Home physical exercise improves functional mobility and quality of life in elderly. A CONSORT-prospective, randomized controlled clinical trial.

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June 10, 2020

Abstract

Aims: to test the hypothesis that a semi-supervised home physical exercise program improves the functional mobility and quality of life (QOL) of elderly in the community. Methods: This trial was conducted with elderly people (88% female), aged 60 years or older, sedentary and without cognitive decline. Elderly were randomly assigned to an intervention group - IG (home physical exercise and sleep hygiene) and a control group - CG (sleep hygiene). Were applied the International Questionnaire on Physical Activity; mental state mini-exam and the Timed Up and Go test (TUG) before and after the 12-week intervention period. Results: The IG showed an improvement in functional mobility, with a mean reduction in TUG execution time ($p < 0.01$) and improvement in the QOL, ($p < 0.01$) in WHOQOL-OLD. Conclusion: Semi-supervised physical home exercise is effective in improving the functional mobility and the QOL of sedentary elderly in the community. Trial Registration: Registro Brasileiro de Ensaios Clínicos (REBEC) Identifier: RBR-3cqzfy Keywords: Elderly; exercise; functional mobility; quality of life; community; physical activity; home exercise.

Introduction

Increased life expectancy is associated with biopsychosocial changes that occurs naturally with advancing age.[1] Important physiological and functional changes are part of the aging process of humans, resulting in neuromuscular, somatosensory, vestibular and visual impairment.[2-4] The decline in functional performance and the fear of falling are among the factors which most influence the quality of life (QOL) of elderly.[5,6] This growing population process aging emerges as a clinical priority, becoming a challenge for the development of health specific resources and social assistance policies[7], considering old age and disability are among the

main determinants of the use of services public health.[8,9] Elderly people in the community have considerable functional decline and disabilities, progressively compromising independence, self-confidence and QOL, and these commitments are intensified by physical inactivity, which is linked to important negative results in the general health of them.[10,11] Some studies have shown the use of specific physical exercise programs present significant improvements in the strength, balance and functional mobility of elderly, even at more advanced ages, also the regular practice of these exercises provides them positive results in the QOL.[10,12,13] Although the evidence shows the benefits of physical exercise, there is still low adherence to this strategy, and this reduced adherence may be related to factors such as locomotion difficulties and poor functional mobility or non-adaptation to the environment where the exercises are performed. It has been shown in others studies so far, the use programs of supervised exercise and performed in physical training centers.[14]A recent study[15], indicated elderly people with a history of falls prefer to participate in exercise programs that can be performed at home or do not require transportation. Considering that semi-supervised home physical exercise is a safe, low-cost and easy-to-implement therapeutic resource, the objective of this study was to test the hypothesis that regular practice of a progressive physical exercise program performed at home improves functional mobility and the quality of life of sedentary elderly people in a community.

Materials and methods

Study design and subjects

This is a randomized, controlled, blind trial, conducted between May to September 2017 according to the criteria of the revised Consolidated Standards of Reporting Trials (CONSORT)[16] 2010 statement for reporting randomized trials. Eligible subjects were elderly 60 years or older residing in Senhor do Bonfim (BA), in the northeast region of Brazil, recruited throughout the community. The inclusion criteria were aged [?] 60 years and who has not exercised regularly for at least three months prior to the beginning of the study. According to the Mini-Mental State Examination[17], elderly people with cognitive impairment were excluded, and who presented any clinical condition that contraindicated the performance of regular physical exercise, identified through a clinical and physiotherapeutic evaluation.

This study follows the principles and ethical codes conformed to the Declaration of Helsinki and, has been approved by the Research Ethics Committee Involving Human Beings of the Bahian School of Medicine and Public Health and registered in Registro Brasileiro de Ensaios Clínicos (REBEC) (Identifier: RBR-3cqzfy). All participants agreed to participate and signed the free and informed consent form. After an initial evaluation, with the verification of the inclusion criteria and signing the informed consent form, the elderly who would participate in the study were randomly distributed (www.randomizer.org) forming a control group (CG) and a group that will submit the intervention (IG). According to our previously published protocol,[18] participants attended a lecture explaining all the study procedures and will also receive an educational booklet with information on activities of daily living (ADL's) related to food, hydration and sleep hygiene. After the guidance on the ADL's, the subjects of the IG participated in a training on how to execute the physical exercise protocol at home.

