



Functionality and Attitudes in Relation to Aging of Elderly Women Practicing Physical Exercises



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Submission: January 17, 2018; **Published:** February 21, 2018

Abstract

The objective was to verify the attitudes regarding old age and the functional capacity of elderly women practicing physical exercises. This is a cross-sectional study, realized with 200 women. The Functional Protocol of the Latin American Development Group for Maturity (GDLAM) and the Scale for Assessment of Attitudes in Relation to Old Age was used. There was a significant correlation only in the stand up from sitting position test, with the domains of expectations regarding activity ($r=-0.31$), satisfaction with life ($r=0.38$) and death anxiety ($r=-0.27$). It can be concluded that there is correlation between some domains of the functional capacity test and the attitudes towards old age.

Keywords: Physical fitness; Motor activity; Aging; Health promotion

Abbreviations: ADLS: Activities of Daily Living; LADGM: Latin American Development Group for Maturity; W10M: Walk 10 meters; SULP: Stand Up from Laying Position; SUCWH: Sit and Stand Up from a Chair and Walk around the House; SUSP: Stand Up from Sitting Position; DUT: Dress and Undress a T-shirt

Introduction

Although gerontological evaluation aims to intervene on physical, cognitive, affective and social performance, the focus of care has been on the functional capacity due to its importance for the well-being of the elderly [1]. Functional capacity can be defined as the management of activities of daily living in an independent manner [2].

Functionality in old age is related to biological, psychological and social factors. Thus, decrease in functionality has been associated with variables related to physical health such as greater number of physical symptoms [3] and chronic non-communicable diseases [4]. There have been also associations with psychological factors, such as depressive symptoms [3,4] less satisfaction with life [5] and lower cognitive functioning [6]. In addition, it has also been verified association between lower functionality and worse self-rated health [3,4], higher consumption of medication [4] and greater use of health services [7]. With regard to sociodemographic factors, there have been associations between lower functionality and older adults [3-5,8] with less years of schooling [3] and lower income [5].

Longitudinal population studies have accompanied the decrease in functional capacity and allowed the identification of some predictors. A study of Kim [9], who used a representative sample of 2,824 older Koreans, showed that poor or very poor self-rated health status was a predictor of decline in the functional capacity of independent elderly people after two years of follow-up. Arnau [10] studied elderly Spanish patients aged 75 and over with a year of follow-up and identified that previous hospitalizations, cognitive impairment and functional impairment of the lower limbs were independent risk factors for functional capacity decline.

In addition, risk factors for functional capacity reduction appear to vary with age. A prospective population-based cohort study with 264 Japanese women [11] showed that the decrease in hand grip strength and presence of pain were significantly associated with a greater risk of decline in activities of daily living (ADLs) for women aged between 40 and 64 years. However, in women aged 65 years and over, decreased walking speed, presence of comorbidities and pain were associated with a decline in ADLs.

Functional capacity has bio-psychosocial implications and is a fundamental aspect to be considered when studying and proposing

interventions that aim to promote healthy aging and well-being in old age. Therefore, it is crucial to study the relationship between functional capacity and the attitudes that elderly people have towards aging. Attitudes have a social basis, are related to direct and indirect experiences and to the historical and cultural context [5]. Elderly people's attitudes about aging can have an effect on their behavior; their beliefs about their ability are associated with their physical and cognitive performance [12]. In addition, negative attitudes towards old age may indicate a risk for the functionality of the elderly person [11].

However, due to the multidimensionality of health in old age and different forms and conditions of aging, it is necessary to identify whether this relationship is present in any condition. For example, in the active elderly and if it is true for any aspect of functional capacity.

Considering this possible relation between attitudes and functionality, the present study aimed to verify the correlation between functionality and attitudes regarding old age of elderly women practicing physical exercises at Sports Centers in the city of Maringa, PR.

Materials and Methods

This is a cross-sectional and observational study based on primary data, approved by the Research Ethics Committee of the University Center of Maringa, through opinion number 1,742,192/2016.

