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EXERCISE, QUALITY OF LIFE AND DEPRESSION IN ELDERLY
OF HUELVA

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Abstract

The aim of this study was to determine the relationship between physical condition level, quality of life related to health and the degree of depression of a sample of people over 60 years old that engage physical activity in social centers of Huelva. A total of 66 elderly people aged between 60 and 87 years with an average age of 69.71 (SD=6.1) was evaluated. Of these, 80.3% were women (n=53) and 19.7% male (n=13). The results indicate that strength has a very significant correlation with Physical Role, Physical Component, Social Function, General Health, Emotional Role and Vitality ($p<.005$) and a significant correlation with Body Pain and Mental Component ($p<.05$). Statistically significant differences are observed between strength and normal and severe depression categories ($F(2)=4.286$; $p=.018$). Relevant conclusions of the investigation found that strength is the only physical quality that correlates with the two major components of health related quality of life, Physical Component (PCS) and Mental Component (MCS); and elderly people with severe depression levels have lower strength values than older people without depression.

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Keywords: Depression, health, older people, physical activity, quality of life.



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1. Introduction

Physical activity is considered, when we talk about active ageing, as a key element for the prevention and improvement of chronic cardiovascular and musculoskeletal diseases that elderly people suffer, recommending to perform physical activity sessions in which exercises should be included to improve the physical condition (OMS, 2010). It is not about prescribing or imposing a unique method of active ageing to perform physical activity, there are a great variety of ways to grow old, as many as elderly people. For this reason, the educational action has to be carried out in a reflective, consensual and dialogue way, taking into account the elderly's characteristics, needs and autonomy (Escarbajal, Martínez & Salmerón, 2015). Realizing physical activity elderly people improve their physical condition, reduce their body weight and acquire greater confidence in their day-to-day life works, getting them to be more autonomous and independent and have an adequate quality of life (Ruiz & Goyes, 2015). The Senior Fitness Test provides reliable data on levels of physical condition for the assessment of physical aptitude of older people, which are essential to verify the degree of autonomy and independence that these people have. (Gómez-Mármol & Sánchez-Alcaraz, 2014).

Regarding the health-related quality of life it is the ability of older people to realize daily life activities related to the affective, functional and social component, and influenced by subjective perception (Botero & Pico, 2007). Having a healthy lifestyle throughout the whole life is a very important factor for older people, since they can reduce risks such as injuries, chronic, cardiovascular and neurological diseases, influencing positively the quality of life and providing a greater longevity (Akesson, Weismayer, Newby & Wolk, 2007).

A very effective method to maintain the functional independence is to realize regular physical activity, as it prevents and delays the decline of physiological functions. These changes are unavoidable and are related to genetic factors and the lifestyle that each person has had throughout their life, which has a great influence on the quality of life of elderly people (Bezerra, Martín & Alexander, 2002).

The evaluation of the social aspects of the health-related quality of life in a multicultural environment is of maximum interest, since the different dimensions of health-related quality of life have to be studied together with other factors in order to draw conclusions of how these dimensions affect older people (Olmedo et al., 2010). The participants in health promotion groups provides benefits in life quality of the elderly, especially when it comes to socially participating and establishing interpersonal relationships (Santos et al., 2015).

Depression is one of the factors that have greater influence on life quality of the elderly, as it is related to high levels of mortality and morbidity (Strawbridge, Deleger, Roberts & Kaplan, 2002). Depression is a psychological disorder that affects the health and quality of life of the elderly (Rodríguez-Hernández, Araya, Ureña, Wadsworth & Solano, 2014). Depression, after arterial hypertension, will be the second disease in 2020 that has greater incidence in the population, since it has a negative effect on the quality of life, the everyday life activities and the social relationships of older people (Runcan, Hategan, Barbat & Alexiu, 2010).

Some of the factors that increase the risk of suffer from depression are in 15% the retirement, in 90% to lose a beloved one and between 32-40% loneliness (Runcan et al., 2010). However, one of the factors that contributes most to have important depressive levels is the low level of physical activity.

Moreover the functional deterioration that the elderly suffers, decreases their physical aptitude, not letting them to realize their normal day-to-day activities as before, so they may suffer depressive states. Nevertheless doing regular physical activity is a very important factor to fight depression in older people (Rodríguez-Hernández et al., 2014). The performance of physical activity combines with antidepressants in elderly people with depression has a protective effect against depression, determining that the higher physical aptitude the lower depression levels. For this reason special attention should be paid to physical activity programs for the elderly, due to its low cost and the multiple benefits it brings to health (Mura & Giovanni, 2013).

2. Problem Statement

The progressive ageing of the population together with changes in lifestyles such as a lower performance of physical activity, an increase in sedentary attitudes and nutritional habits that favor pathologies like obesity, impact on health-related quality of life of older people (Eckel, Kahn, Robertson & Rizza, 2006).

3. Purpose of the Study

The objectives of the study are: to know the values of physical condition according to the analysis variables of the sample of people over 60 years of age, and to describe the existence and scale of depression, to define the relationship between the level of Physical Condition and the different dimensions and components of health-related quality of life, and to determine the relationship between the level of physical condition and the scale of depression of people over 60 who perform physical activity in social centres of the city of Huelva.