The elderly received a pedagogical booklet with illustrations of the exercises and a diary to record the frequency of weekly activities. After verifying the elderly's learning how to correctly perform the home exercise program, guidance was given to family members to help and encourage regular practice of the exercise program at home. Any clinical and / or physical changes should be communicated to the researchers responsible for the program. Guidance was also given to the elderly in the CG regarding the execution of ADL's and maintenance of life habits. Systematized training of five assistants was carried out, exclusively for evaluations, and ten assistants were involved for home monitoring of elderly, five of them visited the IG and the other five visited the CG.

Assessments

All subjects involved in this study underwent clinical evaluations and performed some physical and cognitive tests with the research team composed of physicians and physiotherapists in an appropriate environment, before and after the intervention period. To avoid possible bias, the researchers who took care of the data

treatment were blinded to the results. A physical and general clinical evaluation was performed with collection of socioeconomic, demographic, anthropometric data, self-referred comorbidities, sleep quality evaluation, daytime sleepiness, risk of obstructive sleep apnea, functional mobility and level of physical activity, according to an established protocol.[18,19]

The anthropometric variables evaluation and body mass were obtained using a stadiometer Welmy® (Welmy, São Paulo, Brazil) brand scale, with a capacity of 150 kilograms (kg); the height, in meters (m), was measured by means of a vertical scale; to measure the circumference of the abdomen was used an anthropometric tape of the brand Cescorf® (Cescorf Equipamentos para Esporte Ltda., Porto Alegre (RS), Brazil) and the body mass index (BMI) was calculated from the weight in kg divided by the height in meters squared. The physical activity level was assessed through the International Questionnaire of Physical Activity (IPAQ) adapted for the elderly.[20] It is an instrument that allows estimating the weekly energy expenditure of physical activities related to work, transportation, domestic tasks, and leisure, carried out for at least 10 continuous minutes, with moderate and / or vigorous intensity during a normal / usual week. This variable was dichotomized, and those who performed less than 150 minutes per week of moderate and / or vigorous and active physical activity were those who performed more than 150 minutes per week. Functional mobility was assessed using the Timed Up and Go test (TUG).[21] The procedure followed was described in the original test, where the participant starts in the sitting position in a chair with arms (height of the seat of 45 cm and arms of 65 cm), firm to the floor, with the back resting on the backrest of the chair, being guided to stand up, walk a distance of three meters ahead, make a 180^{o} turn in a marking made in the ground, return and sit again, running as fast as possible, but safely and comfortably, minimizing the possibility of accidents. A Cassio® HS-70W (Casio Computer LTDA, São Paulo, Brazil) chronometer was used from the verbal command "already" at the beginning of the test and stopped when the participant sat down again. All the subjects performed the test twice, and in the second the execution time was registered. To evaluate the QOL, was applied the World Health Organization questionnaire Quality of Life Group-old (WHOQOL-OLD)[22], which contains six facets of 4 items each, evaluated by the Likert scale (1 to 5 points): Facet I - "Operation of Sensory"; Facet II - "Autonomy"; Facet III - "Past Activities, Gifts and Future"; Facet IV - "Social Participation"; Facet V - "Death and Dying"; Facet VI - "Intimacy". Each of the facets has 4 items, so for all facets the score of the possible values can range from 4 to 20, and the scores of these six facets or the values of the 24 items can be combined to produce a "global" quality of life in the elderly.

Intervention

Housing physical exercise program

Home physical exercise program was based on the recommendations of the American College of Sports Medicine for exercise and physical activity with the elderly.[23] Home exercise program followed that proposed in our previou study,[18] which consisted of a combination of aerobic exercises, muscle strengthening, balance, coordination and flexibility, prioritizing exercises involving large muscle groups, lasting 12 consecutive weeks, minimum frequency of 3 sessions per week, 40 minutes of execution time and performing 2 to 3 sets with 5 to 15 repetitions for each exercise at a target stress rate of 13-15 ("a little difficult" to "difficult") on the Borg[24] perceived exertion scale of 6 to 20 points, and the exercise can be performed in the most convenient shift for the elderly.