Study participants were elderly women aged 60 years or over who practiced physical exercises in one of the nine Sports Centers of the municipality, with a frequency of at least twice a week, for at least three months. Older males were excluded due to their low prevalence in the exercises offered by the centers; elderly people who used accessories to help walking (walking sticks, walking frames, wheelchairs) and elderly people with cognitive and physical, perceptive changes that prevented the application of data collection instruments were also excluded. The final sample consisted of 200 elderly women, chosen by convenience.

To characterize the profile of the elderly women, a socio-demographic questionnaire was elaborated by the researchers themselves, containing questions regarding age, race, education, smoking, retirement, self-perception of health, occupational situation, monthly income, marital status, presence of illnesses, history of falls, and also questions related to the sports center, such as which activities they performed in the center, how long they had been exercising and what the weekly frequency was.

The functional capacity was evaluated through the Protocol of the Latin American Development Group for Maturity (LADGM), composed of five tests: walk 10 meters (W10M), stand up from laying position (SULP), sit and stand up from a chair and walk around the house (SUCWH), stand up from sitting position (SUSP) and dress and undress a t-shirt (DUT), all calculated by time in seconds. The shorter time on each test demonstrates better functionality, and vice versa. Each test also receives a rating that

ranges from weak, fair, good, and very good [13].

The total score was calculated as follows:

$$\text{LADGM} = [\text{W10M} + \text{SUSP} + \text{SULP} + \text{DUT} \times 2] + \text{SUCWH} / 4$$

It was also used the Scale for Assessment of Attitudes in Relation to Old Age, originally elaborated by Sheppard [13] and validated for the Portuguese language by Neri [14]. The instrument is composed of 20 items that evaluate feelings of satisfaction in relation to old age (self-esteem, sexuality, self-fulfillment, leisure and companionship in questions 1, 3, 4, 5, 6, 9, 12, 13, 15, 18, 19 and 20) and feelings of loss in relation to old age (uncertainty, death, dependence, loneliness and fear about the future in questions 2, 7, 8, 10, 11, 14, 16, 17). The items are answered on a 5-point Likert scale, ranging from "totally disagree" (1) to "strongly agree" (5). The higher the mean of each dimension, the greater is the degree of feelings of satisfaction regarding old age or the feelings of loss in relation to old age.

The data collection was performed in eight (all) sports centers of the municipality of Maringa, Parana state, after the authorization of the Secretariat of Sports and Leisure. The elderly were informed about the purpose and justification of the research, and those who agreed to participate signed the Informed Consent Form (ICF). The data were collected before the practice of exercises by the elderly women in order to avoid possible interferences in the results, and after the previous scheduling with physical education teachers of each class. The data collection period was between June and August 2016.

Data analysis was performed by using SPSS 22.0 Software, through a descriptive and inferential statistics approach. Frequency and percentage were used as descriptive measures for the categorical variables. For the numerical variables, the normality of the data was initially checked by means of the Kolmogorov-Smirnov test. To verify the impact of self-esteem on the domains of quality of life of women practicing exercise, a regression model was conducted with variables that obtained a significant correlation ($p < 0.05$). The existence of outliers was evaluated by the square distance of Mahalanobis (D^2) and the univariate normality of the variables was evaluated by the uni and multivariate asymmetry ($ISK < 3$) and kurtosis coefficients ($IKu < 10$). As the data did not present a normal distribution, the Bollen-Stine's Bootstrap technique was used to correct the value of the coefficients estimated by the Maximum Likelihood method implemented in AMOS software version 18.0. There were no DM2 values indicating the existence of outliers, nor sufficiently strong correlations between the variables indicating the absence of problems with multicollinearity (Variance Inflation Factors < 5.0). Based on Kline's recommendations [15] the interpretation of regression coefficients had as reference: little effect for coefficients < 0.20 , medium effect for coefficients up to 0.49 and strong effect for coefficients > 0.50 ($p < 0.05$).

Results

There was prevalence of married women (60.6%), aged up to 70 years (67.0%), with a monthly income of 1 to 2 minimum wages

(58.7%), with a complete high school/higher education (50.0%), of the Caucasian race (67.9%), retired (86.2%), who did not exercise paid work anymore (89.9%) and who had never smoked (71.6%).

