ORIGINAL ARTICLE

Factors associated with physical activity level of elderly users of the third age gyms

Daniel Vicentini de Oliveira[1], Maria do Carmo Correia de Lima[2], Luana Caroline Contessoto[3], Jean Carlos Cremonez[3], Mateus Dias Antunes[4], José Roberto Andrade do Nascimento Júnior[5]

ABSTRACT

Objective: This study aimed to analyze the factors associated with the level of physical activity in older adults users of the Third Age Gyms (TAGs). **Method:** A total of 115 elderly people of both sexes participated, with mean age of 67.5 years (± 6.42), users of TAGs. A socio-demographic questionnaire and the International Physical Activity Questionnaire (IPAQ) were used. The analysis of the results was performed using a descriptive and inferential statistical approach using the Pearson Chi-square test, with gross odds ratios, binary logistic regression analysis, using a hierarchical analysis and a final regression model with the adjusted odds ratios. The analysis was made by means of descriptive and inferential statistics using Pearson's chi-square test, with calculation of odds gross ratios, binary logistic regression analysis, using hierarchical analysis and a final regression model to calculate the odds ratios adjusted. **Results:** There was a significant association between physical activity level with sex ($p = 0.004$), educational level ($p = 0.048$), perceived health ($p = 0.046$) and the importance of health to exercise ($p < 0.001$). It is noteworthy that the women showed a 0.262 protection factor, have 73.8% chance of being the most active/very active compared to men. Also, seniors who have perception of good health/very good and consider exercise as important for the health showed a protection factor of 0.276 and 0.097 respectively. **Conclusion:** In conclusion, the female sex, the high level of education, the perception of good health and the knowledge of the importance of exercise for health were associated with the active/very active level of physical activities in the TAGs.

Keywords: Aged, Motor Activity, Health Promotion, Fitness Centers

[1] Doutorando, Universidade Estadual de Campinas – UNICAMP; Docente, Departamento de Educação Física, Faculdade Metropolitana de Maringá – FAMMA.
[2] Doutorando, Universidade Estadual de Campinas – UNICAMP.
[3] Discente de Educação Física, Faculdade Metropolitana de Maringá – FAMMA.
[4] Mestrando em Promoção da Saúde, Centro Universitário Cesumar – UniCesumar.
[5] Docente, Departamento de Educação Física, Universidade Federal do Vale do São Francisco – UNIVASF.

Mailing address:
Universidade Estadual de Campinas (Unicamp)
Rua Tessália Vieira de Camargo, 126
Cidade Universitária Zeferino Vaz
Campinas – SP
CEP 13083-887
E-mail: d.vicentini@hotmail.com

Received on October 26, 2016.
Accepted on December 29, 2016.

DOI: 10.5935/0104-7795.20170004

INTRODUCTION

Brazil is experiencing an intense change in its age pyramid, as in other developing countries, which places the focus on aging, increasing the need for actions of social and governmental agents, as well as health professionals.[1] The recent Increases in the proportion of older people across the world have led to increased focus on methods to improve quality of life in the elderly.[2]

The aging process is characterized by a set of morphological, physiological, biochemical and psychological changes that determine the progressive loss of the individual's capacity to adapt to the environment, being considered a dynamic, progressive and heterogeneous process.[3] One of the concerns associated with this process is the reduction of the level of physical activity among the elderly, which can lead to impairment of functional capacity. Therefore, maintaining physical activity is crucial for independent living by older adults. [2,4,5,6]

Among the behavioral and lifestyle factors, physical activity is considered to be one of the main determinants of active aging and plays an important role in improving quality of life, reducing disability and compressing morbidity.[7] Physical activity, whether made through physical exercise or daily routine activities and time of limited physical inactivity, is an important indicator of the elderly's health.[8]

It has been proven that the more active a person is the less physical limitations he has. Among the many benefits that physical activity practice promotes, one of the main ones is the protection of functional capacity in the elderly.[9] In general, physical activity is an important factor for health promotion, directly implicating the reduction of mortality and/ or prevalence and later onset of chronic non-communicable diseases, being considered as a determinant for longevity.[10]