The exercises were carried out individually at each participant's home, not supervised during their execution, but had guidelines through home visits every fifteen days. Subjects were instructed to increase exercise intensity using the Borg scale as a parameter and in proportion to their ability to perform, as assessed by the research assistants at each visit. This exercises were performed using the weight of the participant's own body and with the help of some low-cost equipment (for example, recyclable plastic bottles to demarcate the signaling of the course, sticks and weights of 1 and 2 kg for performing the resisted exercises), and were constituted as follows, according to Brandão et al.[18,19]

- Warm-up exercises - Active-free exercise of the upper and lower limbs and shoulder rotation associated with breathing exercises;

- Aerobic exercises - Displacement of a walking stick with two hands, from the knees to above the head and returning to the knees, and walking exercises with alternating flexion of the thighs and approaching the knee by hand on the opposite side;
- Resisted exercises - For the upper limbs: from the position with the elbow extended and the hand resting on the opposite thigh, move the whole diagonally upwards and then return the hand to the thigh. For the lower limbs: squatting exercise, starting from the position sitting in a chair and with arms crossed in front of the body, lift to the orthostatic position and then return to the sitting position;
- Balance and coordination exercises - Walk on a straight line and walk away from lined obstacles with progressively smaller distances. When possible, the exercise evolved, and the walk was performed by placing the heel of one foot on the toes of the other foot (standing foot).
- Note: To ensure safety, these exercises were performed close to fixed furniture in the house, making it possible to lean when needed.
- Stretching Exercises - From the sitting position on the bed and with their knees in extension, try to reach the tip of the feet; from the sitting position in a chair and with the feet resting on the ground, perform rotation of the trunk to one side and elevation of the upper limb, on the same side, above the head, stretching as high as possible.

During the period of 12 consecutive weeks, subjects from both groups received periodic home visits to continue living guidelines and encourage adherence to the program, but the IG, as well as guidelines on lifestyle habits, received specific follow-up regarding exercise practice and assistance to possible adverse events. After the three-month period, the participants of the two groups were re-evaluated and with the completion of the protocol the elderly of the IG were encouraged to continue with the exercises, while the CG was made available the follow-up of the home exercises for the same period performed with the IG. Adherence to the exercise was verified through the weekly records filled out by the elderly themselves, with the help of family members and certified by the assistants during home visits.

Sample size and statistical analysis

According to the study by Lacroix et al.[11], at least 63 elderly people in each group will be needed to meet a statistical level of 80% in detecting a difference of 2 points adopting an alpha error of 5%, considering a standard deviation of 4 points. The principle of intention-to-treat analysis was considered, and the sensitivity analysis was performed through simple imputation using the mean of the variables. To test the data normality, the histogram, mean and median, standard deviation, skewness and kurtosis were analyzed, and the Shapiro-Wilk normality test was used for confirmation. Due to the normal distribution of the variables, parametric statistics were used, and the intragroup comparisons were made through the Student test for paired samples. The analysis of subgroups of age groups, which was pre-specified in the study protocol, as it was done with more than two groups that presented parametric distribution, one-way ANOVA was used, followed by the one-way ANOVA Tukey's multiple comparison test. The significance level established for all analyzes was $p < 0.05$ and statistical procedures were analyzed and processed in the Statistical Package of the Social Sciences - SPSS version 21.0 (IBM, Armonk, NY, USA).

Results

Initially, one hundred and ninety-one elderly people were invited to participate of this study by telephone. 28 did not agree to participate, and 32 subjects were excluded according to the eligibility criteria, leaving 131 subjects. In sequence, the GIs with 65 participants and the CG with 66 elderly people were composed. During the study there were follow-up losses of 2 participants of the CG and 4 of the IG, and it was concluded with 125 elderly according to the Consort flow diagram of patient selection and allocation demonstrated a Figure 1.

The sample was predominantly female (88%); with mean age 68 ± 7 years; anthropometric data indicative of pre-obesity, with a mean BMI of 27.3 ± 4; socioeconomic profile with low income preeminence (78% [?] 2 SM) and low schooling (76% [?] 3 years of study); level of physical activity considered active, with 87% of the elderly presenting IPAQ> 150 minutes per week and mean TUG of 9 +- 2. Most of them lived

with their relatives (88%), not being smokers (91%), not consuming beverages (88%) and had as their main self-reported morbidities anxiety, arthrosis, hypertension, and diabetes. Table 1 presents the characteristics of the two groups, at the initial moment of the study, with no statistically significant difference.

