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# Role of physical activity among geriatric patient in their quality of life

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**Abstract:** We designed and implemented a program of physical activation, which directly emphasizes the recovery of motor independence and indirectly in the increased activity of group interaction such that allows elderly inmates improve their ability to perform activities of daily living and reduce the burden on their caregivers. 30 People were randomly selected, 15 of the experimental group and 15 of the control group; 7 women and 8 men in each group. In general, the age of the subjects ranged between 60 and 84 years, with a mean of 78 and a standard deviation of 6.5, a program of physical activation was applied for three months in daily sessions of 45 minutes. The results obtained and the conclusions show that physical activity performed by an adult, metered and systematically improve their functional abilities, which directly or indirectly affects their quality of life.

**Keywords:** Physical Activation, Elderly, Quality of Life, Joint Mobility

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## 1. Introduction

Aging is a natural, dynamic, irreversible, progressive and universal process that starts from the moment we are born, therefore, no human being is exempt from aging. Although this process encompasses all life and its effects vary with the individual, it is considered that the elderly in Mexico begins at age 60 [1].

One of the problems of aging is develop a range of chronic degenerative diseases. Many people associate the aging process to a vital stage in which the individual progressively moves from the physical, social and mental health to absolute decrepitude [2].

Today aging is considered as a set of morphological, physiological, psychological and social changes over time. Among the most documented biological changes found decreased in height and body weight, changes in body compartments, changes in the central nervous system, with changes in weight and brain volume, changes in neurotransmission, increase in the size of the ventricles Beta amyloid deposits and to exceed 90 years [3].

Current statistics indicate that society is aging rapidly, and we must pay special attention to this portion of the population and all their requirements and needs. The

reference [4], published in the report of the Second World Assembly on Ageing, which in the XX century witnessed a revolution in longevity. The average life expectancy at birth had increased by 20 years since 1950 and reach 66. As described in the same report, this demographic triumph and rapid population growth in the first half of XXI century means that the number of people over 60, who was about 600 million in 2000, becoming nearly 2,000 million in 2050.

Today nine out of 100 Mexicans are 60 years or older and in agreement with the growth rate presented between 2000 and 2010, this population is expected to double in 18.4 years [5], so that Mexico has just a few decades to prepare the institutional responses that allow to address these demographic trends.

More specifically for the state of Chihuahua, Mexico data from the reference [1] indicates that 12.5 % of the general populations are elderly and it is estimated that by 2025 that figure increased approximately one quarter of the total population. Besides that stays permanent residence commonly called nursing homes, institutions receiving the elderly for care in the state, lack of physical activation programs that maintain and even better, improve the physical,

psychological, social and functional conditions residents.

Moreover, the manifestations of aging are modifiable and clearly show exercise as palliative [6]. For example: from physical mismatch, the activity against lack of cardiac reserve, aerobic exercise, against lack of agility, stretching, and so many more possibilities for prevention and compensation. Keeping active can help elderly people to preserve and maintain the strength to remain independent. Have more energy to do the things they want to do. Improve balance. Prevent or delay some diseases like heart disease, diabetes and cancer. Improve your mood and decrease depression status. Physical activity can and should be part of their daily lives [6].

For the above and since one of the primary objectives in the care of the elderly is, prevent disability and promote independence, it is clear the need for permanent stays for older adults, are provided with systematic geriatric assessment programs, in order to achieve a rational and integrated treatment and monitoring plan; always oriented functionality of the elderly. Therefore a program of physical activation, to help older adults maintain their homeostatic levels, improve your skills for everyday life and stop as much as possible, the cumulative decline that inactivity is generated, something that has been clearly well tested and has been proven to be daily physical activation cheap remedy to alleviate this deterioration

Specifically the following purpose: to determine whether the use of physical activation program, implemented over a period of three months to allow the elderly confined to nursing permanent residence activities that improve their quality of life in greater proportion than those who not receive the program.

This study therefore contributes to provide evidence and data favoring the intervention stays in nursing homes or permanent residence, to improve the quality of life of older adults.

Accordingly, this research aims, as applied research, provide information that will lead to reliable results of the reality of community-dwelling adults, the consequences generated by the inactivity and the benefits associated with the implementation of a systematic program of physical activity. The results, together with many others, serve as evidence of the urgent need to change the curriculum, not only in the field of training of teachers and health professionals, but any professional who will focus much of their skills to the service to which soon will be the majority.

## 2. Methodology

### 2.1. Subjects

We randomly selected 30 seniors 15 experimental and 15 control subjects, 7 women and 8 men in each group. In general, the age of the subjects ranged between 60 and 84 years, with a mean of 78 and a standard deviation of 6.5, in the control group the mean and standard deviation of age is 77 and 7.4 years respectively, while the experimental group, the mean

and standard deviation of age is 80 and 5.4 years.