Regarding the health profile of elderly women practicing physical activity in the sports centers of Maringa-PR it was verified that the majority had a good health perception (74.3%), had no history of falls in the last 6 months (90.8%), has 3 or more diseases (47.7%) and used 1 to 2 types of drugs regularly (65.1%).

Table 1

Table 1: Frequency distribution of the socio-demographic profile of elderly women practicing physical exercises in the sports centers of the city of Maringa-PR, Brazil, 2016.

Variables	n	%
Marital status		
Married	66	60.6
Not married	43	39.4
Age group		
Up to 70 years	73	67
More than 70 years	36	33
Monthly income		
Less than 1 minimum wage	20	18.4
1 to 2 minimum wages	64	58.7
More than 2 minimum wages	25	22.9
Schooling		
Illiterate	4	3.6
Incomplete Primary School	22	20.2
Complete Primary School	22	20.2
Complete High School/Higher Education	61	56
Race		
Caucasian	74	67.9
Black	30	27.5
Asian	5	4.6
Retirement		

Table 2

Table 2: Frequency distribution of the physical activity profile and the functional capacity of elderly women practicing physical exercises in the sports centers of the city of Maringa-PR, Brazil, 2016.

Variables	n	%
Time of practice		
3 months to 1 year	29	26.6
1.1 to 5 years	61	56
More than 5 years	19	17.4
10-meter walk (W10m)		
Very good	109	100
Standing up from sitting position (SUSP)		
Very good/good	21	19.3
Fair	40	36.7
Weak	48	44
Standing up from laying position (SULP)		

No	15	13.8
Yes	94	86.2
Occupational Situation		
Active	11	10.1
Inactive	98	89.9
Smoking		
Had never smoked	78	71.6
Had already smoked	30	27.5
Currently smoking	1	0.9
Perception of health		
Good	81	74.3
Fair/Poor	28	25.7
Amount of medication		
No use of medication	5	4.6
1 to 2 types	71	65.1
3 types or more	33	30.3
Number of diseases		
No disease	13	11.9
1 to 2 diseases	44	40.4
3 or more diseases	52	47.7
Falls in the last 6 months		
Yes	10	9.2
No	99	90.8

When analyzing the physical activity profile and the functional capacity of the elderly women practicing physical exercises in the sports centers of the city of Maringa-PR (Table 1), it was verified that the majority had practice time between 1 and 5 years (56.0%) and had very good/good level in the following functional capacity tests: 10-meter walk (100.0%); stand up from laying position (60.6%); sit and stand up from a chair and walk around the house (84.4%); and dress and undress a t-shirt (68.8%). In the stand up from sitting position and in the functional capacity classification by LADGM (Table 2), the majority of the elderly women presented a weak level (44.4% and 69.7%, respectively).

Very good/good	66	60.6
Fair	39	35.8
Weak	4	3.6
Standing up from a chair and walking around the house (SUCWH)		
Very good/good	92	84.4
Fair	10	9.2
Weak	7	6.4
Dressing and undressing a t-shirt (DUT)		
Very good/good	75	68.8
Fair	23	21.1
Weak	11	10.1
Functional Capacity Classification (LADGM)		
Very good/good	10	9.2
Fair	23	21.1
Weak	76	69.7

When analyzing the age, the number of modalities practiced and the weekly frequency (Table 3), it was observed that the elderly women had a median age of 68.0 years, two types of activities practiced and frequency of four times a week. Regarding functional capacity (Table 3), the elderly women presented satisfactory

results in 10-meter walk tests (Md=14.3), Sulp (Md=3.1), SUCWH (Md=35.4) and DUT (Md=10.5). However, the results in the SUSP (Md=12.2) and LADGM (Md = 29.5) tests may be considered unsatisfactory.

Table 3

Table 3: Descriptive analysis of age, amount of modalities practiced, weekly frequency and functional capacity tests of elderly women practicing physical exercises in the sports centers of the city of Maringa, Brazil, 2016.

