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Physical activity in the elderly with chronic noncommunicable diseases

La actividad física en el adulto mayor con enfermedades crónicas no transmisibles

Atividade física no adulto mais velho com doenças crónicas não transmissíveis

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ABSTRACT

As the population ages, the prevalence of chronic and disabling diseases increases. Cuba is one of the oldest countries in Latin America; it is expected to be one of the oldest in the world by 2050. The cost of diseases and their impact on functional status are higher in older patients than in younger people. The high prevalence of multiple no communicable diseases in older adults is a major challenge for health care providers.

The physical activity of elderlies as a healthy lifestyle is of great importance in society, since the practice of exercise and sport promotes the prevention, treatment and rehabilitation of no communicable diseases. The objective of this research is to increase the knowledge on the repercussion of aging changes in the functionality of elderly, which allows influencing their wellbeing through physical activity. A bibliographic review was carried out by means of electronic searches and in libraries of national and foreign medical journals indexed in SciELO, Imbiomed and Pubmed over a 10-year period in Spanish and English. Scientific articles and textbooks with information related to population aging, physical activity, physical activity and non-communicable diseases were consulted, and it can be concluded that therapeutic physical activity is a health professional act, which allows the individual to reach the highest possible functional capacity, achieving maximum autonomy, in order to enable greater integration into society.

Keywords: Physical activity; Elderly; Non-communicable diseases.

RESUMEN

En el entrenamiento deportivo, se realizan valoraciones sobre el rendimiento utilizando los resultados de pruebas en las que se miden la manifestación global del fenotipo de las infantas, sin entrar a discriminar la influencia que tiene cada uno de los elementos que en él intervienen, tal es el caso del judo femenino en Camagüey, ya que se desconoce la relación entre la ratio de los dedos y las capacidades motrices. Es por ello que, se persigue como objetivo determinar la relación de la ratio de los dedos de las manos con las capacidades motrices en las atletas de judo escolares de Camagüey. Se desarrolló una investigación transversal en la que se emplean los métodos teóricos que constituyen los procesos lógicos del pensamiento y empíricos fundamentalmente la medición, así como la estadística descriptiva mediante la medida de tendencia central media: media, desviación típica, máximo y mínimo; así como estadística inferencial, determinando si existe correlación entre la ratio y las capacidades, para lo que se aplica el coeficiente de correlación de Pearson. Se concluye que en las atletas estudiadas se encontró una relación inversa entre la ratio de la mano derecha y las capacidades motrices fuerza y rapidez, no siendo fuerte. La relación que se encuentra entre las capacidades y la ratio no es lineal.

Palabras clave: Actividad física; Adulto mayor; Enfermedades no transmisibles.

RESUMO

À medida que a população envelhece, a prevalência de doenças crónicas e deficiências aumenta. Cuba é um dos países mais antigos da América Latina; em 2050 espera-se que seja um dos mais antigos do mundo. O custo das doenças e o seu impacto no estado funcional são mais elevados em pacientes mais velhos do que em pessoas mais jovens. A elevada prevalência de múltiplas doenças não transmissíveis em adultos mais velhos é um grande desafio para os prestadores de cuidados de saúde. A atividade física dos adultos mais velhos como um estilo de vida saudável é de grande importância na sociedade, uma vez que a prática de exercício e esporte promove a prevenção, tratamento e reabilitação de doenças não transmissíveis. O objetivo desta investigação é aumentar o conhecimento sobre a repercussão das mudanças do envelhecimento na funcionalidade dos adultos mais velhos, o que permite influenciar o seu bem-estar através da atividade física. Foi realizada uma revisão bibliográfica através de pesquisas

electrónicas e em bibliotecas de revistas médicas nacionais e estrangeiras indexadas em SciELO, Imbiomed e Pubmed num horizonte de dez anos em língua espanhola e inglesa. Foram consultados artigos científicos e livros escolares com informações relacionadas com o envelhecimento da população e a atividade física; atividade física e doenças não transmissíveis. Pode-se concluir que a atividade física terapêutica é um ato profissional de saúde, que permite ao indivíduo atingir a maior capacidade funcional possível, alcançando a máxima autonomia, a fim de tornar possível uma melhor integração na sociedade.

Palavras-chave: Atividade física; Adulto mais velho; Doenças não transmissíveis.