The average exercise frequency over the entire 12-week period was 4 +- 0.6 days per week, with a minimum of 3 days per week performed by 3 participants and a maximum of 6 days per week performed by 1 participant. All IG subjects had 100% adherence to the exercises and there was no report on any type of injury related to the intervention program developed. Figure 2 presents an analysis of the improvement in functional mobility, by altering the TUG execution time between the moments before and after the intervention, in each group, demonstrating the improvement in mobility was statistically significant only in the IG, changing from 9.1 +- 2 for 7.1 +- 1, with a mean reduction of 2 +- 1 seconds ($p < 0.01$), compared with the CG who presented a change from 9 +- 2 to 8.7 +- 2, reducing only 0.2 +- 0.7 ($p = 0.7$). In figure 3, it can be seen the influence of home physical exercise on the QOL of the elderly, by altering the global WHOQOL-OLD score between the moments before and after the intervention, in each group studied. We can observe that only the IG presented improvement in the QOL, with a variation of the score of 85 +- 10 at the initial time of the study to 90.4 +- 9 after application of the intervention, obtaining an increase of 5.4 +- 9.5 points ($p < 0.01$) compared to the CG that varied from 84, 3 +- 10 for 83.7 +- 10, with a decrease of 0.6 +- 8.8 ($p = 0.6$). Table 2 presents the mean and standard deviation data for each of the 6 QOL aspects of the WHOQOL-OLD, both before and after the intervention in each of the studied groups, demonstrating that IG improved statistically significant in the autonomy facets; present, past and future activities; social participation and death and dying, with no significant improvement in sensory functioning and intimacy being identified. CG did not show significant improvement in any of the facets. Subgroup analysis by means of ANOVA, performed in the IG, showed that the improvement in QOL and functional mobility did not present a significant difference when comparing the 60 to 69, 70 to 79 and [?] 80 age groups, with $p > 0.05$ for both analyzes.

Discussion

In this study, it was observed that sedentary elderly people who perform a regular physical exercise program at home show a significant improvement in functional mobility and quality of life, which corroborates our hypothesis. The natural aging process causes morphological and functional deteriorations that progressively compromise the functional mobility and QOL of the elderly[1,5,6], but these physiological changes can be minimized by regular physical exercise.[5,6,25-28] In this study, the elderly was submitted to a semi-supervised exercise program performed at home. Every two weeks of training, home visits were carried out by the researchers with the purpose of controlling activities, general assessments, checking the occurrence of possible injuries related to training, increasing the load, and adhering to the protocol. A considerable average was observed in the practice of the exercises (+- 0.6 days per week) and a reduced loss of follow-up (4.5%). The results are consistent with previous researches that have demonstrated the efficacy of physical exercise programs in functional mobility[10,25-28] and in the QOL of the elderly.[5,11,12,28] Most of these studies have analyzed the effect of supervised exercise programs performed at training and / or rehabilitation centers, others have conducted a comparative analysis of the benefits of supervised versus unsupervised exercise and they have observed trends indicating supervised exercise is most effective;[29-31] however, recent studies have shown the elderly have a preference for home-based programs,[10,32,33] providing more satisfaction and as a consequence, greater adherence and continuity after the end of the program which may have a positive impact on the results in the medium and long term.[11,25,34] Whereas, the knowledge regarding the effects of home exercises on the elderly is still incipient.

The subjects who performed the home exercise program in our study during the period of 12 consecutive weeks showed a significant improvement in the primary endpoint, functional mobility, constituting an important evolution of the functional capacity, being consistent with previous studies[10,11,13,25] which, through similar methodologies, obtained equivalent results. In the study conducted by Nelson et al.[10], 72 elderly (mean age of 77.8 +- 5.3) were randomly assigned to a group that performed physical exercise at home or to a control group with nutritional education at home.

The exercise group performed the program for 6 months where each participant received a booklet with

exercises guidelines, adjustable weight anklets, training at the beginning of the program on proper exercise performance and periodic follow-up visits. They concluded that minimally supervised home-based exercises can be safe and improve the functional performance of the elderly, like the results found in this study. In a similar research to our study, Youssef and Shanb (2016)[35] evaluated the effects of supervised exercise programs versus home exercises on muscle strength, balance, and functional activities in the elderly.

The authors involved 40 elderly people divided into a group that practiced the supervised exercise program and another that practiced at home. The subjects performed an exercise program of 35 to 45 minutes twice a week for four months consisting of muscle strength training, coordination and functional and balance training. At the end of the study, the authors concluded that the two training modalities improve balance performance. It was also observed that the supervised program showed superior results in relation to functional activities and isometric muscle strength.

