

## RESULTS OF THE B-LEARNING PROGRAM OF PHYSICAL ACTIVITY AT HOME IN SENIOR ADULTS

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**Abstract:** Optimal functionality allows the elderly to maintain their independence, so an efficient exercise program is essential to promote the well-being and active aging of the elderly. Objective: To evaluate the short-term functional effects of the B learning program in older adults. Materials and methods: Quantitative approach, with the use of the Katz test, the Tinetti scale, Senior fitness test and medical records, with an explanatory scope and pre-experimental design. The sample was 50 older adults members of the “FisioAge” gym. Results: according to the Katz Test, 100% of the sample has an independent functional capacity; in the Tinetti Test the risk of falling is medium in 28% and low in 66% and the Senior fitness test indicates that 44% have a strength relationship in the upper body between regular (38%) and poor (6% ) and in the lower body of 44% between fair (40%) and bad (4%), in terms of gait, 34% had a final evaluation between fair (28%) and bad (6%). Conclusion: A B learning program with home care gives older adults the facility to improve their functional condition and quality of life.

**Keywords:** Functional Capacity, Older Adults, B learning Program, Home Care, Quality of Life.

## INTRODUCTION

Functional deficit in older adults arises as a common consequence of the aging process and can lead to unfavorable health outcomes, due to the inability to perform instrumental activities or activities of daily living independently (1). The severity of such a deficit is determined by “physical impairments caused by underlying medical conditions and by external factors such as social support, financial support, and the environment” (2).

Functional capacity involves three fields of functionality “biological, psychological (cognitive and affective) and social” (3). In this sense, the functional capacity is directly

related to the habit that a person has to exercise and maintain a good physical state; however, over time individuals become sedentary and begin to present what is known as functional deficit (4).

Currently, it is estimated that 46% of older people have disabilities and more than 250 million older adults experience some moderate to severe functional deficit (5). The functional deficit presented by sedentary older adults is increasingly common and notorious, about 25% over 65 years of age require help for activities of daily living” (6).

The Ministry of Public Health indicates that 23.3% of this Ecuadorian population suffers from some level of functional deficit, with a 15% prevalence of disability (7). This situation urges countries to further review and explore the complementarities between the discourses on aging and functional deficits (8).

The challenges related to functional capacity are focused on strategic programs aimed at increasing physical activity in older adults (9). The exercise prescription for this age group must meet the pertinent and effective criteria, which include exercises for balance, coordination, and strengthening, among others (6).

Physical activity and exercise at home reappears as a means and an opportunity for people who have difficulty moving to a care center to stay physically and mentally healthy, or gradually start the culture of exercise (10). Consider an activity plan that is a home physical activity B learning program for older adults with functional deficits, meets the most relevant and effective criteria for the prescription of exercise in this age group (6).

An in-depth and systematic approach to the relationship between physical activity at home and functional deficit can help significantly in the development and minimization of complications in older adults (11). Supported in a b-learning or blended

learning environment, focused on solitude, reduced interactivity and physical inactivity, with significant results from physical exercise at home (12).

The present study has as essential objective, to evaluate the short-term functional effects of the b-learning program of physical activity at home in older adults, as an alternative for parallel communication, considering the segmentation of the population, the state of their physical mobility and functional capacity; as well as the measurement of the post-application results of the proposed program.

## **MATERIALS AND METHODS**

The present study had a quantitative approach, explanatory scope and quasi-experimental research design, since it sought to study cause and effect relationships in situations where it is not possible to randomly assign participants, evaluate them before starting the program and measure changes after the intervention (13), (14).

The program admitted the application of therapeutic exercises of balance, coordination, flexibility and strengthening, developed in home care and through the implementation of the B-learning modality.

The population sample consisted of 50 older adults of both genders and between the ages of 65 and 90, members of the "FisioAge" gym located in the city of Guayaquil, which provides services for the elderly, who responded to the needs of the investigative process.

## **INSTRUMENTS AND PROTOCOLS**

The Senior Fitness Test allowed evaluating the physical condition of older adults in relation to strength, flexibility, agility and aerobic resistance of the extremities (15).

The Tinetti Test gave way to the clinical evaluation of the balance and gait of the study

subjects, assessing the stability and movement capacity of the individual (16), it is scored based on the ability to maintain balance and perform the movements of safely and efficiently (17). The applied weighting was 0 for the cases that did not achieve the tasks and it is considered as an inappropriate gait pattern, 1 when the tasks are achieved, but with effort and it is considered as an adaptive condition and 2, when the tasks are carried out without problems, so it is considered a normal condition (18).