INTRODUCTION

The change in life expectancy and lifestyle of the western population has led to the appearance and rise of new chronic diseases. In just a few years, health concerns in developed countries have changed. We have managed to obtain almost definitive control over most of the communicable diseases that plagued the world thanks to the appearance of vaccines, antibiotics and bio-sanitary advances.

The positive results achieved in the control of infectious diseases and the declining fertility trend are leading inexorably to the transition from a young to an older population structure. This demographic transition will occur more rapidly in developing countries than in developed countries.

As the population ages, the prevalence of chronic and disabling diseases increases. In general, diseases diagnosed in older adults are not curable and, if not treated properly and in a timely manner, tend to cause complications and sequelae that hinder the independence and autonomy of individuals J. *et al.*, (2005).

The cost of diseases and their impact on functional status are greater in older patients than in younger people. For example, the sequelae of cerebrovascular disease (CVD) and myocardial infarction often exert a greater effect on the functional status of older adults and their use of health services than their initial acute presentation (J. *et al*., 2005).

The high prevalence of multiple NCDs in older adults is a major challenge for health care providers. NCDs, whether single or multiple, are known to raise healthcare costs and some countries in the Region whose populations are aging rapidly, such as Chile and Brazil, are experiencing an increase in the burden of NCDs and disability J. *et al.,* (2005).

In Cuba, a rate of 8.7 deaths per 100 000 population was reported in 2016. Non-Communicable Diseases (NCDs), represent about 80% of total deaths (cardiovascular diseases are followed by malignant tumors, neurological diseases, chronic diseases of the lower respiratory tract and diabetes mellitus) Noa-Pelier, Vila-García, & de la Torre-Chávez, (2019).

One of the best-known effects of aging, coupled with low physical activity and a sedentary lifestyle, is the reduction in muscle strength, which is associated with a decrease in muscle function and mobility. Loss in muscle strength not only has physical or physiological effects on older adults, but also affects the psychological and social spheres of this population group Andersen, (2003).

Sarcopenia is a relatively recent term introduced by Rosenberg in 1988, and refers to the process by which there is a significant decline in muscle mass (the size and number of muscle fibers) that is two standard deviations below the mean of a healthy, young reference population. It is probably one of the characteristics of aging that involves a major change in body function and composition. Aging produces the most considerable decrease (in structure and function) in muscle mass of the entire life cycle, which is closely associated with loss of muscle strength, the tendency to be admitted to specialized institutions or nursing homes, increased weakness, falls and fractures, osteoporosis, decreased or loss of mobility, insufficient food intake and poor nutritional status, which ultimately leads to the presence of postural disorders, disability and physical dependence Andersen, (2003).

Perhaps the most interesting aspect in this context is whether this regressive phenomenon can be controlled or reversed by physical training. Contrary to the above, the protective effect of physical activity and in particular, strength work on muscle health in the elderly is well documented. High levels of physical activity cause muscle mass loss and strength loss to be reduced Andersen, (2003). In this context, one aspect that is particularly interesting is physical conditioning through strength training, which would undoubtedly have important repercussions in the field of health. The work of Brown, McCartney, & Sale, (1990), is a clear example of how the strength and body composition of people can be improved up to very advanced ages (over 90 years). Works such as those of Izquierdo et al. are a world reference in the field of strength work in elderly and clearly show how older people subjected to intense and systematized strength work can still, by increasing strength and muscle mass, be able to increase their muscle power even at an advanced age. Therefore, it seems evident that both muscular strength and its explosive manifestations (power) are necessary aspects when performing some of the daily tasks in this population group. Thus, it is logical to encourage the development of the most appropriate strategies for this group to improve strength and its various manifestations both at the level of the upper and lower limbs and/or trunk Andersen, (2003) Brown *et al.,* (1990).

In another order of ideas, the importance of muscular conditioning of the elderly has also been pointed out in a wide variety of situations. For example, the importance of increasing muscle mass and its effect on increasing basal metabolism, the reduction of body fat in the long term and a more abundant energy supply can be highlighted. It is also worth highlighting the protective effect that muscle mass has in relation to the appearance of osteoporosis and in the prevention of bone fractures by reducing the risk of falls. In the same way, the importance of increasing muscle mass in favoring glycemic control is currently recognized, due to the important consumption of glucose by muscle during muscular activities, which is interesting in view of the high number of elderly people suffering from type II diabetes. Similarly, trunk and upper limb strength are necessary for the performance of many daily activities, and are even recommended for rehabilitation programs for people with cardiovascular problems, albeit under supervision and once possible contraindications have been ruled out, since approaches exclusively focused on the execution of aerobic activities such as walking, running, cycling (on static or normal bicycles) or water aerobics activities, although necessary, have generally not focused on trunk and upper limb conditioning Andersen, (2003) Brown *et al.,* (1990).