The reduced muscle mass and muscle function and / or reduced physical performance is known as sarcopenia[36], which represents a considerable highlight in public health worldwide[37,38] with numerous physiological complications such as functional deficits, fragility, fatigue, increased risk falls, fractures, hospitalizations, multiple comorbidities (osteoporosis, diabetes mellitus)[39], increased mortality and impaired quality of life.[38,40,41] In view of this scenario, several physical training protocols associated or not with nutritional support have been highly recommended in the therapeutic approach to sarcopenia.[42]

Tsekoura and coworkers[43] involved 54 elderly people (47 women) with sarcopenia in a study comparing the effect on muscle, functional / physical performance, and QOL of home and supervised three-month exercise programs. The subjects were randomized into a supervised group, a home group, and a control group. Three functional evaluations were carried out, before the beginning, at the end and three months after the conclusion of the training protocol. Assessments included four-meter (4 m), Timed-Up and Go (TUG) and chair support (CS) tests. Qol was assessed using the Greek questionnaire Sarcopenia Quality of Life (SarQol_GR).

The handgrip strength and knee muscle strength were also checked using portable and isokinetic dynamometers and the body composition by bioelectrical impedance. At the end of the study, the authors presented significant results on the effects of physical exercise in elderly people with sarcopenia in both training groups when compared to the control group in all measured variables. It was also observed that the effects of the training were maintained for at least three months after the end of the protocol. Both exercise programs were effective, however the supervised program showed superior results. These data corroborate the findings of our study that showed significant results regarding the efficiency of a semi-supervised home exercise program in improving the functional mobility and the QOL of sedentary elderly in the community.

In another recent study conducted by Kota et al. (2019)[44], the effects of a regular home exercise program on the elderly's locomotion syndrome were evaluated. The training program was carried out three times a week for a period of two months, including balance exercises, muscle strength, nutritional education, and incentives to social participation. Pre- and post-intervention assessments were performed on all participants. The intervention was performed three times a week. The authors used a balance test in the orthostatic position and a scale for assessing geriatric locomotive function. The researchers concluded that a low-frequency home program of physical and educational activities was effective in improving the physical and locomotor function of the elderly.

As seen in the scientific literature, the practice of physical exercise improves the functional mobility of the elderly, increasing their level of physical activity[10,46] and, improve functional and cognitive performances,[47] improve balance and muscle strength,[48] giving them the ability to safely carry out ADL's such as bathing, dressing and performing household activities, minimizing the risk of falls and increasing autonomy[10,11,45] which provides a higher QOL for this population.[5,12,28,49]

Degenerative diseases are common in the elderly population, especially degeneration of the knee joint cartilage with a prevalence of 47% in men and 70.2% in women in the Japanese population over 60 years.[50] The evolution of osteoarthritis of the knees leads to a limitation of ADL's compromising the QOL of the elderly.[51]

In 2019, Suzuki and coworkers[52] verified the effects of two home exercise programs on muscle strength and joint flexibility in 100 elderly people in the community with knee osteoarthritis, confirmed by radiological examination. One group of patients performed different exercises and stretched the knee and hip muscles and the other group strengthened the quadriceps muscles. The authors assessed pain self-reported physical function, maximum isometric strength of knee extension and radiological control after four weeks of training and observed a significant reduction in knee pain in the strength of the knee extensor muscles and in radiographic indexes. They also highlighted the important improvements in the performance of ADL's and general health conditions. Another important outcome assessed was the high rate of adherence to the home exercise program.[52]

According to several studies, hip fractures are the most important cause of morbidity and mortality and health spending by the government with the elderly population,[53-56] and consequent impairment of health-related quality of life (HRQOL).[57,58]Renerts et al. (2019)[59] carried out a study involving elderly people after hip fracture with the objective of verifying the effect of a home exercise program associated or not with vitamin D supplementation. Patients, after hospital discharge, received a pocketbook with the guidelines of a balance exercise program, muscle strength and functional mobility, consisting of 30 minutes daily according to a protocol previously published by the authors.[60] At the end of the study, the authors observed that hip fractures really have a negative impact on the HRQOL of the elderly regardless of the variables age, gender, body mass index and interventions used in the study. With this study, it can be concluded that a home exercise program associated or not with vitamin D supplementation has a positive effect on maintaining HRQOL for up to one year.[59]