However, despite being ease for one to practice it and the knowledge about the health benefits of physical activity, the prevalence of physical inactivity among the population is higher in the elderly and tends to increase with age.[11]

Previous studies have revealed that there are several factors related to the practice of physical activity with adult individuals. It is possible to observe in previous studies that some sociodemographic variables can be more explored in research with this population, such as type of residence, marital status and family income, since these variables may present an important contribution in explaining the variations of physical activity practice among the elderly.[12]

From this, there is the need for a more comprehensive understanding of the factors that lead to inactivity or physical activity. It is observed that the main underlying hypothesis is that these situations are influenced by demographic, socioeconomic, cultural and psychosocial factors.[13]

In order to stimulate more and more the practice of physical activities, especially outdoors, the understanding of the association of extrinsic factors and the practice of physical activities can further favor the elaboration of specific programs of prevention and health promotion for this population.

This paper is justified by the need to do some research involving the association of different extrinsic factors with the level of physical activity of the elderly, so that more efficient intervention proposals can be elaborated, eliminating or reducing, in parts, the factors that impede an increase in the physical activity level of this population.

OBJECTIVE

To analyze the sociodemographic factors and health conditions associated with the level of physical activity of elderly users of TAGs.

METHOD

The non-probabilistic sample, intentionally selected for convenience, consisted of 115 elderly (60 years and older) of both sexes, users of the TAGs of the city of Maringá, state of Paraná, for at least three months and a minimum frequency of twice a week. Elderly people were excluded from physical exercise; with neurological alterations that were incapacitating to perform the questionnaires. For the location of the representative sample of elderly Maringa population using TAGs, 30 of the 57 TAGs located in different regions of the city (North, South, East and West) were chosen. Participation was voluntary and occurred through the signing of an free and informed consent form (FICF).

To characterize the elderly, a socio-demographic questionnaire was elaborated by the authors themselves, with questions related to age, sex, marital status (married, single, widower), schooling (incomplete elementary school, complete elementary school, incomplete high school, occupational (active, inactive), monthly income considering minimum salary in effect in 2015 (R$ 788.06/US$ 308.87) (1 to 2 minimum wages, more than 2 minimum wages), poor, good, very good health), importance of physical activity for health (yes, no) and prescription of physical activity by health professional in the last semester (yes, no).

The physical activity level of the elderly was evaluated using the short version of the International Questionnaire of Physical Activity (IPAQ), which presents seven questions, whose information estimates the time spent per week in different dimensions of physical activity, such as walking and exertion between mild, moderate and vigorous intensities. This instrument evaluates physical activities performed during leisure time, displacement from one place to another, domestic services and occupational activities.[14]

This is a population-based, quantitative, observational and cross-sectional epidemiological study, with data collected from August to October 2015 in Maringá, Paraná, a pioneer municipality in Brazil in the construction of TAGs in 2006, after the authorization of the Secretary of Sports and Recreation. The same was submitted to the Research Ethics Committee of the Centro Universitário Cesumar (UN CESUMAR) and approved by the Opinion 1,401,289.

Data analysis was performed using SPSS 22.0 Software. The analysis was performed using a descriptive and inferential statistical approach. In the descriptive approach, the absolute and relative frequencies were distributed to the categorical variables. In inferential statistics, Pearson's Chi-square test (X2) was used to observe the possible associations between independent variables (socio-demographic variables and health-related variables) and dependent variables (level of sedentary/ irregularly active physical activity and active/very active), with calculation of gross odds ratios (OR).

Then, a binary logistic regression analysis was performed, using hierarchical analysis. By means of the established strategy of associations between the variables studied, an explanatory model of binary logistic regression was introduced, introducing all the variables that showed association in the antecedent analysis, remaining in the subsequent model only the variables that had statistical significance ($p < 0.05$) in the previous model. The exit criterion for all variables introduced in the model was $p < 0.10$.

In the end, a final regression model was reached with only those variables of greater statistical significance. The method of introducing the variables in the adopted models was the "backward stepwise". A significance level of $p < 0.05$ and a 95%

confidence interval (CI), with adjusted odds ratios were considered.