Nowadays, the need for physical exercise as a means of prevention and treatment of multiple diseases is becoming more and more evident in the world, with the aim of providing an action that contributes to raise the quality of life of the practitioners and more so in the elderly, given the characteristics of the diseases associated with geriatrics and due to the great incidence that has the social development referred to the pre-elaborated diet, loaded with carbohydrates and the increase of adipose tissue in the body, due to the insufficient planning of time to exercise in a practical way the organism, aging is an inevitable fact.

The physical activity of older adults as a healthy way of life is of great importance in society, since the practice of exercise and sports promotes the prevention, treatment and rehabilitation of some diseases, which provides a better level of health. Most people have some idea of the benefits offered by the practice of physical activity; however, it is not known how it can be related to physical and social functionality, vitality to carry out daily tasks, and its relationship with nutrition.

The aim of this work is to increase knowledge on the repercussion of aging changes on the functionality of the elderly, in order to contribute to increase the quality of life and well-being of this important sector of the population, based on physical activity.

A bibliographic review was carried out by means of electronic searches and in libraries of national and foreign medical journals indexed in SciELO and Pubmed over a ten-year horizon. Scientific articles and textbooks with information related to population aging and physical activity, physical activity and no communicable diseases were consulted.

Pubmed: in this database a search was performed with the search terms "Chronic non communicable diseases AND physical activity". Subsequently, in additional filters, the search was limited as follows:

In publication dates, a time of ten years was established for obtaining articles, leaving 83 articles.

In text availability, the option of free full text available was selected, leaving 53 articles, from which 15 articles were selected that responded to the interests of our research.

SciELO: a search was carried out in this database. Using the terms "chronic non-communicable diseases" AND physical activity" without any filter, 13 articles were obtained, of which, due to the characteristics of the articles with our research; they were reduced to four articles.

Through a free search on the Internet, 12 PDF files were obtained. However, only two have been used in this research. The reasons for exclusion have been the little evidence that some of them showed or the lack of practical information for our research. Five books were consulted through the library of the University of Physical Culture and Sport Sciences, of which two were excluded because of the antiquity of the publication date and because they contained the same and more recent information in the selected books.

DEVELOPMENT

The nervous system itself is subdivided into the so-called central nervous system, which comprises the encephalon (meaning the cerebrum, cerebellum and brain stem) and the spinal cord. Subsequently we have the peripheral nervous system, within which all the extradural components are agglomerated, enumerating spinal nerves, cranial nerves (with the exception of the olfactory and optic nerves, which due to their embryological origin are considered part of the central nervous system) and together with them the peripheral receptors and dorsal root ganglia that by function work closely with each other. Some authors include as part of this system even the motor plate (motor neuron axon and all the muscle fibers it innervates). Finally, and as a third subdivision, stands the so-called autonomic nervous system Sequeira Quesada & Casares Fallas, (2018). The concept of quality of life refers to a dynamic process that has undergone profound modifications in the last three decades, evolving from a sociological conception to the current psychosocial perspective, in which both objective and subjective aspects of well-being or personal satisfaction with life are included, the latter being the ones that acquire greater relevance. The literature on gerontology shows how the social environment is important for psychosocial balance, which benefits the physical aspect of the older adult González-Rodríguez, (2015).

The aging of organs and systems, as well as the atypical and simultaneous presentation of diseases, makes necessary the application of a special assessment system in older adults, dynamic and structured, which allows the detection and quantification of the problems, needs and capacities of the older person in the clinical, functional, mental and social spheres, in order to elaborate, based on them, an interdisciplinary strategy of intervention and long-term follow-up to optimize resources, achieve the highest degree of independence and good quality of life, functional, mental and social to elaborate, based on them, an interdisciplinary strategy of intervention and long-term follow-up in order to optimize resources, achieve the highest degree of independence and a good quality of life Morejón-Márquez, Hernández-Gory, Pujol-Machín, & Falcon-Díaz, (2018).