Similarly, the Katz Test allowed the evaluation of the functional capacity of the study group, based on their basic activities of daily living (19). The test assigns a weight of 0 to the independence or 1 to the dependence of the individual in each activity, which makes it possible to assess their degree of autonomy (20).

Likewise, it was necessary to use a digital platform for the development of the home physical activity B-learning program; the same one that was carried out during the months of May - August of the year 2022, with the support of five instructors from the "FisioAge" gym, of which two belong to the research team of the study. The care was carried out at home and by tele-rehabilitation from Monday to Saturday, from 9 am to 5 pm. in the sectors "Samborondón, Ceibos, Vía a la Costa, Urdesa and Centro, Samanes, Sauces and Southwest of the city of Guayaquil"

The work plan assigned 10 older adults to each of the collaborators, with the following schedule "Monday and Wednesday in person and Friday via telematics; Tuesday and Thursday face-to-face and Saturday via telematics"

## STATISTICAL ANALYSIS

Microsoft Access and a database system included in the Office package called Microsoft 365, a successor to Embedded Basic, was used. Access is a data manager that uses relational database concepts and can be managed through queries and reports; and it is suitable for collecting data from other utilities like Excel, SharePoint and others.

## RESULTS

According to the data collected from the studied sample, it has been identified that 60% of the participants were female, while 40% belonged to the male gender, with an average age of 70 to 80 years.

Likewise, according to Figure 1, related to the Katz Test, which assessed the independence of the elderly, it was determined that the entire sample (100%) maintains its functionality in daily activities.

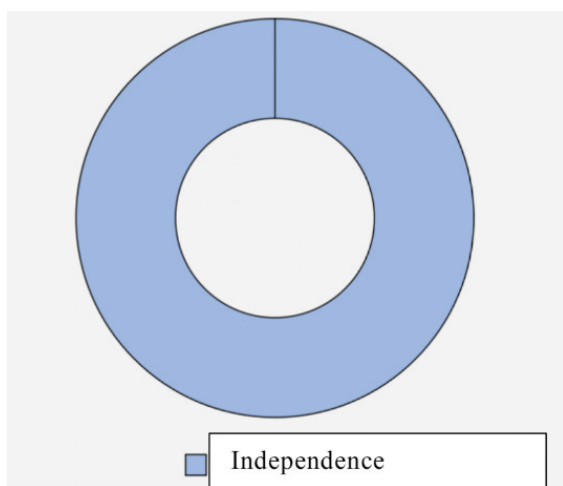


Figure 2: Results of the Katz Test

\* Results extracted from the degree work of Pérez and Rubira (6)

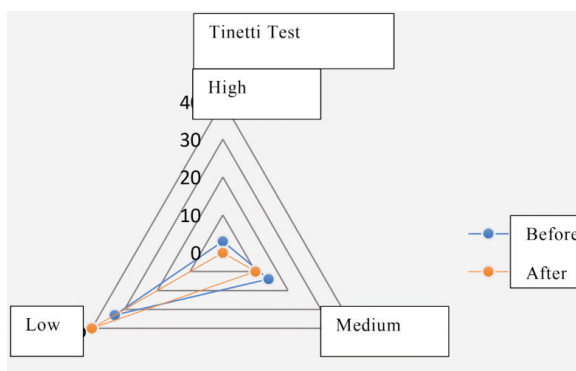


Figure 3: Results of the application of the Tinetti Test

\* Results extracted from the degree work of Pérez y Rubira (6)

According to the results obtained from Figure 3, 66% of the older adults had a low risk of falls, while 28% presented a medium level of risk and 6% a high risk, that is, 34% of the population sample had limitations to perform movements.

After applying the B learning home care program, it can be established that 80% of the elderly improved their balance and gait; however, 20% maintained a moderate risk level.

It can be seen in Figure 4 that 56% of the older adults had a good level of strength in their upper body, while 38% maintained regular strength; instead, 6% presented strength problems; that is to say, 44% externalized strength difficulties in the upper body.

In the same way, once the B learning home care program was executed, it was observed that the study group improved the strength of their upper body by 76% and only 24% still maintained certain limitations in this part of the body.

On the other hand, the results of Figure 5 indicate that 56% of the sample studied did not have strength problems with their lower extremities, on the other hand, 40% presented a regular level of strength and 4% indicated a bad level; therefore, 46% manifested strength difficulties in their lower body.

