Effects of a program of physical activity on the autonomy level of elderly participants in the program of the family health


ABSTRACT: Introduction: The objective of this study was to verify the effects of a program of physical activity on the autonomy level of elderly participants of the Program of Family Health. Materials and Methods: The sample was composed by seniors of both sexes, being divided in an experimental group (GE), with mean age of 68.66±5.93 years (n=35), and a control group (GC), with mean age of 69.80±8.05 years (n=35). The functional autonomy was evaluated by the battery of tests of the Group of Latin-American Development for the Maturity (GDLAM), composed of: to walk 10m (C10m), to get up of the seating position (LPS), to get up of the ventral decubitus position (LPDV), to get up of the chair and to move around in the house (LCLC) and the test of to dress and to remove a shirt (VTC). Results: In the pre-test, a weak value of functional autonomy was observed in all the tests, in GE and in GC. After the intervention, it could be noticed in the results of GE a weak value in the LPS test, regular in the LCLC and IG tests and strong in the LPDV, C10m and VTC tests. Discussion: The elderly participants, after the accomplishment of the program of physical activity, obtained improvement in their level of functional autonomy, echoing in a smaller difficulty for the accomplishment of the activities of the daily life.

Keywords: senior, program of physical activity, functional autonomy, program of family health.
The Brazilian Institute of Geography and Statistics – IBGE\(^1\) – has found, through accomplished researches that the Brazilian elderly population grows quicker than the world’s population as a whole and that Brazil, in 2020, will have reached the 6th position regarding the elderly population in the planet.

During senescence several changes occur, and these changes are either influenced by genetic factor or lifestyle. In this, the functional autonomy, also known as functional capacity, is found to be one of the most relevant concepts in relation to health, physical aptitude and life quality\(^2\).

One of the aspects which determine life expectancy with quality and life quality it is related to the standard of physical activity carried out during the whole life\(^3\). The disorders caused by the progressive loss of autonomy are reflected in several spheres in the elderly’s life, for instance, unbalanced and precarious motricity\(^3\).

Nowadays, more and more it is recommended the practice of physical activities for the maintenance of health, which enables the healthy aging, i.e., actively providing the elderly with autonomy to keep a good performance of DLA\(^6\).

Physical activity contribution for health is linked to the reduction of the level of risk to which anyone is subject, some recommendations are necessary so as to improve the physical condition and develop favorable attitudes for such an activity\(^7\).

Despite the advantages of physical activity, a great many people are inactive or do not do exercises at insufficient levels to achieve satisfactory results for health\(^8\). With this, some diseases related to sedentarism have become an important issue of worldwide public health\(^9\).

In Brazil, the Programa de Saúde da Família (PSF) (the Family Health Program, in English) is defined as a strategy for the re-orientation of the assistance model, put into practice by means of the implementation of cross-functional teams in Basic Health Units. These teams are in charge of the follow-up of an established number of families located in a limited geographical area. The team act for the furtherance of health, prevention, recovery, rehabilitation of diseases and most frequent aggravation as well as the maintenance of health of this community.

The responsibility for the follow-up of these families makes these teams surpass the limits traditionally defined for the basic care in Brazil, especially in the context to the Brazilian Health Care System (Sistema Único de Saúde – SUS\(^10\), in Portuguese).

As a conclusion, the aim is to check the effects of a physical activity program for the functional autonomy level of elderly participants of the PSF.

**MATERIALS AND METHODS**

**Sample**

The sample of it was selected on the grounds that all individuals were volunteers\(^11\), composed of 70 elderly individuals of both se-
xes, divided in two groups: one experiment group (EG; 26 women and 9 men, aged 68.66±5.93 years) and a control group (CG; 20 women and 15 men, 69.80±8.05 years), all residents of the municipality of Santa Cruz de Minas, Minas Gerais, Brazil.

As inclusion criteria, the individuals should be regarded as autonomous, be in full performance of DLA and be physically capable of taking part of experimental treatment. The participants were evaluated by a cross-functional team (doctors, physiotherapists, nutritionists, psychologists and physical education professionals) and directed to attended physical activities. The elderly should not be doing any physical activities for at least three months.

The exclusion criteria established that those, who had acute conditions which could compromise or hinder the continuity in the program of attended physical activity, were not allowed to take part in it.

