


Effects of a senior exercise program on functional capacity in institutionalized elderly in the municipality of Mação

JORGE SANTOS¹ , JOÃO PETRICA¹, MARCELO MENDES², JOÃO SERRANO¹, PAULO SILVEIRA¹, LUIS MAIA³

¹SHERU (Sport, Health and Exercise Research Unit), Instituto Politécnico de Castelo Branco, Portugal

²Escola Superior de Educação de Castelo Branco, Instituto Politécnico de Castelo Branco, Portugal

³Universidade da Beira Interior, Departamento de Psicologia e Educação, Covilhã, Portugal

ABSTRACT

The aim of this study was to study the effects of a Senior Gymnastics Program (SGP), with duration of 12 weeks 2 times per week, on the functional capacity of the elderly in the municipality of Mação, through the application of the Senior Fitness Test (SFT). On the other hand, to perceive how Functional Capacity evolved in the elderly who did not benefit from the program. We tried to verify if an SGP, specific for this age group, caused significant effects in both genres in the improvement of the functional capacity of the institutionalized elderly. It was sought to evaluate the evolution of the functional capacity (FC) of the institutionalized elderly who did not benefit from SGP. A quantitative, experimental, analytical and longitudinal research was carried out. The sample consisted of 2 groups of elderly institutionalized in the House of the Santa Casa da Misericórdia de Mação, one that we designated as experimental (GE) with 13 individuals (10 women and 3 men $87,15 \pm 6,09$) who carried out the 12 week program and one that we denominated sedentary group (GS) with 10 (7 women and 3 men $79,6 \pm 6,45$) individuals who did not benefit from the program. As a conclusion, the experimental group showed statistically significant differences in all SFT battery tests, except for the 8 foot Up and Go again ($p \geq 0.06$). **Keywords:** Physical activity; Functional capacity; Aging; Institutionalized Elderly; Senior Gymnastics Program.

 **Corresponding author.** Rua da Zebreira n° 81 – 6060-257 Ladoeiro, Portugal.

E-mail: jorgesantos@ipcb.pt

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INTRODUCTION

The objective of this work is to make known the reality that exists in the municipality of Mação, a municipality in the interior of the country, in a very old area, with respect to functional capacity. According to INE (2011), in Portugal, about 19% of the Portuguese population is 65 years old or more. The aging rate has increased from 102 in 2001 to 129 in 2011, which means that there are currently 129 elderly people per 100 young people. By 2050, the percentage of the elderly will be 25%, when, for the first time in history, there will be more people over 65 than young people. In terms of population structure according to WHO (2002), in 2050, Portugal will be the 4th country of the 25 of the EU with the highest percentage of elderly and with a lower percentage of active population and 6^o with greater dependence on the elderly population, surpassed only by the Spain, Italy, Greece, Germany and Belgium. Thus, it is essential to include in the daily routine of the elderly the practice of regular and well-oriented AF, where it is essential to carry out an exercise program specifically aimed at this target audience, with the main objectives of socializing and maintaining mobility, and autonomy. (Serrano, Faustino, Rato, Petrica, Paulo, Mendes and Batista, 2015). This study seeks to know the reality of a specific area of the country, such as for example the study of Mira (2016), which sought to know the state of PA in the elderly of Melgaço and cross-border population of Neves, Arbo, Crecente, Cañiza and Padrenda. Thus, we sought to know how the functional capacity of two groups evolved, one that benefited from a 12-week Senior Gymnastics Program, and another that did not benefit from this program.

MATERIAL AND METHODS

Participants

The sample selected for the accomplishment of this study is a sample for convenience, constituted by 23 institutionalized elderly people attending the Elderly Home of SCM de Mação. After selecting the sample and applying the test battery by Rikli and Jones (1999; 2001), the subjects were divided into 2 groups: GE (experimental group) - n = 13 elderly people 10 females and 3 males who participated in the Senior Gymnastics Program; SGP, $\bar{x} = 87.15 \pm 6.09$ years old - Group without Physical Activity Practice n = 10 elderly people 7 females and 3 males who did not participate in the Senior Gymnastics Program, $\bar{x} = 79.6 \pm 6.45$; Inclusion criteria: Participation in at least 90% of SGP classes; For all SFT tests; Have been present at the meeting and sign the informed consent form; Be over 65 years old; Do not make any formal AF prior to the PGS; Institutionalized at SCM Mação. Exclusion criteria: Present an attendance of less than 90% to the SGP classes; Inability / impossibility to perform any of the SFT tests; Perform formal AF beyond the SGP.