### 2.2. Instruments

Pfeiffer scale cognitive assessment (SPMSQ). It is a short questionnaire to detect cognitive impairment in elderly patients. It consists of 10 items and is very useful, simple and fast. With questions like: What's the date today? (day, month and year) How old are you?, What date was born?, etc. Errors 0-3 are normal, 4-5 intellectual impairment, 6-8 moderate intellectual impairment, 9-10 severe intellectual impairment.

Guillermo Calderón's Depressive Syndrome Scale. Scale consisting of 20 questions answer YES/NO, where YES answer has 3 options to choose from: little, some or a lot. For each question, gives the following score: NO 1 point, little 2 points, 3 points regular, a lot 4 points. Ranges: 20 to 35 points, normal, 36 to 45 points, mild anxiety, 46 to 65 points, depressive symptoms and medium intensity, of 66 to 80 points severe depressive state.

Katz Index (IK). Rating scale of functional ability. It consists of 6 items: washing, dressing, toilet use, mobilization, continence and feeding. They are hierarchically ordered according to how patients lose functions. Patients are classified 3 groups: 0-1 mild dependence, 2-3 moderate dependence, 4-6 severe dependence. It is noteworthy that since its publication in 1969, this scale basic pattern remains the most frequently used, in its original version or adaptations thereof.

Trunk flexion. Distance traveled by the tip of the middle finger in the thigh during the lateral flexion (right, left) as a result of the application of lateral trunk flexion test European fitness test for adults (EUROFIT).

### 2.3. Procedure

Once established collaboration agreements with participating and signed consents by older adults with a medical condition that would allow him to participate in the study. We proceeded with the implementation of the instruments (pretest). Then, according to the results of the pretest, subjects to experimental and control groups were assigned, then the physical activation program the experimental group for 12 weeks with a frequency of weekday was applied. Each session had 10 minutes of heating, 30 minutes of medullar part and 10 minutes core of recovery and relaxation. We sought to implement the whole body in general soft and progressive through joint mobility with simple and varied exercises that help meet the body and its movement possibilities. After the twelfth week of the program were re-apply instruments (posttest). Finally we proceeded to the analysis of the data obtained.

### 2.4. Data Analysis

To compare the data obtained in the control groups and experimental analysis of variance was used, supplemented by the application of Scheffe test to check the obtained differences in scores on level of cognitive impairment, level of depression, level of dependence and Flex trunk.

### 3. Results

#### 3.1. Level of Cognitive Impairment

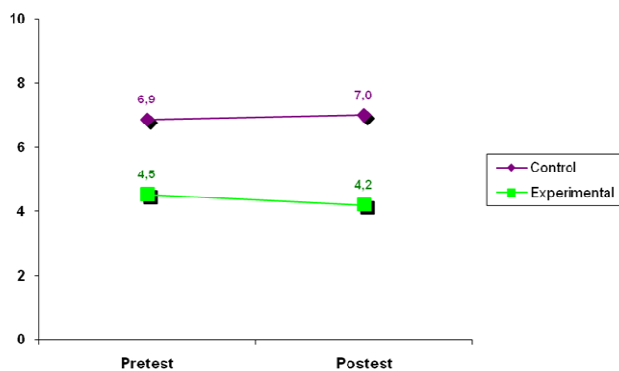
**Table 1.** Analysis of variance for the mean score of the Pfeiffer scale SMPSQ.

| Source          | SS       | df      | MS           | F     |
|-----------------|----------|---------|--------------|-------|
| Pre-Pos         | 0,150    | 1       | 0,150        | 0,088 |
| Pre-Pos * Group | 0,817    | 1       | 0,817        | 0,481 |
| Error (Pre-Pos) | 47,533   | 28      | 1,698        |       |
| Group           |          |         |              |       |
| Control         |          |         | Experimental |       |
| Pretest         | Posttest | Pretest | Posttest     |       |
| 6,9             | 7,0      | 4,5     | 4,2          |       |

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .005$

Note: the mean shearing the same subscript differ, at least to a level of  $p = .05$  to each other.

The analysis of variance to analyze the scale score Pfeiffer, showed no significant difference (table 1 and figure 1).