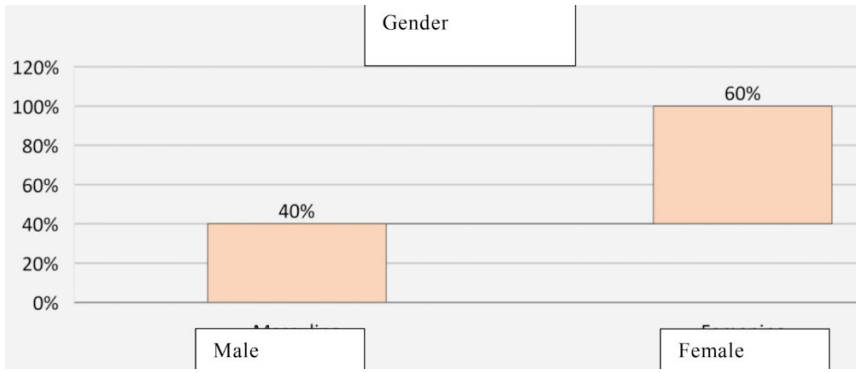


Figure 1: Gender of the participants

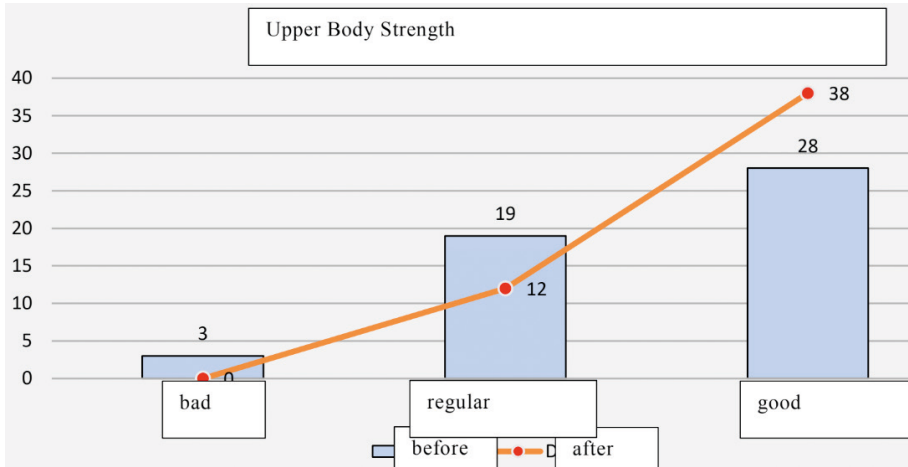


Figure 4: Results of the application of the Senior fitness test - Upper Body

\* Results extracted from the degree work of Pérez y Rubira (6)

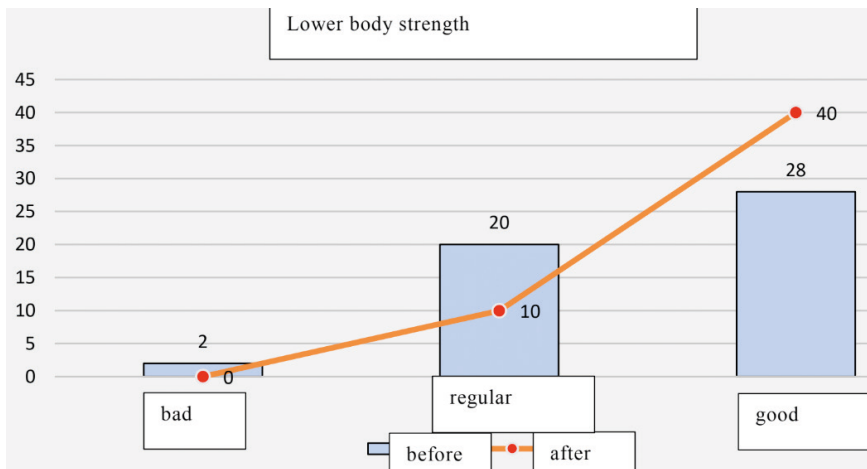


Figure 5: Results of the application of the Senior fitness test - Lower Body

\* Results extracted from the degree work of Pérez y Rubira (6)

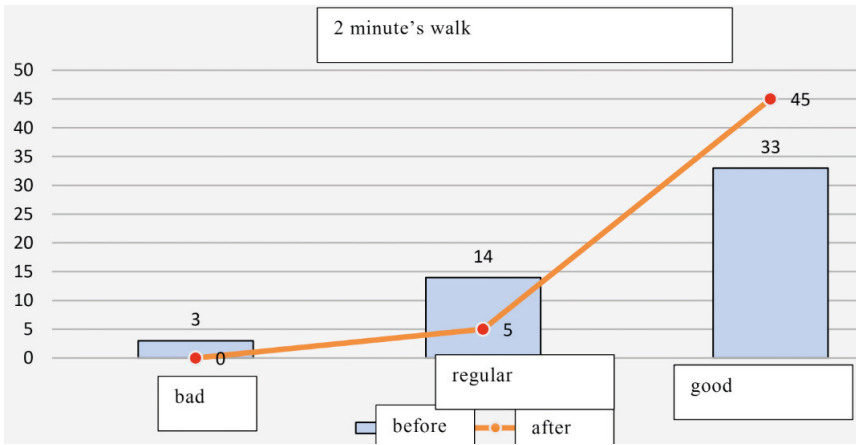


Figure 6: Results of the application of the Senior fitness test - 2-minute walk.