4. Research Methods

4.1. Participants

This research is transversal and a descriptive and correlational design has been used. The used variables of the analysis were age and gender. A total of 66 elderly people have been evaluated, with ages between 60 and 87 years old with an average age of 69.71 (DS=6.1). Of these, 80.3% were women (n=53) and 19.7% men (n=13). These people have participated in a physical activity program launched by the collaboration between the City Council and the University of Huelva. They belong to associations of older people in social centres. In this study the following criteria were established as inclusion criteria for population delimitation: people over 60 years of age who have regularly attended a physical activity program two days a week. 106 people were given the informed consent and 66 performed the tests, which is a sample of 62.26% of the population.

4.2. Instruments

The instrument to assess the physical condition in this population is the battery Senior Fitness Test (SFT) of Rikli & Jones (1999). This consists of the following tests: 30 Second Chair Stand: standing up and sitting down on a chair during 30 seconds with the arms crossed on the chest. It measures the strength

in the lower body part. Arm Curl: arm push-ups performed in 30 seconds with a dumbbell of 5 lbs. (2.27kg) in women and 8 lbs. (3.63kg) in men. It measures the strength in the arms. Back Scratch: join the hands behind the back. It scores the flexibility of the upper body part. The distance between the tips of the middle fingers of both hands is measured. Chair Sit & Reach: flexing exercise of the body on a chair. Sitting on a chair, the participant will try to touch the tip of the shoe with the tips of the fingers. If it passes, the cms are counted in positive, if it does not arrive in negative. It measures the flexibility in the lower body part. 8 Foot Up & Go: a test of standing up, walking and sitting down again. A chair is placed against the wall and a cone at 8 feet (2.44 metres) distance. The participant has to stand up, walk to the cone as fast as possible, go around it and sit down again. The time it takes is measured. It assesses the dynamic balance. 6 Minute Walk: 6 minutes walking through a circuit of 20 yards (18.8 m) for 5 yards (4.57m), every 5 yards the circuit is marked with a cone. It assesses the aerobic endurance.

In addition, the prension force was evaluated by means of a hand-held dynamometer with adjustable handle. For the development of the test the subject tightens gradually and continuously for at least 2 seconds.

The health-related quality of life is evaluated through the Health Questionnaire SF-36, Spanish version (Alonso, Prieto & Antó, 1995). This questionnaire is composed of 36 items which assess positive and negative states of health. It provides information on 8 dimensions: Physical function, Physical role, Body pain, General health, Vitality, Social function, Emotional role and Mental health. These dimensions are grouped into the Physical Component and the Mental Component.

The Geriatric Depression Scale GDS-30 was used to measure the levels of depression in elderly adults. The questionnaire has thirty questions in which the participants have to answer “yes” or “no” in relation to how they felt last week. The people who obtain less than 10 points on this scale are considered to have a normal depressive level, the people with scores between 10 and 19 points in a moderate depressive state and those who reach between 20 and 30 points in a severe depressive state (Yesavage & Brink, 1983).

4.3. Procedure

After receiving an explanation of the study, the participants agreed to sign an informed consent. Subsequently they were given a battery of questionnaires to fill in at home, where sociodemographic, clinical data and psycho-social measures were collected. The week after the delivery, the questionnaires were collected, were spent on the Senior Fitness Test.

4.4. Statistical analysis

For the realization of the database and later analysis the SPSS statistical package version 24 for Windows is used. Descriptive statistics is done to present the results of the different variables and inferential for the correlations, using the Z score to obtain a global value of the general physical condition as well as of each of the physical qualities evaluated with different tests.

5. Findings

In the majority of the Senior Fitness Tests there is a greater proportion of subjects within the group of normal values (Chair Sit & Reach, Chair Stand, 8 Foot Up & Go y 6 Min Walk), except for the Back Scratch Test, where those who gave a low result predominate, and the Arm Curl Test where there is a

majority of high results. By gender, the greater proportion of men is in the group of normal values in Chair Sit & Reach y Back Scratch, while women are in values below normal (Table 1).

Table 01. Range of SFT categorized in function of gender for the total of the sample

	Gender		Total		Gender		Total
	Men	Women			Men	Women	
Chair Sit & Reach				8 Foot Up & Go			
Low	38.5%	45.3%	43.9%	Low	15.4%	28.3%	25.8%
Normal	61.5%	41.5%	45.5%	Normal	76.9%	67.9%	69.7%
High	0%	13.2%	10.6%	High	7.7%	3.8%	4.5%
Back Scratch				Arm Curl			
Low	23.1%	56.6%	50%	Low	0%	1.9%	1.5%
Normal	53.8%	35.8%	39.4%	Normal	46.2%	35.8%	37.9%
High	23.1%	7.5%	10.6%	High	53.8%	62.3%	60.6%
Chair Stand				6 Min Walk			
Low	15.4%	25.5%	22.7%	Low	15.4%	11.3%	12.1%
Normal	69.2%	64.2%	65.2%	Normal	46.2%	47.2%	47%
High	15.4%	11.3%	12.1%	High	38.5%	41.5%	40.9%

After categorizing depression, the 68.2% of people have values of depression within the normal range. Of these, 84.6% are men and 64.2% are women, this being the group in which there is a greater proportion of people for both sexes. 27.3% have an average depression, being 15.4% men and 30.25% women and 4.5% of the total sample have severe depression being all of them women. Finally, we see that all age groups have a higher percentage of people with normal depression than the other two more serious types of depression, except for the age group of 75-79 years old, which presents the same proportion of people suffering from normal depression and average depression (44,4%); and from the age group of 85-89 years old, that the only person in this group suffers from a severe depression (Table 2).