**Figure 1.** Mean score of SMPSQ Pfeiffer Scale pretest-posttest control and experimental groups.

#### 3.2. Depression Level

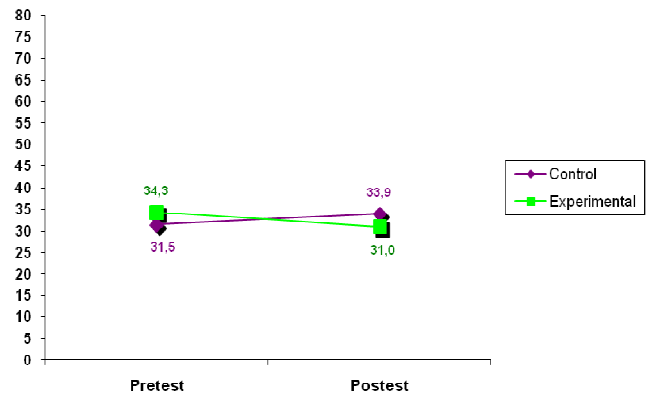
Analysis of variance for the Calderon's scale score Depression determined as significant interaction of both variables, showing a reduction in depression scores in the experimental group from pretest to posttest (table 2 and figure 2).

**Table 2.** Analysis of variance for average score syndrome depression scale.

| Source          | SS       | df                | MS                | F       |
|-----------------|----------|-------------------|-------------------|---------|
| Pre-Pos         | 2,817    | 1                 | 2,817             | 0,095   |
| Pre-Pos * Group | 126,150  | 1                 | 126,150           | 4,253 * |
| Error (Pre-Pos) | 8309,533 | 28                | 29,662            |         |
| Group           |          |                   |                   |         |
| Control         |          |                   | Experimental      |         |
| Pretest         | Posttest | Pretest           | Posttest          |         |
| 31,5            | 33,9     | 34,3 <sub>a</sub> | 31,0 <sub>a</sub> |         |

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .005$

Note: Mean sharing the same subscript differ, at least to a level of  $P = .05$  to each other.



**Figure 2.** Mean score Syndrome Depression Scale pretest-posttest control and experimental groups.

#### 3.3. Level of Dependence

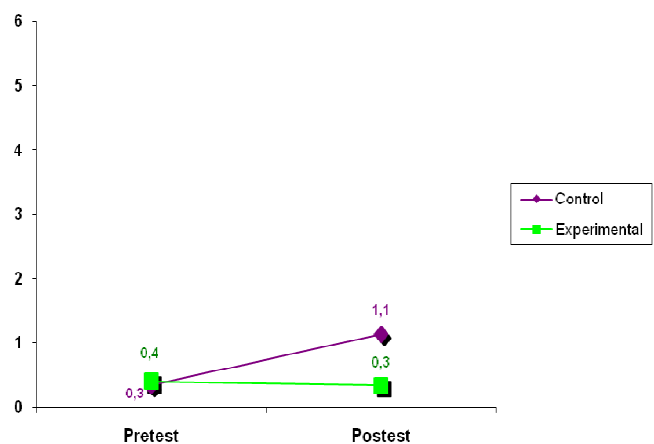
Analysis of variance for KATZ Index score, determined as significant interaction of the two variables, showing an increase in dependency score in the control group from pretest to posttest (table 3 and figure 3).

**Table 3.** Analysis of variance for the KATZ average index score.

| Source          | SS       | df      | MS           | F       |
|-----------------|----------|---------|--------------|---------|
| Pre-Pos         | 2,107    | 1       | 2,107        | 2,606   |
| Pre-Pos * Grupo | 3,317    | 1       | 3,317        | 4,286 * |
| Error (Pre-Pos) | 21,667   | 28      | 0,774        |         |
| Control         |          |         | Experimental |         |
| Pretest         | Posttest | Pretest | Posttest     |         |
| 0,3a            | 1,1 a    | 0,4     | 0,3          |         |

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .005$

Note: the mean shearing the same subscript differ, at least to a level of  $p = .05$  to each other