Aas and coworkers (2020)[61] evaluated occupational balance compared to QOL in 46 institutionalized elderly (69 to 101 years old) of both genders. The authors observed a normal distribution of occupational balance scores in the sample, for both genders. Occupational balance was positively and significantly associated with the QOL of men, but not among women. These findings confirm a balance deficit in institutionalized elderly and reinforce the need to adopt a regular program of physical activities for this population. A recent systematic review,[62] demonstrated an evidence of a strong association between physical exercise and the QOL of the elderly, but it was not possible to sustain the existence of the causal relationship since most of the studies presented significant associations used transversal designs making inferences impossible about causality. It was verified semi-supervised home physical exercise resulted in a statistically significant improvement in overall QOL when compared to CG, converging with results from previous studies obtained similar results, but with the use of supervised exercises.[28] It was also observed a significant improvement in the QOL in the IG, in four of the six facets of the WHOQOL-OLD, corroborating with previous study.[63] It is important to highlight the great improvement obtained in the autonomy facet which may be related to a relevant improvement in functional mobility, identified by the reduction. The analysis of variance performed in the age extracts showed no statistically significant difference between the subgroups studied demonstrating the home exercise program is effective in improving the functional mobility and the QOL of the elderly in different age groups, obtaining equivalent results between elderly and very old.

We would like to draw attention to some of the strengths of this clinical randomized, controlled and blind trial. Both groups of subjects were followed up individually with home visits by the researchers every two weeks with the purpose of controlling the execution of the proposed activities. Another strength of this study was that the training program proposed was composed of dynamic exercises easy to perform, without the need for specialized assistance at home weekly control through the personal diary and the intense participation of family members contributing to high adherence to the protocol and low rate of complications. Another detail to consider was the reduced sample loss which did not interfere with the results as they did not exceed ten percent of the sample calculation.

On the other hand we can consider the predominance of the female gender as a limitation of this study. However the randomization process avoided this bias and it is also justified that among the elderly population there is a predominance of women.[64-66] The participants filled in the diary with the exercise routine but to increase the reliability of the data, family members were asked to assist them. According to the state of the

art new studies need to be carried out to confirm the effects of semi-supervised home exercise programs on the QOL of the elderly.

Conclusion

This paper has argued that the semi-supervised physical exercise program at home can be safe and effective in improving functional mobility and quality of life of sedentary elderly people.

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Tables

Table 1. Baseline characteristics of subjects

Variables	Control Group (n = 64)	Intervention Group (n = 61)
Age (years)	69.9 ± 6.7	69.8 ± 7.4
Gender (% women)	84.4	91.8
BMI (Kg/m^2)	27.7±4.7	27.6±4.1
Waist Circumference (cm)	93±10	93±10
Number of self-reported morbidities	1.9±1.4	1.8±1.5
Per capita income (% [?] 2 minimum wages)	82.3	85.7
Education (% [?] 3 years of study)	75	75.9
Housing (% live with relatives)	67	71
Timed Up and Go test (TUG)	9 ± 2	9,1 ± 2
Physical Activity – IPAQ (% actives)	88	85

Note: BMI= Body mass index; IPAQ= International Physical Activity Questionnaire; Data mean ± standard deviation or in (%); n = number of participants who completed the follow-up. No significant difference was detected between groups ($p > 0.05$).

Table 2. Mean score of WHOQOL-OLD before and after the intervention, for each group studied. T test for samples in pairs.

Facets	Groups	Basal moment	After 12 weeks of intervention	p*
Sensory functioning	**CG IG**	14,1 ± 0.8 14,3 ± 0.4	14.2 ± 0.8 14,6 ± 0.4	ns ns
Autonomy	**CG IG**	13.6 ± 0,4 13.8 ± 0,5	13.5 ± 0,4 15.2 ± 0,9	ns *
Present, past, and future activities	**CG IG**	13.5 ± 0.4 13.6 ± 0,4	13.4 ± 0.5 14.1 ± 0,5	ns *

Facets	Groups	Basal moment	After 12 weeks of intervention	p*
Social participation	**CG IG**	14,8 ± 1,5 14,9 ± 1,5	14,6 ± 1,5 15,4 ± 1,7	ns ns
Death and Dying	**CG IG**	12,6 ± 1,2 12,5 ± 1	12,8 ± 1,2 13,4 ± 1	ns *
Intimacy	**CG IG**	14,5 ± 1,7 14,6 ± 1,5	14,4 ± 1,6 14,9 ± 1,1	ns ns

Note: CG= control group; IG= intervention group; ns=not significant; *=significant

Figures Legend:

Figure 1. CONSORT flow diagram of the study.

Figure 2 . Time Up and Go test execution time between the moments before and after intervention. Note: T test for samples in pairs.

Figure 3. Overall WHOQOL-OLD score before and after the intervention. Note: T test for samples in pairs