\* Results extracted from the degree work of Pérez y Rubira (6)

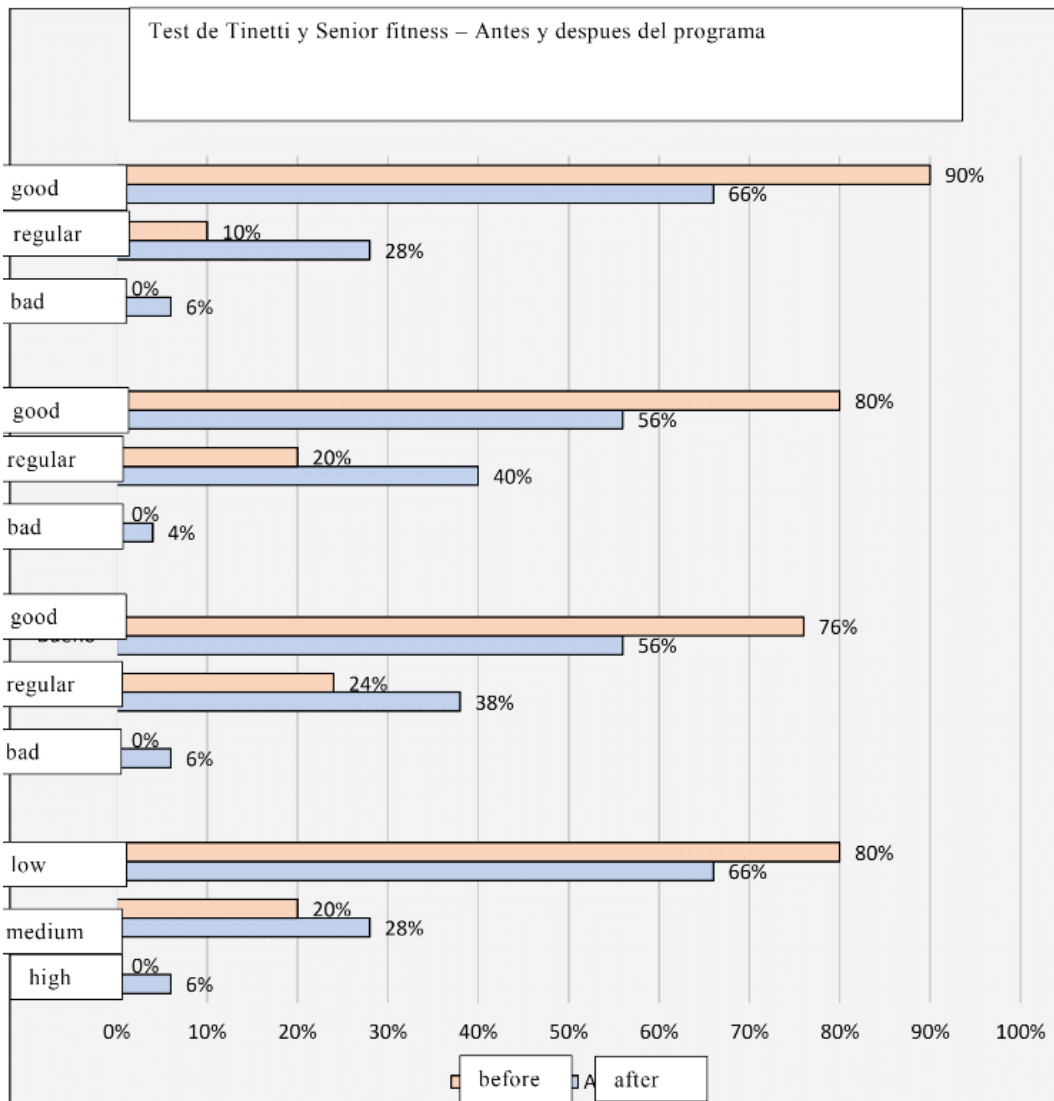


Figure 7: General Results of the Tests applied

\* Results extracted from the degree work of Pérez y Rubira (6)

As evidenced, once the B learning home care program was applied, 80% of the older adults improved their strength in the lower body, while 20% still maintained a certain condition of inefficiency with the level of strength.