**Figure 3.** KATZ Average Score Index pretest-posttest Control and experimental groups.



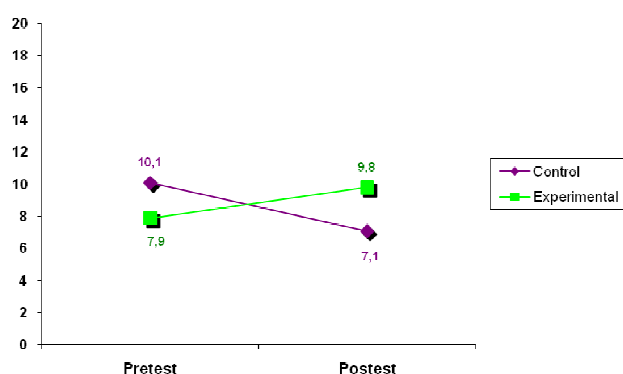
### 3.4. Trunk flexion

**Table 4.** Analysis of variance for left trunk flexion .

| Source              | SS                 | df                 | MS                 | F         |
|---------------------|--------------------|--------------------|--------------------|-----------|
| Pre-Pos             | 4,537              | 1                  | 4,537              | 0,829     |
| Pre-Pos * Grupo     | 92,504             | 1                  | 92,504             | 16,892*** |
| Error (Pre-Pos)     | 153,333            | 28                 | 5,476              |           |
| Group               |                    |                    |                    |           |
| Control             |                    |                    | Experimental       |           |
| Pretest             | Posttest           | Pretest            | Posttest           |           |
| 10,1 <sub>a c</sub> | 7,1 <sub>a d</sub> | 7,9 <sub>b c</sub> | 9,8 <sub>b d</sub> |           |

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .005$

Note: the mean shearing the same subscript differ, at least to a level of  $p = .05$  to each other.



**Figure 4.** Left trunk flexion pretest - posttest, control and experimental groups.

The analysis of variance for left trunk flexion determined as significant interaction of the two variables, showing an improvement from pretest to posttest, left in trunk flexion of older adults in the experimental group, as well as a decline in the control group in addition to a difference between the experimental and control groups, In the pretest in favor of the control, and posttest in favor of the experimental (table 4 and figure 4).

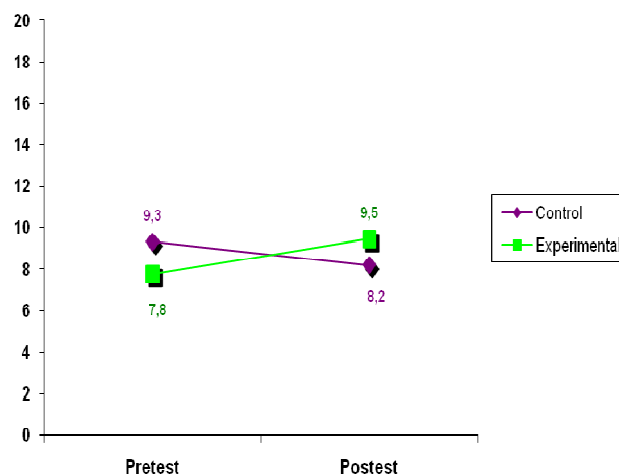
The analysis of variance for right trunk flexion determined as significant interaction of the two variables, showing an improvement from pretest to posttest in the right trunk flexion older adults in the experimental group (table 5 and figure 5).

**Table 5.** Analysis of variance for the right trunk flexion.

| Source          | SS       | df               | MS               | F         |
|-----------------|----------|------------------|------------------|-----------|
| Pre-Pos         | 1,204    | 1                | 1,204            | 0,446     |
| Pre-Pos * Grupo | 30,104   | 1                | 30,104           | 11,155 ** |
| Error (Pre-Pos) | 75,567   | 28               | 2,699            |           |
| Group           |          |                  |                  |           |
| Control         |          |                  | Experimental     |           |
| Pretest         | Posttest | Pretest          | Posttest         |           |
| 9,3             | 8,2      | 7,8 <sub>a</sub> | 9,5 <sub>a</sub> |           |

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .005$

Note: the mean shearing the same subscript differ, at least to a level of  $p = .05$  to each other.



**Figure 5.** straight trunk flexion pretest -posttest control and experimental groups.

## 4. Discussion and Conclusions

As regards to cognitive impairment, no effect of physical activity program implemented is observed.

With regard to changes in the level of depression, the results show a significant reduction in depression scores in the experimental group from pretest to posttest, strengthening the idea that the physical activation program, at least indirectly lowers levels anxiety and depression in older adults who carry it out. These data are consistent with a study by reference [7] which states that there are significant differences among adults who have a high level of physical activity (one to perform more hours a week) and those who have a low level of physical activity (performed no more than one hour per week) compared to the presence or absence of the symptoms of depression.

Regarding levels of dependency results reveal that older adults in the experimental group exhibit stability in their dependency levels, while the control group increased, from pretest to posttest, their levels of dependency for activities of daily living, which depend largely on locomotor system, thereby enhancing the idea that physical activation program, if not decreases the levels of dependency for activities of daily living, at least reduces the possibility that this dependence will increase.

As for trunk flexion is concerned, a significant improvement in left trunk flexion in the experimental group and a decline in the control group were observed, in addition in the posttest there is a difference in the left flexion for experimental group, being that in the pretest this difference favored the control group. The right trunk flexion also shows a significant improvement from pretest to posttest in older adults in the experimental group. Again, these results for bending left and right trunk again support the idea that physical activation program, leads to improvements in quality of life of older adults to significantly improve joint mobility.

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