gait itself. Regular physical exercises provide the elderly with increased safety of daily physical activities, better balance, reduced risk of falls,

maintenance of function and independence that are directly associated with greater autonomy and quality of life (BIANCHI, 2015). According to PRADO (2010), in the elderly exercises with small weights collaborate in the improvement of muscle tone and preservation of the bone mass, important for the reduction in the fragility of the locomotor apparatus, reducing the probable deficits that may arise in the aging process. The anti - resistance exercises act by increasing muscle strength and mass, preventing osteoporosis, improving degenerative diseases, improving performance in aerobic activities, balancing, coordination, and self - esteem by reversing the cycle in the path of decreasing physical inactivity. Weight exercises performed with repeated loads with adequate intensity and tension are stimuli for the increase of bone mass, although there are preconceptions that its accomplishment associated with the lack of knowledge for its correct application prevented that the benefits of this modality could offer benefits health, social and labor reintegration (PRADO, 2010).

Conclusion

The intervention performed through an exercise program proved to be adequate for improving lower limb muscle strength, balance and flexibility. Regular resistance training is effective so that the effects of sarcopenia can be minimized or reversed and may lead to an increase in the sex hormones responsible for the maintenance of the musculoskeletal system and should not be performed for an extended period without rest. The data obtained can serve as a reference to guide professionals involved with health to use simple measures of functional capacity assessment, to predict physical disabilities guiding and optimizing the interventions of these professionals, be they restorative or rehabilitative. The results also show that the proposed program of functional exercises generates significant improvements in the performance of ADLs, but the greater the degree of dependence of the elderly, the lower their performance in the capacity of strength, with repercussions in general lower rates of physical fitness. The gait related to strength training, functional training and stretching exercises are found to have positive results in different gait parameters, on the other hand, it is understood that when the exercise program is interrupted the gains are lost, since gait performance in the elderly makes it an essential ability to perform ADLs, independence and autonomy. High-intensity muscle strengthening programs lead to significant gains in muscle strength and consequently in functional mobility, and in turn, low-intensity exercises are capable of improving the functional performance of the elderly despite small gains in strength. Such exercises can be performed independently by the elderly, although it is necessary to monitor health professionals at all stages of training in order to optimize the results obtained. It was concluded from the study that regular physical exercises have important benefits for gait and decrease of falls, as well as resistance exercises increase balance, functional mobility, physical and psychological dominance. The evaluation of the gait is fundamental for the development of adequate training programs according to the individual needs, so that they can achieve positive results in the quality and life expectancy of the elderly.

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