As of the authorization, the participants started to take part of an implemented project in the PSF: exercise and life quality (ELQ), in which several physical activities were conducted, enabling all participants to take part of activities especially designed by a physical education professional.

All participants signed a statement of consentment about the study. In addition, it was signed a term informing the university where the study was held. The study herein met the norms for the realization of research using human being, regulamentation 1996/96, regulation 196/96 of Brazilian Council of Health, on 10th October, 1996 (BRASIL, 1996). It was also submitted to the Committee of Ethics on research involving human beings, Castelo Branco University (UCB/RJ).

**Procedures**

The physical activity programs involved walks, hydrogymnastics, stretching exercises and exercises carried out with the participants’ body mass, with weekly frequency of three times and duration of one hour.

For the functional autonomy evaluation, the participants were submitted to a battery of exercises composed of five tests adopted in the protocol of the Group of Latin-American Development for Maturity -GDLAM, hereinafter GDLAM Protocol15. Walking 10m (C10m), getting up from the seated position (LPS), getting up from the belly down position (LPDV) and getting up from the chair and moving around house (LCLC), dressing and undressing (VTC), which were used to calculate the GDLAM Score (IG; Equation 1), calculated by means of normalization between five tests of autonomy, estimating the values of rating. The times of these tests were measured in seconds.

$$IG = \frac{[(C10m + LPS + LPDV + VTC) \times 2] + LCLC}{4}$$

In the table 1, the standard values of functional autonomy of GDLAM16 protocol are shown.

### Statistical treatment

It was composed of descriptive analysis, aiming to obtain the profile of data, by means of measures of localization (mean and median) and dispersion (standard deviation – s, standard error of mean, coefficient of variation – CV) and by inferential analysis using the Shapiro-Wilk test to check the homogeneity of the sample. The work admitted p<0.05 for statistical significance.
Table 3 - Descriptive and inferential statistics of the functional autonomy evaluation tests of the GC (pre-test and post-test)

<table>
<thead>
<tr>
<th>Tests</th>
<th>x</th>
<th>e</th>
<th>md</th>
<th>s</th>
<th>CV%</th>
<th>p-value (SW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pre</td>
<td>post</td>
<td>pre</td>
<td>post</td>
<td>pre</td>
<td>post</td>
</tr>
<tr>
<td>C10m</td>
<td>8.32</td>
<td>8.59</td>
<td>0.33</td>
<td>0.3</td>
<td>8.09</td>
<td>8.43</td>
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<tr>
<td>LPS</td>
<td>18.46</td>
<td>18.13</td>
<td>0.75</td>
<td>0.6</td>
<td>17.4</td>
<td>18.52</td>
</tr>
<tr>
<td>VTC</td>
<td>13.77</td>
<td>13.81</td>
<td>0.44</td>
<td>0.44</td>
<td>14.32</td>
<td>14.32</td>
</tr>
<tr>
<td>LPDV</td>
<td>6.31</td>
<td>6.79</td>
<td>0.31</td>
<td>0.26</td>
<td>5.92</td>
<td>6.35</td>
</tr>
<tr>
<td>LCLC</td>
<td>50.98</td>
<td>50.78</td>
<td>0.15</td>
<td>0.92</td>
<td>49.93</td>
<td>50.34</td>
</tr>
<tr>
<td>IG</td>
<td>39.06</td>
<td>39.31</td>
<td>0.77</td>
<td>0.69</td>
<td>38.52</td>
<td>38.7</td>
</tr>
</tbody>
</table>

x: mean; e: standard error of the mean; Md: median; s: standard deviation; CV%: coefficient of variation; SW: statistics of the Shapiro-Wilk test; C10m: Walking 10m; LPS: getting up from the seated position; LPDV: getting up from the belly down position; LCLC: getting up and moving around the house; VTC: dressing and undressing; SG: autonomy score GDLAM; p<0.05

RESULTS

In Table 2, the results of the descriptive and inferential analyses of the test of the EG are shown. By analyzing the table, it is noticed, with exception of the variable C10m, the result indicated a normal distribution for the other variables because it is noticed p >0.05. The CV% is greater than 25% in the variable LPDV, post-test, this is taken as central tendency in relation to the median. As the other variables had the CV% smaller than 25%, this is taken as central tendency in relation to the median. In the pre-test functional autonomy evaluation, it is observed a weak value for all the tests and for the IG as well. However, in the post-test, it is observed a regular value of functional autonomy for the tests LPS, LCLC and IG and a good value for the tests C10m, VTC and LPDV.