RESULTS

When analyzing the association between the level of physical activity and the socio-demographic variables of the elderly users of the TAGs in the city of Maringá, a significant association was found with gender (p = 0.004) and level of schooling (p = 0.048), indicating a difference in the proportions of sedentary/ irregularly active and active/very active individuals in relation to gender and schooling level (Table 1). It should be noted that there is a greater proportion of active/very active females (f = 54) and complete secondary education (f = 38).

There was no significant association between physical activity level and marital status (p = 0.229), occupational status (p = 0.300), and income (P = 0.163), indicating that there is no difference in the proportions of sedentary/ irregularly active and active/very active individuals in relation to the variables analyzed. Table 2 shows the association of the level of physical activity with the variables related to the health of the elderly practicing exercise in the TAGs in the city of Maringá-PR.

There was a significant association between physical activity level and health perception (p = 0.046) and the importance of exercise for health (p <0.001), showing a higher proportion of active / very active elderly perceived with good / very Good health (f = 63) and consider exercise as important for health (f = 62). No significant association was found between the level of physical activity and the prescribing or not of exercise per professional in the last semester (p = 0.950).

In order to verify the effect of socio-demographic variables and health-related variables on the active/very active level of physical activity of the elderly in the TAGs of Maringá-PR, a binary logistic regression model was used with the variables that presented association with the level of physical activity. Table 3 shows the final regression model only with the variables that presented statistical significance (p <0.05).

In the regression analysis for the level of physical activity (Table 3), only the female sex (OR = 0.262), the good / very good health perception (OR = 0.276) and the importance of the exercise for health (OR = 0.065). It is noteworthy that women presented a protection factor of 0.262, that is, they had a 73.8% chance of being active/very active compared to men. In addition, elderly people who have good/very good health perception and who consider exercise as important for their health presented a protection factor of 0.276 and 0.097, respectively, that is, they have 72.4% and 90.3% of more likely to be active/very active compared to the elderly who have regular health perceptions and who do not consider exercise as important, respectively.

Table 1. Association of the level of physical activity with the socio-demographic variables of the elderly practitioners of exercises in the TAGs of the city of Maringá-PR

VARIABLES	Level of physical activity		X^2	P
	Sedentary/ Irreg. active (n=23)	Active/Very Active (n=90)		
	f (%)	*f* (%)		
Gender				
Male	17 (73.9)	36 (40.0)	8.460	0.004*
Female	6 (26.1)	54 (60.0)		
Marital Status				
Single	8 (34.8)	22 (24.4)	1.449	0.229
Widowed	7 (30.4)	25 (27.8)		
Married	8 (34.8)	43 (47.8)		
Education				
Incomplete Elementary	9 (39.1)	21 (23.3)	3.777	0.048*
Complete Elementary	9 (39.1)	31 (34.4)		
Complete High School	5 (21.8)	38 (42.3)		
Occupational Status				
Active	13 (56.5)	40 (44.4)	1.073	0.300
Inactive	10 (43.5)	50 (55.6)		
Monthly Income[a]				
1 to 2	19 (82.6)	61 (67.8)	1.949	0.163
Over 2	4 (17.4)	29 (32.2)		

*Significant association – p < 0.05: Qui-square Test. aMinimum salary in 2015: R$ 788.06 (US$ 308.87).

DISCUSSION

In the studied population, in relation to the socio-demographic variables analyzed, a higher proportion of active/very active individuals was associated with female sex and with high school education. Among studies with samples from other Brazilian cities, one study[15] showed that middle-aged and elderly, women and low-education groups had a higher risk of not performing physical leisure activities.

Already in another study1[16], they found similar results when they demonstrated that leisure-time sedentarism is more prevalent in women and associated with low level of schooling and age, as well as in the analysis of the study[17] in which people of both sexes with low level of education, besides being married, separated and widowed are less likely to be involved in physical activities during leisure time, the association of this study differs in relation to the female sex because it represents the largest proportion of active/very active individuals. This fact can be explained by the environmental and cultural hypothesis, in which each region studied presents different characteristics and customs, which may influence the findings.

