

Ejercicios físicos alternativos para mejorar el equilibrio en adultos mayores

Alternative physical exercises to improve the balance in older adults

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RESUMEN

La presente investigación tiene como objetivo elaborar ejercicios físicos alternativos, para mejorar el equilibrio en adultos mayores del Círculo de Abuelos Ernesto Guevara del Combinado Deportivo San Justo. Se seleccionó como muestra a 26 adultos mayores. Se utilizaron como métodos del nivel teórico el análisis-síntesis, análisis de documentos y el sistémico-estructural-funcional. Del nivel empírico la observación, pre-experimento y encuestas. Del nivel estadístico matemático el cálculo porcentual. Los resultados obtenidos demostraron que el 82,65% de los adultos mayores mejoraron el equilibrio, lo que corrobora la factibilidad de los ejercicios físicos alternativos para su introducción en la práctica social.

Palabras claves: Adulto mayor; Ejercicios físicos alternativos; Equilibrio

ABSTRACT

The objective of this research is to develop alternative physical exercises to improve balance in older adults of the Ernesto Guevara Grandparents Circle of the San Justo Sports Complex. Twenty-six older adults were selected as a sample. The analysis-synthesis, document analysis and systemic-structural-functional methods were used as theoretical methods. From the empirical level observation,

pre-experiment and surveys. From the mathematical statistical level the percentage calculation. The results obtained showed that 82.65% of older adults improved their balance, which corroborates the feasibility of alternative physical exercises for their introduction into social practice.

Key words: Older adult; Alternative physical exercises; Balance

INTRODUCTION

The aging process is the fortunate circumstance of accumulating many years of life. It is a phase of the continuous intellectual, emotional and psychological growth of the individual. Many have been the denominations related to this process: old age, elderly people, grandparents, third age and elderly, the latter coined in 1994 by the World Health Organization (WHO).

Each time, a greater number of people are in this stage, generally with good vitality and productivity. Fariñas Rodríguez, G. (2016), states that in 2010, 17% of the Cuban population was 60 years old and over. In just five decades these figures grew up to 19.4%, and the certainty that this number will continue to rise with an approximate life expectancy of 78 years.

The detailed attention to the elderly, involves different determining entities of the country to face this social phenomenon with adequate preparation, not only of the person who arrives at that age, but also of the families. The Ministry of Public Health in coordination with the National Institute of Sports Physical Education and Recreation, constitute in the communities the main scenario for the diagnosis and biological, psychological, social evaluation, educational work, preventive and rehabilitation for the elderly. This happens, taking into account that they experience multiple changes and limitations, mainly in the locomotor system, where joint deformities, osteoporosis, muscles atrophy, ligaments and cartilage lose resistance and elasticity, loss of joint mobility, step is made short and slower, which negatively affects the maintenance of balance (Sánchez Benavides, X. 2014).

The conservation of balance is one of the most important requirements for a satisfactory old age. Their disorders are a frequent problem, causing limitation of activities and loss of independent wandering, which is a subject of great interest due to its high prevalence and vulnerability to falls, having great impact on the quality of

life and sometimes causing injuries that lead to disability or death (Leyva Salerno, BM 2008).

The diagnosis made to the implementation of the Senior Adult program in the Sports Complex of San Justo Community, showed as insufficiency that there is an inadequate implementation of work with balance in the classes with the older adult, as well as a poor use of auxiliary means to work the balance in the classes.

For this reason the research aims to develop alternative physical exercises to improve balance in older adults of the "Ernesto Guevara" Grandparents Circle of the San Justo Sports Complex.

DEVELOPMENT

For the development of this research, the Circle of Grandparents "Ernesto Guevara", belonging to the Sport Center San Justo, of the Guantánamo municipality, was selected. This has an enrollment of 26 grandparents, of them 18 women and 8 men. These are between 60 and 84 years of age. In addition, 7 of 10 Physical Culture teachers were selected.

The analysis-synthesis methods were used at the theoretical level to approach the theoretical foundations on work with balance in the elderly. It is also the analysis of documents that allowed gathering necessary information on the particularities of the Senior Adult Program and work with the balance in this age group. Similarly the systemic-structural-functional to develop the set of alternative physical exercises to improve balance in older adults.

From the empirical level, observation was used to assess how Physical Culture teachers implement work with balance in their classes. The pre-experiment allowed to assess the effectiveness of the set of alternative physical exercises to improve balance. The survey allowed to know the level of satisfaction of the elderly with the set of alternative physical exercises. The percentage calculation was used in the analysis and interpretation of the results of the empirical instruments used in the investigation.