Finally, Figure 6 revealed that 66% of the sample had good resistance, while 28% showed regular resistance and 6% a poor resistance level; consequently, 34% had difficulty keeping their stamina level going.

Finally, after applying the B learning program for home care, it was found that 90% of the elderly improved their resistance in a 2-minute walk, while 10% presented difficulties in this aspect.

Consequently, the development and application of a home care B-learning program gives older adults the opportunity to participate in physical activities directed at their needs, since it is very beneficial for their age and health status, because it avoids a sedentary lifestyle. and with it the deterioration of their functional activities, improving the well-being and quality of life of a person in the senescence stage.

## DISCUSSION

The population growth of older adults and the increase in chronic diseases that accompany them, often result in a deficit in physical performance, balance, gait, risk of falls, among others, which lead to disability, similar to those shown in the results. obtained in the tests applied prior to the development of the B learning home care program (21). The adoption of an unhealthy lifestyle together with physical inactivity promotes nutritional disorders, which encourages the appearance of diseases that affect the health status of an older adult (22). A study carried out in Tunja, Colombia in 2018 revealed that 40% of the active group has more than two history of pre-existing diseases such as hypertension

(21), Diabetes (5), Osteoporosis (2); unlike the active group that only 25% present these complications in their health. (23).

The findings of the study “Physical activity and quality of life in the elderly” determined that 34% of the sample, made up of 120 older adults, aged 60 to 70 years, presented limitations to perform movements in the development of skills physical (24) while in the results of the study “Effect of a therapeutic physical exercise program on functional capacity in older adults” conducted in a sample of 50 older adults between 60 and 80 years old, it was found that 60% did not have problems performing their daily activities, according to the Katz Index, while 28% had a moderate risk of falling according to the Tinetti scale (25), results that are similar to those obtained in the B-learning activity program home physics where 100% of the sample maintains their independence according to the Katz Test; but there is a better response to the risk of falls since 66% have a low risk according to the Tinetti Test (6).

The results of the study “Effects of a physical strengthening program on the functional condition of older adults” carried out in 70 adults over 60 years of age showed that physical activity generated significant improvements in the physical condition of 41% of the sample, according to the Senior Fitness Test (26). This result is similar to that obtained in the B-learning Program for home physical activity, in whose population group the physical condition of 82% of the participants was improved, using the same test (6).

The analysis of the article “Physical activity in the elderly” whose sample had 400 older adults, showed an evident improvement in their quality of life (27); while another investigation where functional exercises were performed on a group of adults over 60 years of age improved the cognitive processing

of the participants (28); The evidence is compared with the findings of the “Home physical activity B-learning Program whose results had a positive impact on the functional development of the elderly (6).

B-learning is the way of learning that combines face-to-face teaching with non-face-to-face technology (29). In the scientific article E-learning and blended learning: Strategies to teach and learn differently in times of pandemic, a general conception associated with the use of these tools is exposed, as a teaching alternative during social isolation after the context of the global pandemic. of COVID 19 in order to sustain the pedagogical continuity of some socio-educational activities (30). Telerehabilitation in Physiotherapy has also become a fundamental strategy for the health care of patients whose health condition allows it, obtaining satisfactory results from the improvement of their capacities and the link to various activities (31).

The elderly people participating in a kinesitherapy/physiotherapy/physical therapy program through telerehabilitation showed an increase in their level of functional independence, unlike those with the intervention with a physical activity booklet guided by telephone call, which suggests considering Physiotherapy programs, as a therapeutic alternative to improve the level of independence in older people (32).

Consequently, the B-learning Program for home physical activity aimed at older adults may present limitations in the use of technology, since many older adults are not familiar with the use of technological

devices; however, timely technical assistance can provide a solution to this inconvenience, since within any research process limitations arise that can be improved using new methodological designs.

## RECOGNITION

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## CONCLUSIONS

Based on the evaluation of the short-term functional effects of the b-learning program in older adults, the home physical activity approach allowed older adults to exercise in a familiar and comfortable environment, adapted to their needs and abilities from the comfort of their homes. from their homes, fostered the social and emotional support of the participants and achieved a significant improvement in physical and functional abilities.

High adherence to the home physical activity program was found, since older adults showed interest and motivation to participate in exercise sessions at home, which suggests that the b-learning approach can be an effective strategy to promote intervention and maintain the continuity of the practice of physical activity for this age group, generating a positive impact on the quality of life of the participants.



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