Regarding health perception and consideration of the importance of exercise for health, a greater proportion of active/very active elderly individuals who perceived themselves as having good/very good health and who considered exercise as important for their health, favorable results and in agreement with the study of Guimarães and collaborators[18] that investigated the level of perception of health, physical activity and quality of life of the elderly participants of the Center of Attention to the Third Age where the perception of health was considered to regulate the good.

Studies[18,19] have shown that there is a positive association between physical activity and health perception, which was also shown in the results of this study, and added to the fact that elderly people who have good/very good health perception and who consider the exercise as important for health presented a protection factor and have 72.4% and 90.3%

Table 2. Association of the level of physical activity with variables related to the health of the elderly that do physical exercises in the TAGs of the city of Maringá-PR

Variables	Level of physical activity		X^2	P
	Sedentary/ Irreg. active (n=23)	Active/ Very active (n=90)		
	f (%)	*f* (%)		
Health perception				
Fair	12 (52.2)	27 (30.0)	3.985	0.046*
Good/Very good	11 (47.8)	63 (70.0)		
Importance of exercising for health				
No	11 (47.8)	11 (12.2)	14.811	<0.001*
Yes	12 (52.2)	79 (87.8)		
Prescription of physical exercise by professional in the last semester				
No	7 (30.4)	28 (31.1)	0.004	0.950
Yes	16 (69.6)	62 (68.9)		

*Significant association – p < 0.05: Qui-square Test.

Table 3. Binary logistic regression analysis, final model for the level of physical activity (active/ very active)

Variables	OR_{gross}	$OR_{adjusted}$ [I.C. 95%]	p
Gender			
Male	1.00	1,00	0.021*
Female	-1.341	0.262 [0.084-0.816]	
Health perception			
Fair	1	1,00	0.030*
Good/Very good	-1.287	0.276 [0.086-0.884]	
Importance of exercising			
No	1	1,00	<0.001*
Yes	-2.331	0.097 [0.285-0.335]	

*Significant effect – p < 0.05: Binary Logistic Regression.

chance of being active/very active compared to the elderly who have a regular perception of health and who do not consider the exercise as important, respectively.

The practice of physical activities favors social interaction, improves self-efficacy, provides a greater sense of control over the events and demands of the environment, both for social engagement and for positive stimulation in the physical aspects of physical activity practice, results in maintenance of the functional capacity and better quality of life of the elderly.[13,19]

The increase of the elderly population brings out the need to discuss some actions aimed at improving the health conditions of the elderly, among them, the importance of practicing physical activity. Through the results, it is important to encourage the participation of the elderly in the TAGs, since there is a positive association between the practice of physical activity and the perception of health. The results indicate that gender, level of education, perception of good health and knowledge of the importance of exercise for health were associated with the practice of physical activities in TAGs.

One of the limiting factors of the study was the fact that it analyzed only the city of Maringá, thus justifying the elaboration of future research addressing elderly people from other Brazilian cities, involving other factors related to the practice of physical activity.

CONCLUSION

In conclusion, the female sex, the high level of education, the perception of good health and the knowledge of the importance of exercise for health were associated with the active/very active level of physical activities in the TAGs.