In the table 3, the results of the descriptive and inferential analyses of the test for the CG are shown. By analyzing the table, it is noticed that only the variables C10m, VTC and IG of the sample indicated a normal distribution, for it is noticed p >0.05. The CV% was greater than 25% in the variable LPDV, post-test, this is taken as central tendency in relation to the median. As the other variables had the CV% smaller than 25%, this is taken as central tendency in relation to the median. In the functional autonomy evaluation, both for the pre- and post-test, it is observed a weak value for all the tests and for the IG as well.

In the Graph 1, the variation of the absolute of the sample is shown. In it, it can be observed that there was a significant different in the battery of tests of the protocol of functional autonomy of GDLAM, when compared the moments of pre- and post-test of EG and with the post-test of CG.

DISCUSSION

In this study, it is noticed that both the EG and CG had similar characteristics in relation to the tests of functional autonomy before the intervention.

In the tests carried out by the group of elderly people bore resemblance with the DLA and were already applied in other studies for the evaluation of autonomy. In the test C10m of EG, it is observed that after the introduction of the physical activity, there was some improvement in the time for the fulfillment of it, in which the individuals had a good level of functional autonomy. The application of this test shows the reality of the movement in the streets of the urban cities. Certainly, a ten-meter distance is equivalent to cross a street. Therefore, it is a test of evolution of security for the elderly who have to go out and walk alone. Relative to this test, positive results are also observed in a program of strength training. The CG had level of functional autonomy practically stable. In the LPS test, it is observed that the velocity of test increased and the time for the fulfillment decreased in the post-test of EG. This decrease of time of fulfillment of this test can be confirmed in the study of King et al.

In relation to the VTC test, it was observed some improvement in the time of execution, reaching a good level of functional autonomy for this test, being justified by the work carried out in the lower limbs. In this battery of tests related to the DLA, only this test is aimed at the evolution of lower limbs. In this study, it can be noticed the relation between the response to muscular strength and functional autonomy of upper limbs, reinforcing the studies of Alexander et al.

In the LPDV test, the EG had one of the most significant improvements of all tests, demonstrating greater quickness in the execution and good level of functional autonomy for this test. Only the study of Vale et al. indicated a result in the level of rating very good. This can be related with the training of strength which was used in the experimental treatment.
It was observed that in the LCLC test, the EG participant had positive results in relation to the CG. It seems that this improvement is due to the fact that the participants carried out exercise of knee extension, working the musculature of the femoral quadriceps, the most needed part in this movement. This test evaluates the agility and balance, and this becomes very important instrument of the evaluation of autonomy. This test was the longest to be carried out among all of them. These results are in agreement with Dantas & Vale.

The EG had, at the end of the intervention, its functional autonomy rated as “regular”, according to the standard of the GDLAM protocol, presenting an IG of 27.33±2.02. In the participants of CG, it is observed that the IG remained virtually constant. This study agrees with the study carried out by Pereira et al., in which it was also used the IG, and which was one of the first ones to compare the functional autonomy of elderly women in this protocol.

The key-factor to evaluate the dependency and also the risk of mortality is the capacity of performing DLA. Assuming that the functional autonomy is related to DLA, the IG, used in this study and other previous ones, was idealized to represent the level of this variable for the elderly.

According to Ramos et al., elderly people with dependency for 7 or more DLA have three times more risk of mortality than independent individuals, seeing that the dependency in DLA is a factor which can be mutable with prevention and rehabilitation. These data reinforce the study herein, once the evaluated individuals, before starting the program of physical activity, had weak functional autonomy and, after the intervention, they obtained partial improvement in relation to some of test, becoming less dependent and proving that the dependency is one factor which can be changed.

In conclusion, the elderly people, after the fulfillment of a program of physical activity, obtained improvements in the functional autonomy, reflecting smaller difficulty for the DLA and, consequently, becoming less dependent socially where they live in.

REFERENCES