Aging is the biological process that involves gradual and unavoidable changes that occur despite the state of health, the active lifestyle and the lack of diseases. In this life cycle, the elderly experience feelings of handicap or disability, chronic illnesses

and the probability of death, which in many cases could be assessed as threatening or harmful. That is why it is necessary to increase social support networks, as a resource for people to optimize their health and well-being states (Sariol Jay, L. 2009).

Berdayes Pérez, A. (2006) states that the support networks created by the State should not be seen as a sum of isolated resources, but should be considered as a system, where institutions, such as the National Sports Institute of Physical Education and Recreation and the Ministry of Public Health, associated with a strong interaction with the family, help older adults stay active, motivated and with a lifestyle that conditions good mental and physical health.

Professionals of Physical Culture, through the prioritized programs of the Community Physical Activity, develop the educational, preventive, prophylactic and rehabilitation work for the elderly, counteracting the onslaught of chronic non-communicable diseases and their risk factors, as well as the limitations that arise in the locomotor system, which usually cause disability or dependence on means for ambulation. Gámez Matos, Y. (2012).

In this stage, the musculoskeletal system undergoes numerous transformations that have an important implication in the body segments that participate in the balance, and therefore in the execution of the march, which becomes slower, the step is shortened and the width, swing time / support time is reduced, height decreases, there is less rotation of hips and knees. (Orozco Roselló, C. 2012).

Many are the authors that define equilibrium, classifying it in static and dynamic equilibrium. The authors of this research assume the point raised by Debra J. Rose (2014), that the static balance refers to the orientation of the head with respect to the ground and depends on the force of gravity, projecting the center of gravity of the body within the area delimited by the external contours of the feet, as well as, the dynamic balance is related to abrupt and sudden movements, such as starting the march or getting up quickly. During this movement, the center of gravity and the base of support are constantly modified.

Other authors, such as Fonseca, A. and Rapetti, L. (2003), studied different aspects related to balance in the elderly and based on the application of the Tinetti Test and the Test "get up and walk", improving balance, postural control and the risk of falls.

Within the Community Physical Activity Program, which governs work with the Elderly, the authors assume elements of the research conducted by Sánchez Benavides, X. (2014) and Gámez Matos, Y. (2012).

In addition, it uses the Romberg Test, proposed by the Authors staff (2006), which allows the establishment of indicators to assess balance alterations and make the exercises more complex depending on the possibilities of the elderly.

Simple Romberg: the examinee should be stopped with the feet together, arms in front, fingers of the hands separated and eyes closed. It will be observed if there is body shock, tremor in the eyelids or fingers of the hands. If it occurs, there is imbalance.

Romberg complex: has 2 variants.

First variant.

- Arms extended laterally, make the tip of one foot coincide with the heel of the other.
- The same as in Romberg simple, the eyes can be closed or not.

Second variant.

- Leaning on one foot, the tip of the other, touches the heel of the foot supported. Stay in that position for 29 seconds.

Diagnosis of the current state of work with balance in the elderly of the San Justo Sports Complex.

In order to obtain more information for the investigation, 7 observations were made to classes of the Elderly, for 100%. Of these, 6 that represent 85.7%, denote insufficient mastery of work with balance and functional tests are not used to evaluate it. Only in 1 class, for 14.2%, reference was made to physical capacity, without working it. The exercises that are done to the grandparents, implicitly have the abilities of coordination, agility, resistance, but not the balance.

In 5 classes, for 71.4%, the associated pathologies of the grandparents are not taken into account, which can be limiting for the proper performance of the

exercises, being poor the use of auxiliary means (chairs, benches, railings, walls). 100% state that the Senior Adult Program refers to work with balance, but does not issue methodological indications.

In order to evaluate the balance of all these elderly people, an initial diagnosis was made, using the Romberg Test as a basis. The following indicators were used:

Static equilibrium Indicator	Evaluation
Firm in the position	Good
Flashing and swinging trunk and / or arms.	Regular
Need for support	Bad

Of a total of 26 grandparents, 3 to 11.5%, were evaluated as good, because they managed to keep the position firm; 15, which represent 57.6%, were evaluated as regular, predominantly in them the swaying of the trunk and the arms; and 8 grandparents, for 30.7%, were evaluated badly, because they needed means to support themselves.

1. Dynamic equilibrium.

Indicator	Evaluation
Straight trunk	Good
Moderate trunk deviation	Regular
Marked deviation, needs support	Bad

Of a total of 26 grandparents, 11 for 42.3% were evaluated as regular with a moderate trunk deviation, while 15, for 57.7% were evaluated as bad, due to marked deviation with need of support.

Proposal of alternative physical exercises:

General objective:

Perform alternative physical exercises in 20 seconds to improve balance in older adults.