In recent years, mortality due to CVD has increased in the country, due to the extension of life expectancy of Cubans, which is almost 80 years. In 2012, the mortality rate due to (CVD) was 79.4 per 100 thousand inhabitants, and in 2013 it was 80.7. It is also the second cause of death in the age group over 65 years and is the first cause of disability in the world (Piloto-González, Herrera-Miranda, Ramos-Aguila, Mujica-González, & Gutiérrez-Pérez (2015) Serra Valdés, Serra Ruíz, & Viera García, (2018). Multiple authors state that this disease increases in incidence after the age of 60, when atherosclerotic processes reach their maximum expression Escobar-Alfonso, Zaldivar-Garit, Rodríguez de la Rosa, & Cabrera-Cordovés, (2014).

Cerebrovascular disease (CVD) is currently one of the most important health problems, not only in Cuba, but also in developed countries. It is the second leading cause of death and permanent disability in adults worldwide. Cardiovascular diseases and cancer only surpass it, which determines its medical, economic and social relevance, given the cost of rehabilitation and care required by patients with significant neurological damage. It is the third cause of death in Cuba and in most developed countries. Its appearance and torpid evolution is closely related to the existence of diseases or risk factors such as diabetes mellitus, arterial hypertension (AHT), heart disease, previous encephalic vascular accidents, smoking and obesity. Cerebral ischemia is the cause of most strokes, both thrombotic and embolic; its consequences cause prostration and disability González & Campillo (2007). Cerebrovascular disease is associated with a long period of work

incapacity, high degree of disability and notable difficulty in social and occupational readaptation. It is the most fatal and disabling cause of neurological diseases Piloto-González *et al.,* (2015).

Diabetes mellitus is one of the diseases with the greatest social and health impact, not only because of its high frequency, but above all, because of the consequences of the chronic complications that this disease entails, the important role it plays as a risk factor for atherosclerosis and cardiovascular pathology. Ninety percent of diabetics have type 2 diabetes and its prevalence is increasing throughout the western world because of the aging of the population and the increase in obesity and sedentary life styles Bosch, Alfonso, & Bermejo, (2002). In the USA, it is estimated that deaths in patients with diabetes account for 15-20 % of all deaths in the population over 25 years of age, and these figures double in patients over 40 years of age. In the case of genetically predisposed individuals, obesity and a sedentary lifestyle lead to insulin resistance, a condition that precedes type 2 diabetes and is often accompanied by other cardiovascular risk factors such as dyslipidemia, hypertension and prothrombotic factors. The frequent association of these risk factors in the same individual is known as the metabolic syndrome. Clinical evidence of insulin resistance includes abdominal obesity, mild hypertension, mild elevation of triglycerides (150-250 mg/dl), decreased HDL cholesterol (HDLc), mild elevation of LDL cholesterol (LDLc) (130-159 mg/dl) and, in some cases, mild hyperglycemia (110-126 mg/dl).

Recognition of this syndrome is fundamental for the primary prevention of cardiovascular disease, which is the cause of death in two thirds of diabetic patients Bosch *et al.,* (2002). Diabetic patients have a greater probability of presenting an acute coronary syndrome or even sudden death in a silent manner. Therefore, it is essential to detect the initial onset of cardiovascular disease in these patients. One of the main reasons for the poor prognosis of patients with diabetes and ischemic heart disease is the greater prevalence of ventricular dysfunction and heart failure, which has come to be called diabetic cardiomyopathy. Diabetes also increases the risk of carotid atherosclerosis; about 13 % of diabetic patients over 65 years of age have suffered a cardiovascular accident. Mortality from stroke is almost three times higher among diabetic patients Bosch *et., al* (2002).

Neurodegenerative diseases (NDDs) include numerous processes, which are acquiring great prominence due to the aging of the population, given their high prevalence and social cost. We define neurodegenerative diseases as those pathologies, hereditary or acquired, in which there is a progressive dysfunction of the Central Nervous System (CNS). According to the National Institute of Neurological Disorder and Stroke Study (NINDSS) there are more than 600 NDDs among which stand out for their high prevalence and severity, Alzheimer's Disease (AD), Parkinson's Disease (PD), Huntington's Disease (HD) and Amyotrophic Lateral Sclerosis (ALS) and Multiple Sclerosis (MS) (Ministerio de Sanidad, 2016).