REFERENCES

1. Mourão ARC, Novais FV, Andreoni S, Ramos LR. Physical activity in the older adults related to commuting and leisure, Maceió, Brazil. Rev Saude Publica. 2013;47(6):1112-22.
2. Kimura T, Kobayashi H, Nakayama E, Kakihana W. Seasonality in physical activity and walking of healthy older adults. J Physiol Anthropol. 2015;34:33. DOI: http://dx.doi.org/10.1186/s40101-015-0071-5
3. Cordeiro J, Del Castillo BL, Freitas CS, Gonçalves MP. Efeitos da atividade física na memória declarativa, capacidade funcional e qualidade de vida em idosos. Rev Bras Geriat Gerontol. 2015;17(3):541-52. DOI: http://dx.doi.org/10.1590/1809-9823.2014.13006
4. Ingram DK. Age-related decline in physical activity: generalization to nonhumans. Med Sci Sports Exerc. 2000;32(9):1623-9. DOI: http://dx.doi.org/10.1097/00005768-200009000-00016
5. Matsudo SM, Matsudo VKR, Barros Neto TL. Atividade física e envelhecimento: aspectos epidemiológicos. Rev Bras Med Esporte. 2001;7(1):2-13. DOI: http://dx.doi.org/10.1590/S1517-86922001000100002
6. Al-Hazzaa HM. Health-enhancing physical activity among Saudi adults using the International Physical Activity Questionnaire (IPAQ). Public Health Nutr. 2007;10(1):59-64. DOI: http://dx.doi.org/10.1017/S1368980007184299
7. Bauman A, Merom D, Bull FC, Buchner DM, Fiatarone Singh MA. Updating the Evidence for Physical Activity: Summative Reviews of the Epidemiological Evidence, Prevalence, and Interventions to Promote "Active Aging". Gerontologist. 2016;56 Suppl 2:S268-80. DOI: http://dx.doi.org/10.1093/geront/gnw031
8. Huisingh-Scheetz MJ, Kocherginsky M, Magett E, Rush P, Dale W, Waite L. Relating wrist accelerometry measures to disability in older adults. Arch Gerontol Geriatr. 2016;62:68-74. DOI: http://dx.doi.org/10.1016/j.archger.2015.09.004
9. Franchi KMB, Montenegro Junior RM. Atividade física: uma necessidade para a boa saúde na terceira idade. Rev Bras Promoç Saúde. 2005;18(3):152-6.
10. Nunes APOB, Luiz OC, Barros MBA, Cesar CLG, Goldbaum M.Domínios de atividade física e escolaridade em São Paulo, Brasil: estudo transversal seriado, 2003 e 2008. Cad Saude Publica. 2015;31(8):1743-55. DOI: http://dx.doi.org/10.1590/0102-311X00130814
11. Corseuil MW, Schneider IJ, Silva DA, Costa FF, Silva KS, Borges LJ, et al. Perception of environmental obstacles to commuting physical activity in Brazilian elderly. Prev Med. 2011;53(4-5):289-92. DOI: http://dx.doi.org/10.1016/j.ypmed.2011.07.016
12. Thomaz PM, Costa TH, Silva EF, Hallal PC. Factors associated with physical activity in adults in Brasília, Central-West Brazil. Rev Saude Publica. 2010;44(5):894-900. DOI: http://dx.doi.org/10.1590/S0034-89102010005000027
13. Rosa TE, Benício MH, Latorre MR, Ramos LR. Determinant factors of functional status among the elderly. Rev Saude Publica. 2003;37(1):40-8. DOI: http://dx.doi.org/10.1590/S0034-89102003000100008
14. Matsudo S, Araújo T, Matsudo V, Andrade D, Andrade E, Oliveira LC, et al. Questionário internacional de atividade física (IPAQ): estudo de validade e reprodutibilidade no Brasil. Rev Bras Ativ Fís Saúde. 2001;6(2):5-18.
15. Gomes VB, Siqueira KS, Sichieri R. Physical activity in a probabilistic sample in the city of Rio de Janeiro. Cad Saude Publica. 2001;17(4):969-76. DOI: http://dx.doi.org/10.1590/S0102-311X2001000400031

16. Salles-Costa R, Werneck GL, Lopes CS, Faerstein E. The association between socio-demographic factors and leisure-time physical activity in the Pró-Saúde Study. Cad Saude Publica. 2003;19(4):1095-105. DOI: http://dx.doi.org/10.1590/S0102-311X2003000400031
17. Pitanga FJ, Lessa I. Prevalence and variables associated with leisure-time sedentary lifestyle in adults. Cad Saude Publica. 2005;21(3):870-7.
18. Guimarães ACA, Silva FB, Soares A, Fernandes S, Machado Z. Nível de percepção de saúde, atividade física e qualidade de vida de idosos. Rev Bras Ciênc Saúde. 2011;14(4):393-8.
19. Rocha SV, Almeida MMG, Tania MA, Santos LB, Rodrigues WKM. Fatores associados à atividade física insuficiente no lazer entre idosos. Rev Bras Med Esporte. 2013;19(3):191-5. DOI: http://dx.doi.org/10.1590/S1517-86922013000300009