Methodological steps:

1. Motivation and explanation of the exercise (physiological influence of the exercise).
2. Organization.
3. Delivery of materials (if required).
4. Demonstration.
5. Initial practice of the exercise.
6. Development.
7. Evaluation.

I. **Static equilibrium.**

Objective: to execute alternative physical exercises without implements, to improve the static balance in older adults.

Exercise 1. Embraced.

Initial position: standing, legs joined, arms crossed by the wrist to the chest. Hold the position for 20 seconds looking at a fixed point and then 20 seconds with your eyes closed.

Methodological indications:

- ✓ Take into account auxiliary means.
- ✓ Hold the position with the gaze at a fixed point, and then with the eyes closed for 20 seconds.
- ✓ Keep the trunk erect and relaxed.

Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, stopwatch, auxiliary means (chairs, benches, railings, walls).

Exercise 2. Legs in the form of steps.

Initial position: standing, legs in the form of steps, arms crossed by the wrist to the chest. Hold the position for 20 seconds looking at a fixed point, and then 20 seconds with your eyes closed.

Methodological indications:

- ✓ Body weight should be distributed in the midline of the body.
- ✓ Hold the position with the gaze at a fixed point and then with the eyes closed for 20 seconds.
- ✓ Keep the trunk erect and relaxed.
- ✓ Between one foot and another, there must be a prudent distance of one foot.
- ✓ Take into account auxiliary means.
- ✓ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, stopwatch, auxiliary means (chairs, benches, railings, walls).

Exercise 3. Pointer heel.

Initial position: standing, one foot forward making match heel and tip of the other foot, arms crossed by the wrist to the chest. Hold the position for 20 seconds looking at a fixed point, and then 20 seconds with the eyes closed.

Methodological indications

- ✓ Body weight should be distributed in the midline of the body.
- ✓ Hold the position for 20 seconds looking at a fixed point and then 20 seconds with the eyes closed.
- ✓ Keep the trunk erect and relaxed.
- ✓ Match the toe of the back foot with the heel of the forward foot.
- ✓ Take into account auxiliary means
- ✓ Stop the exercise if necessary. At the end, perform muscle relaxation exercises.

Means: teacher's voice, stopwatch, auxiliary means (chairs, benches, railings, walls).

Exercise 4. The lame.

Initial position: standing, bending one leg and leaning on one foot, arms crossed by the wrist to the chest. Hold the position for 20 seconds looking at a fixed point, and then 20 seconds with the eyes closed.

Methodological indications.

- ☐ The weight of the body rests on the supported leg.

- ☐ Try to hold the position for 20 seconds looking at a fixed point and then 20 seconds with the eyes closed.
- ☐ Take into account auxiliary means
- ☐ Keep the trunk erect and relaxed.
- ☐ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, stopwatch, auxiliary means (chairs, benches, railings, walls).

II. Dynamic equilibrium:

Objective: to execute alternative physical exercises with implements, to improve the dynamic balance in older adults.

Exercise 5. Move the ball with your the feet.

Initial position: standing, arms down, with the right foot on a medium-sized ball. Move the ball in different directions (forward, back, diagonal, circles) while maintaining balance for 20 seconds. Alternating movement with closed eyes.

Methodological indications

- ✓ Perform the exercise first with the right foot and then the left. Each action will be 20 seconds looking at a fixed point.
- ✓ Do it with the eyes closed for 20 seconds.
- ✓ Take into account auxiliary means
- ✓ Keep the trunk erect and arms relaxed.
- ✓ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: voice of the teacher, chronometer and medium ball, auxiliary means (chairs, benches, railings, walls).

Exercise 6. One step forward.

Initial position: standing, with eyes open, take a step forward holding a ball at chest height. Then take the ball to the height of the head and take a step back. Perform it in 20 seconds. Repeat the action with closed eyes.

Methodological indications

- ✓ Try to perform the action for 20 seconds looking at a fixed point and then 20 seconds with the eyes closed.
- ✓ Take into account auxiliary means.
- ✓ Keep the trunk erect.
- ✓ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, stopwatch, auxiliary means (chairs, benches, railings, walls).

Exercise 7. Walk and wait.

Initial position: standing, with a ball held in the hands towards the front. At the command voice start walking in a straight line 8 steps; first execute 4 steps with open eyes, and then 4 steps with closed eyes. To the loud voice, turn and return to the place in the same way.

Each action for 20 seconds.

Methodological indications

- ✓ Stay relaxed.
- ✓ Try to keep the route marked.
- ✓ Take into account auxiliary means.
- ✓ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, chalk, ball, chronometer, auxiliary means (chairs, benches, railings, walls).

Exercise 8. On the move, turn your head.

Initial position: standing, arms down.

At the command voice, walk 4 steps on a firm surface, with your head up and facing forward. Turn your head slowly to the right. When you return, turn your head to the left.