Most of these diseases are characterized by a common pathogenic mechanism consisting of aggregation and accumulation of misfolded proteins that are deposited in the form of intracellular or extracellular aggregates and lead to cell death. Many neurodegenerative diseases are age-related, so the progressive aging of the population in developed countries means an increase in the prevalence of this type of pathologies (Ministerio de Sanidad, 2016).

Two of the chronic diseases that have a high impact on the population are Diabetes Mellitus and Alzheimer's disease (AD) (Romano-Martín, Nissen-María, Del Huerto Paredes, & Parquet, (2003). AD is defined as "diffuse cerebral atrophy, generally associated with dementia, which usually occurs in senile age".

On the other hand, according to the WHO, AD is defined as a primary degenerative brain disease of unknown etiology, with characteristic neuropathological and neurochemical symptoms. It is a neurological disorder that causes the death of nerve cells in the brain. Alzheimer's disease usually begins gradually and its early symptoms may be attributed to old age or common forgetfulness. As the disease progresses, cognitive abilities deteriorate, including the ability to make decisions and carry out daily tasks, and personality changes and problematic behaviors may emerge. In its advanced stages, Alzheimer's disease leads to dementia and eventually to death. Initially, AD was considered a chronic disease that was difficult to prevent, since it was mainly associated with age and genetic load. Over the years, new studies determined that although it was true that there was a genetic and age risk, there was also an important contribution of other factors related to unhealthy lifestyles.

Parkinson's disease (PD) is the second most prevalent neurodegenerative disorder today. Non-motor symptoms of PD include cognitive-behavioral disturbances, sleep disorders, sensory symptoms (anosmia and pain) and autonomic symptoms (urogenital dysfunction, constipation and orthostatic hypotension). Non-motor symptoms of PD are the most prevalent and disabling long-term problems of the disease. Several investigations have suggested a link between hypertension and Parkinson's disease Pérez, (2017). In 2008, one of the first studies linking Parkinson's disease with diabetes mellitus appeared in the literature Driver *et al.,* (2008). In hypertensive Parkinsonian patients, it was found that they have more rigidity and a more aggressive evolution, compared to non-hypertensive patients". Arterial hypertension is present in five out of ten people with Parkinson's disease (48 %). Another situation that is important to take into account is that 40 % of hypertensives with Parkinson's disease present high blood pressure also during night rest Driver *et al.,* (2008); Martín, Peña, & Gutiérrez, (2003); Ng, Chander, Tan, & Kandiah, (2015); Pérez, (2017); Yang *et al.,* (2017). Amyotrophic lateral sclerosis (ALS), along with its variants (primary lateral sclerosis, progressive muscular atrophy and progressive bulbar palsy), is the most common adult motor neuron disease. It is a disease of the central nervous system, characterized by progressive degeneration of motor neurons in the cerebral cortex (upper motor neurons), brainstem and spinal cord (lower motor neurons). The consequence is muscle weakness that progresses to paralysis, spreading from one body region to another. It threatens motor autonomy, oral communication, swallowing and breathing; characteristically the disease does not affect the ocular, sphincteric musculature or sensory fibers. The patient needs more and more help to perform activities of daily living, becoming more dependent and usually dies from respiratory failure Pérez, (2017); Pfeiffer, (2008); Sáez-Francàs *et al.,* (2016); Vásquez-Celaya, Tamariz-Rodríguez, Gutiérrez-Pérez, & Márquez, (2019).

ALS is the third neurodegenerative disease in incidence, after dementia and Parkinson's disease. The average age of onset is between 60-69 years, with a peak incidence at 70-75 years and a decline in incidence at higher ages (unlike what happens with Parkinson's disease or Alzheimer's type dementia) Pérez, (2017).

Physical activity in the elderly

Physical activity is defined as any muscular activity that produces energy expenditure, such as walking, riding a bicycle, climbing stairs, performing household activities, exercising, among others. Low physical activity increases the risk of mortality in adults while regular physical activity reduces the risk of ischemic heart disease, shock, diabetes, breast and colon cancer. Physical activity constitutes a key determinant for the prevention of obesity; Tarqui Mamani, (2017). This author, like Shephard, (1995), includes within the concept physical activity daily practices, such as walking, work and domestic activities, as well as other more organized and repetitive ones, such as physical exercise, and activities of a competitive nature such as sports. This breadth and comprehensiveness of physical activity make it a concept more closely related to the promotion of active lifestyles Devís, (2000); Shephard, (1995).