Variables	Md (Q1; Q3)
Age (years)	68.0 (64.0; 72.0)
Amount of modalities	2.0 (1.0; 2.0)
Weekly Frequency	4.0 (2.0; 4.0)
Functional Capacity Tests	
10-meter walk	14.3 (12.6; 15.5)
Standing up from sitting position (seconds)	12.2 (10.4; 14.2)
Standing up from laying position (seconds)	3.1 (2.6; 3.7)
Standing up from a chair and walking around the house (seconds)	35.4 (34.1; 37.1)
Dressing and undressing a t-shirt (seconds)	10.5 (10.1; 12.1)
Functional Capacity Classification (score)	29.5 (27.6; 31.0)
Attitudes towards Old Age	
Expectations regarding activity	30.0 (27.5; 31.0)
Feelings towards old age	12.0 (9.0; 14.0)
Satisfaction with life	10.0 (7.0; 11.0)
Death anxiety	6.0 (6.0; 6.0)
Final score	52.0 (49.0; 55.0)

Table 3 presents the correlation between functional capacity and attitudes regarding old age of elderly women practicing physical exercises in the sports centers of the city of Maringa-PR.

Table 4

Table 4: Correlation between attitudes towards old age and functional capacity of elderly women practicing physical exercises in the sports centers of the city of Maringa, Brazil, 2016.

Variables	W10m	SUSP	SULP	SUCWH	DUT	LADGM
Expectations regarding activity	-0.05	-0.31*	-0.1	0.02	0.07	-0.12
Feelings towards old age	-0.09	-0.07	-0.02	0.13	0.17	0.01

Satisfaction with life	0.11	0.38*	-0.05	-0.14	-0.09	0.16
Death anxiety	-0.2	-0.27*	-0.12	0.03	0.02	-0.18
Final score	-0.07	-0.07	-0.11	-0.01	0.05	-0.04

A significant correlation was found only in the SUSP test with the domains of expectations regarding activity ($r=-0.31$), satisfaction with life ($r=0.38$) and death anxiety ($r=-0.27$), which indicates a weak relationship between increased functional capacity in relation to standing up from the sitting position and increased satisfaction with life and reduced expectations regarding activity and death anxiety. There was no significant correlation regarding functional capacity and attitudes regarding old age with

age, weekly frequency and number of modalities practiced.

In order to verify the impact of the functional capacity on the attitudes regarding the old age of the elderly women practicing physical exercises in the sports centers of the city of Maringá-PR, after the analysis of the correlation, a regression model was conducted (Figure 1) between functional capacity tests and attitudinal factors in relation to old age that presented a significant correlation ($p<0.05$).

Figure 1

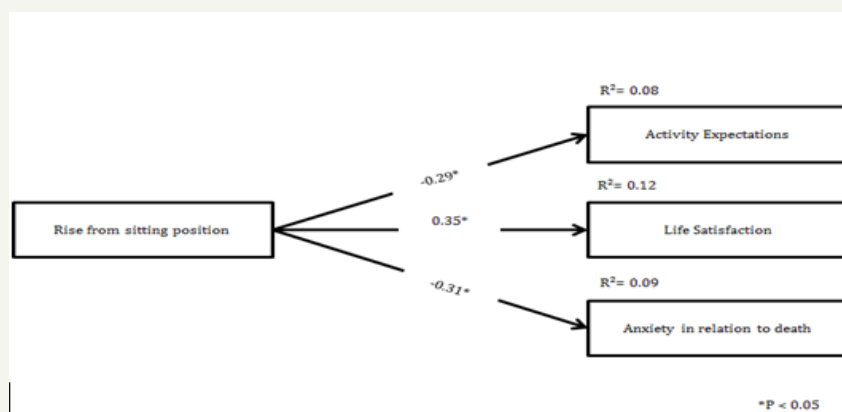


Figure 1: Model of regression of the impact of functional capacity on the attitudes in relation to old age of elderly women practicing physical exercises in the sports centers of the city of Maringá-PR, Brazil, 2016.

It was verified that (Figure 1) SUSP (functional capacity) had a significant impact ($p<0.05$) on the variability of expectations regarding activities (8%), satisfaction with life (12%), death anxiety (9%). In relation to the individual trajectories of the regression model, it was verified that the improvement in the result of SUSP test has a significant ($p<0.05$) and moderate ($\beta>0.50$) effect on the expectations regarding activities ($\beta=-0.29$), satisfaction with life ($\beta=0.35$) and death anxiety ($\beta=-0.31$).