Methodological indications

- ✓ Keep the trunk erect and arms relaxed.
- ✓ Try to keep the route marked.
- ✓ When you turn your head you must do it in 4 times.

- ✓ Do not stop the march.
- ✓ Take into account auxiliary means
- ✓ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, chalk, chronometer, auxiliary means (chairs, benches, railings, walls).

Exercise 9. Walk in a straight line.

Initial position: standing, with an object held with hands facing forward.

At the command voice start walking in a straight line, 8 steps with eyes open and 4 with closed eyes.

Methodological indications

- ✓ Arms extended in front holding the ball by the hands.
- ✓ Try to keep the route marked.
- ✓ Take into account auxiliary means.
- ✓ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, chalk, chronometer, auxiliary means (chairs, benches, railings, walls).

Exercise 10. I play the stream.

Two lines are marked approximately between 1.80 and 2 meters, with a separation of the other one of 80 centimeters, simulating a "V" that will represent a stream. Four circles are drawn inside the marked lines that will be the rocks, among them balls of different sizes will be placed, which they will have to remove with their feet while crossing the rock-in-rock stream.

Methodological indications

- ✓ Stay relaxed.
- ✓ From the marked circle that will be the rock, take out with one foot the nearest ball. They must not leave the circle
- ✓ Try to complete the marked route in 20 seconds
- ✓ Take into account auxiliary means

- ✓ Stop the exercise if necessary. Upon completion, perform muscle relaxation exercises.

Means: teacher's voice, chalk, stopwatch, balls of different sizes, auxiliary means (chairs, benches, railings, walls).

Security measures for carrying out the exercises:

- The area must be clear of dirt and architectural barriers.
- They must be run on regular ground.
- The environment must be quiet and with the area delimited.
- Older adults should be aware of where they should be supported in case of imbalance.
- Use of auxiliary means (chairs, benches, walls, walls).
- Stop the exercises in case of discomfort or sudden disability.

Results obtained:

From the exercises that arise in the research conducted by Sánchez Benavides, X. (2014) and Gámez Matos, Y. (2012), the authors adapt the exercises taking into account the characteristics of the community, the land, the pathologies presented by older adults, where joint deformities caused by arthrosis predominate. It is helped by means such as chairs, walls, railings, benches, walls and canes. In addition, the time of 29 seconds, which establishes the Romberg Test, is modified in 20 seconds. The proposed exercises were carried out during a period of 7 months, 3 times a week. Exercises were developed to evaluate the static and dynamic equilibrium, five in each case, with their indicators. When making the final diagnosis, it was determined:

In the exercises for static equilibrium, out of a total of 26 grandparents, 11 for 42.3% were evaluated as good, because they managed to keep the position firm; 12 for 46.1% were evaluated as regular, with trunk swaying predominating; and 3 for 11.5% were evaluated badly, because they needed means to support themselves.

With respect to the initial diagnosis, 23 grandparents, representing 88.4%, improved the established indicators when evaluating the static equilibrium in 20 seconds.

In the exercises for dynamic equilibrium, of 26 grandparents, 9 representing 34.6% were evaluated as good, because they managed to keep the position firm; 11 for

42.3% were evaluated as regular, with trunk swaying predominating; only 6 grandparents were evaluated as bad, for 23.07%, because they needed means to support themselves.

Taking into account the results of the initial diagnosis, it is found that 20 grandparents, representing 76.9%, improved the established indicators when evaluating the dynamic equilibrium in 20 seconds.

In general, the results obtained when evaluating both the static and dynamic equilibrium, showed that 82.65% of the adults of the Circle of Grandparents "Ernesto Guevara" of the Sport Complex in San Justo Community improved their equilibrium.

To measure the level of satisfaction with the exercises, a survey was applied, where 91% of the grandparents stated that it is absolutely necessary the presence of auxiliary means in the area to feel safe when performing the exercises and reduce the risk of falls. 85% feel safer when walking, going up or down stairs and picking up objects.

All the grandparents agree on the need to perform the exercises in all classes and propose improvement in the coordination of movements and stability of the march

CONCLUSIONS

The diagnosis of the current state of work with the balance in the elderly of the Sport Complex of San Justo Community evidenced its inadequate implementation in the classes and the poor use of auxiliary means, demonstrating the pertinence of the present investigation.

The alternative physical exercises developed constitute for the professionals of the Physical Culture, a tool to be used within the classes with the older adult to improve the balance, taking into account the individual particularities.

The results obtained showed that 82.65% of the adults of Grandparents Circle "Ernesto Guevara" of the Sport Complex of San Justo Community, improved the balance, which corroborates the feasibility of alternative physical exercises for their introduction into social practice.

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