Measures

Data was recorded in a spreadsheet. In order to compare and verify whether or not there was evolution, we used, as already mentioned, two evaluation moments with a 12-week interval between them, which allowed us to compare the results before and after the SGP. Still, with regard to the collection of data, it was only carried out after all ethical and anonymity principles were assured, in such a way that a number was assigned to each participant. The instrument used was the test battery of Rikli and Jones (1999; 2001). The order of application of the tests was as follows: 1^o30s Chair Stand, 2^oArm-Curl, 3^o Chair Sit-and-Reach, 4^o 8-Foot Up-and-Go, 5^o Back Scratch, 6^o 6-Minute Walk and finally IMC.

Procedures

What we want to know is whether a SGP with a duration of three months of structured PA offered on a permanent basis, with an average of 45 to 50 minutes in duration and frequency of 2 times a week, applied to a group of institutionalized your FC To do this, we used the test battery of Rikli and Jones (1999; 2001) in two moments: one before the beginning of the program (pre-test) and one second at the end of the program

(post-test). In both, the data was collected in order to explain and compare the information collected from each of the variables.

Analysis

Statistical Package for the Social Sciences (SPSS) - Version 24.0 and Microsoft Excel 2013 were used. The level of significance was set at $\alpha = 0.05$ (95% confidence interval). All the descriptive statistics were performed, followed by the groups' characterization as well as the comparison between them. Groups were also be characterized by gender as well as compared. For the comparison, first check the normality, through statistical tests.

RESULTS

In the pre-test, the results obtained by the GS show the values obtained by the males and females groups. In the pre-test yet, the results obtained by the GE, show the values obtained by both genders are shown in table 1.

Table 1. Pre-test results in both groups

	Pré – Test				Post- Test			
	GS		GE		GS		GE	
	Male	Female	Male	Female	Male	Female	Male	Female
IMC (kg/m²)	27.07	27.41	29.29	29.27	27.34	27.87	28.73	28.57
30s Chair Stand	4.33	6	5	4.9	3	4.71	7.67	7.9
Arm-Curl	9	9.86	9	7.4	6.67	7.29	15.33	12.3
Chair Sit-and-Reach (cm)	-12.67	-5.86	-9.67	-10.8	-15	-9.71	-6	-5.75
8-Foot Up-and-Go (seg)	26.85	19.56	17.19	23.24	30.7	22.42	15.37	21.62
Back Scratch (cm)	-42.33	-43.43	-46.67	-37	-48.33	-46.29	-34.67	-27.8
6-Minute Walk (m)	278.33	342.86	340	309.5	235	303.57	401.67	361

In the same table yet, the results obtained by gender and by group are found after the 12 weeks of the SGP, the SFT test battery was again performed.

DISCUSSION

For GE, we verified that there are significant differences in the initial and final functional capacity of institutionalized elderly people who were given a specific program of 12 weeks of senior gymnastics, as shown in table 2, except for Sitting, walking 2.44 meters and returning to sit.

Table 2. Presentation of the values obtained in GE after application of the t-student or the Wilcoxon test

Tests	t/Z	Sig.
IMC 1 e 2 ^{a)}	3.78	0.003 ²
Arm-Curl 1 e 2 ^{a)}	-12.74	<0.001 ²
Back Scratch 1 e 2 ^{a)}	-4.28	0.001 ²
6 Minute Walk 1 e 2 ^{a)}	-9.37	<0.001 ²
8-Foot Up-and-Go 1 e 2 ^{b)}	-1.85	0.064 ¹
Chair Sit-and-Reach 1 e 2 ^{b)}	-2.50	0.012 ²
30s Chair Stand 1 e 2 ^{b)}	-3.20	0.001 ²

Legend: a) Student's t-test; b) Wilcoxon test; 1 - Does not present DES; 2 - Displays OFF

Table 3. Presentation of the values obtained in study of Mira (2016) after and before fitness program

Tests	After	Before
IMC (kg/m ²)	25.35±12.87	26.65±3.28
30s Chair Stand	14±6.52	14.5±6.89
Arm-Curl	19±5.27	20±6.83
Chair Sit-and-Reach (cm)	4.5±10.14	5±11.09
8-Foot Up-and-Go (seg)	7.38±4.09	6.55±2.13
Back Scratch (cm)	-19±12.62	-17±12.47
6-Minute Walk (m)	482±110.13	481±101.15

Comparing our results with those obtained by Mira (2016), we found that these did not follow their trend since, after applying a fitness program, slightly worse results were observed comparing the initial and final moments, with the exception of IMC and 6 Minutes' walk.

CONCLUSIONS

We conclude that, with the application of PGS, there were significant differences in the FC of the institutionalized elderly in the municipality of Mação. We also concluded that the physical fitness levels of the elderly who participated in SGP improved significantly, with the exception of the sitting test, walked 2.44 meters and returned to sit, but also improved. In addition, we conclude that the elderly who were part of the GS showed a decrease in their abilities, presenting worse results compared to the initial moment. It is important to point out that this decrease occurred in both genders.

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