According to the American College of Sports Medicine and the American Heart Association, older adults should engage in at least 30 minutes of moderate to vigorous physical activity daily, consisting of recreational or leisure activities, commuting, or occupational activities (if still working), among others. The benefits of regular physical activity for the elderly can be very relevant in avoiding, minimizing or reversing many physical, psychological and social problems that accompany the aging process. Aerobic exercise is widely recommended to prevent and treat many chronic diseases related to aging. Those older adults who are physically active have a lower probability of experiencing some functional limitation compared to those who are sedentary Mejia, (2017).

The physical qualities or components associated with physical fitness have an impact on the improvement and development of physical capacities of people for motor performance; however, there is a lack of uniformity when it comes to integrating the factors involved in physical fitness. The basic or conditional physical qualities are also known as organic-functional, since they depend on the work of muscular contraction and the energy necessary for this work Pate, (1988).

Benefits of physical activity in the older adult Morejón-Márquez *et al.,* (2018).

Benefits of balance

- Improves postural reactions in movement.
- Reduces the risk of falls.
- Improves static posture.
- Increases the safety of the elderly to perform activities of daily living.

Benefits of stretching

- Increased flexibility.
- Improved joint mobility.
- Provides greater freedom of movement in activities of daily living.
- Provides a relaxing effect.

- Helps prevent muscle, tendon or ligament injuries.

Strengthening benefits

- Improves walking speed.
- Improves balance.
- Increases the level of spontaneous physical activity.
- Maintains and/or increases bone density.
- Helps in the control of diabetes, arthritis, vascular diseases, etc.
- Improves digestion.
- Reduces depression.
- Strengthens muscles.
- Prevents falls.
- Improves reflexes.
- Maintains body weight.
- Improves joint mobility.

Benefits of warming up

- Increases body temperature.
- Increases heart rate.
- Increases the volume of blood reaching the tissues.
- Increases the metabolic level.
- Increases gas exchange.
- Increases the speed of nerve impulse transmission.
- Facilitates muscle recovery after contraction.
- Decreases muscle tension.
- Improves joint function and joint lubrication.
- Psychologically prepares the elderly for the practice of some physical activity.

It is important for the older adult to know what types of activities can be performed during the third age. In general, various types of exercises can be performed, but be careful with the intensity with which they are carried out and avoid permanent positions, whether standing, sitting or lying down. It is also important to monitor exercises involving the head and trunk, and to avoid rapid exercises and sudden movements, as these are frequently associated with injuries, since the older the person is, the greater

the risk of bone decalcification increases, resulting in a greater risk of injury if he or she does not exercise as much as his or her condition allows.

The basic recommendations for exercise prescription (considering type, intensity, duration, frequency and progression) are the following: Townsend, (2015); WHO, (2019).

Type of activity. Any activity that requires the participation of large muscle groups, can be maintained for a more or less prolonged period, and is rhythmic and/or aerobic in nature. Some examples are walking or marching, jogging (running at a slow pace), swimming, stationary cycling, or participating in different games or sports adapted to their age.

Exercise intensity. Physical activity equivalent to 40-60 % of maximal oxygen consumption (VO2 max), or 40-60 % of maximum heart rate. It is worth mentioning that a lower intensity exercise can produce important health benefits, and even mean an increase in physical condition in some individuals (for example, sedentary or unfit people).

Duration of exercise. From five to 30 minutes of continuous or intermittent aerobic activity. In sedentary individuals, multiple, short-duration sessions (5-10 minutes, approximately).

Frequency of exercise. 3 to 5 days per week.

Rate of progression. In most cases, the effect of improved fitness allows individuals to increase the total amount of work per session. In continuous work, it can be accomplished by increasing the duration of exercise. The most significant effects can be seen during the first 6 to 8 weeks of the program. The exercise prescription can be adjusted at the same time as the fitness effect occurs, and the adjustment will depend on the characteristics of the individual and the results of a stress test and/or performance during exercise sessions.

The fundamental objective of our medicine is prevention and health promotion, in addition to rehabilitation to improve the quality of life of chronic conditions. It is a priority to achieve a good level of health in the elderly population, because having a population with quality of life and excellent medical care is a strategic pillar of the Cuban health system.

CONCLUSSIONS

The pandemic of chronic vascular diseases constitutes a new paradigm and challenge, the implementation of integrated prevention strategies where physical activity plays an important role is a necessity. Physical activity facilitates the elderly to reach their maximum possible functional capacity, autonomy and integration into society.

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