Discussion

The performance of the elderly women in LADGM was not homogeneous in all the tests. Although they presented satisfactory results in four of the five tests (10-meter walk, Sulp, SUSWH and DUT), they presented unsatisfactory results in the SUSP test and in the total evaluation of the protocol. Brazilian studies using the LADGM Protocol show variability in relation to their results. Such variation has been justified by the characteristics of the sample, such as the age of the participants, degree and type of activities developed, among other health conditions [16].

Nevertheless, it is possible to find some similarities of the results of this study with other studies with elderly people in Brazil. For example, in the study of Dantas [17] conducted with 2,158 elderly women aged from 60 to 88 years and independent in daily life activities, the means of the tests for each age group were

predominantly classified as regular. In the study of Oliveira [18] with 120 elderly women practicing four different types of physical activities, the results were weak for all the tests.

With respect to functional capacity and attitudes towards old age, it is possible to verify relationship between variables. The correlation was significant for only one test (SUSP); however, when observing the variation between the results of each test, this one showed the greatest variability.

Regression analysis showed that SUSP was associated with three of the four subscales of the attitudes inventory. Other studies have shown an association between attitudes regarding old age and physical health. In the study of Witham [19], with elderly with heart failure, the attitude was associated with exercise capacity (performance) measured by the 6-minute walk test. Thorpe [20] evaluated 300 middle-aged adults aged from 49 to 51 years in New Zealand and the data showed an association between chronic non-communicable diseases and attitudes towards one's own aging. It was also identified an association between attitudes regarding old age and self-reported physical health [21,22] and consumption of medicines [23].

It is interesting to note that the subscales of the attitude inventory behaved differently in relation to SUSP. The scale of satisfaction with life was positively associated with SUSP, that

is, the greater the functional capacity in this test, the greater the satisfaction with aging. Such association can be understood since previous studies have identified an association between measures of functional capacity and satisfaction. A study with 114 women aged 60 years and over identified an association between quality of life and functional evaluation tests (including SUSP) [24]. Another study with patients with chronic obstructive pulmonary disease identified an association between the SUSP test and the quality of life related to the disease [25].

However, expectations regarding activity and death anxiety were negatively associated with SUSP. Thus, the better the performance on the test, the worse the attitudes toward old age in these factors. These data demonstrate that the relationship between functional capacity and attitudes towards old age may be more complex. Silva [26] evaluated the attitudes regarding the old age of 54 elderly people and also found differences in their answers regarding different domains of attitudes. Elderly people showed that they perceive gains in old age (integrity, satisfaction and the possibility of being happy). At the same time, they evidenced fear of dependence, loneliness, inactivity and death. Luchesi [23] also identified divergences between attitudinal domains in a sample with elderly caregivers. They reported more positive attitudes regarding social relationships and more negative attitudes toward agency.

This study showed that this association needs to be contextualized. Information on the attitudes related to old age and functional ability may help to understand the performance of activities by the elderly, and can bring information for the construction of interventions, but it is necessary to understand the specificities between characteristics of the elderly (for example: age, gender, educational level, chronic illness, level of physical activity performed) and the attitudinal aspects with respect to the aging. This study suggests that the relationship between attitudes related to age and functional capacity is complex and needs to be further investigated.

One limitation of this research is that it is a cross-sectional study. The assessment of functional capacity occurred in only one moment. Thus, it was not possible to recognize the recent process of decline and/or functional stability of the elderly participants. Probably, the perception of the decline and its speed influenced the attitudes of the surveyed women. Another limitation is that all the evaluated elderly women participated in physical exercises; therefore, they were already different from the elderly in society. Longitudinal studies may help identifying whether and how changes in functional capacity may relate to changes in the attitude of the elderly with regard to old age. It is important to consider that other variables may have influenced this association. Further studies should be developed to deepen the relation between functional capacity and attitudes towards old age.

Conclusion

It can be concluded that there is correlation between some domains of the functional capacity test and the attitudes towards

old age; however, this correlation was weak, which does not allow establishing an association between attitudes and functionality. Thus, in this study, the attitudes of the elderly towards aging do not seem to serve as predictors for their physical performance.

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