Table 02. Categorization of depression in function of gender and range of age

	Gender		Total	Range of age						Total
	Men	Women		60-64	65-69	70-74	75-79	80-84	85-89	
Normal depression	84.6%	64.2%	68.2%	56.3%	73.7%	88.2%	44.4%	75%	0%	68.2%
Average depression	15.4%	30.2%	27.3%	37.5%	26.3%	11.8%	44.4%	25%	0%	27.3%
Severe depression	0%	5.7%	4.5%	6.3%	0%	0%	11.1%	0%	100%	4.5%

In table 3 are shown the obtained correlations between the Zscore of SFT, Zscore Strength, Zscore Flexibility, the test of Dynamic Balance (8 Foot Up & Go) and Endurance (6 Min Walk) with the components of health-related quality of life, obtaining the following results: the correlation between Zscore of SFT and SF-36 are very significant with Social Function and the Physical Component (p=.005) and with General Health (p=.006). Also, it is related in a significant way to the Physical Role (p<.05). The score of Zscore Strength presents a very significant correlation with Physical Role, Physical Component, Social

function, General Health, Emotional Role and Vitality ($p<.005$) and a significant correlation with Mental health, Body pain and the Mental Component ($p<.05$). Zscore Flexibility does not show any relationship with the SF-36. The dynamic balance (*8 Foot Up&Go*) presents a very significant correlation with the Physical Component and Social function, Physical Role, Emotional Role, General Health ($p=.000$), Vitality and Body pain ($p<.05$). The endurance (*6 Min Walk*) has a very significant correlation with the Physical Component and with the Social Function, Physical Role, General Health and Emotional Role ($p<.005$). In addition, it correlates significantly with Vitality and Body Pain ($p<.05$).

Table 03. Correlation between the scores Zscore of SFT, Strength, Flexibility, Agility and Endurance with the dimensions and components of SF-36

	PF	RP	BP	GH	VT	SF	RE	MH	PCS	MCS
Zscore SFT	.342**	.259*	.138	.332**	.201	.110	.189	.088	.341**	.093
Zscore Strength	.486**	.522**	.278*	.474**	.373*	.242	.387**	.288**	.502**	.283*
Zscore Flexibility	.176	.033	.021	.121	.027	.047	.067	-.074	.144	-.029
Dynamic balance	.496**	-.496**	-.316**	-	-	-.128	-.447**	-.234	-.500**	-.242
Endurance	.469**	.432**	.279*	.430**	.301*	.057	.361**	.191	.484**	.174

In table 4 shows that the scores of GDS present a very significant correlation with the endurance (*6 Min Walk*), Zscore Strength ($p<.005$), and dynamic balance (*8 Foot Up & Go*) ($p<.05$). In addition, it has a significant relationship with Zscore of SFT ($p<.05$).

Table 04. Correlation between the GDS scores and scores of Zscore of SFT, Strength, Flexibility, Agility y Endurance

	Zscore SFT	Zscore Strength	Zscore Flexibility	Dynamic balance	Endurance
GDS scores	-.272*	-.364**	-.056	.326**	-.389**

After having done an ANOVA between the scores of Zscore Strength and the categorized depression we can see that statistically significant differences are observed ($F(2)= 4.286$; $p=.018$). In a post hoc test with the statistician Tukey, it was established that the only statistically significant differences in strength values are within the groups of older people that present normal values and the group of severe depression.

6. Conclusion

In general, the level of Physical Condition of older people who made up the sample is within the group of normal values in the SFT tests, but it presents some exceptions depending on the analysis variables. As for the gender: in the Arm Curl test where the majority have a high result, and the Chair Sit & Reach y Back Scratch tests where women show values below normal. The averages of the health-related dimensions of life quality in our study's sample are lower than the reference values of the older Spanish population, having as a possible cause that the sample lives in areas with a medium-low socioeconomic level. In our research's sample there is a greater proportion of people who do not have depression than those who do

have. The vast majority of those elderly people who have depression are women. It could not have been determined the influence that age has on depressive levels. One of the most important discoveries is that strength is the only physical quality that correlate sin our study with the two major health components related to quality of life, the Physical Component (PCS) and the Mental Component (MCS). Another relevant finding is that older people with severe depression levels present much lower strength values than those without depression. Also the values of depression are lower if the elderly present a high cardiovascular endurance, dynamic balance and general physical condition.

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