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Functional mobility, strength, fear of falling, lifestyle and quality of life in elderly practitioners of walking

Mobilidade funcional, força, medo de cair, estilo e qualidade de vida em idosos praticantes de caminhada

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ABSTRACT

The aging process involves changes in locomotor performance and may predispose the elderly to falls and changes in quality of life. **Objective:** Compare the fear of falling, functional mobility, lower limbs strength, lifestyle and quality of life in sedentary elderly and walking practitioners. **Method:** This is an observational cross-sectional study involving 51 elderly persons, 25 regular walkers (RW) and 26 sedentary (ST) participants. Participants were evaluated for functional mobility (Timed Up and Go - TUG), lower limb strength (stand and sit test), fear of falling (Falls Efficacy Scale – International - FES-I), lifestyle (FANTASTICO questionnaire) and quality of life (SF-36). **Results:** There were no differences between both groups regarding mean age, gender distribution and body mass index. Participants from RW displayed significantly better functional mobility (9.45 ± 2.68 vs. 14.97 ± 6.55 seconds, $p = 0.001$) than those from ST, as well as less fear of falling (23.16 ± 5.33 vs. 29.04 ± 10.22, $p = 0.01$). Lifestyle was also higher among walking practitioners (79.84 ± 5.52 vs. 67.19 ± 10.35, $p = 0.0001$). Regarding quality of life, RW presented higher scores in functional capacity ($p=0.013$), functional limitations ($p = 0.17$), and limitations due to emotional aspects ($p = 0.05$) when compared to the ones in SG. **Conclusion:** Elderly who practice regular walking have better results regarding functional mobility, ability stand and sit down, less fear of falling, better lifestyle and better quality of life in some domains when compared to sedentary elderly subjects.

Keywords: Aged, Mobility Limitation, Physical Fitness, Life Style, Quality of Life

RESUMO

O processo de envelhecimento envolve modificações no desempenho locomotor que podem predispor os idosos a quedas e alterações na qualidade de vida. **Objetivo:** Comparar o medo de cair, mobilidade funcional, força de membros inferiores, estilo e qualidade de vida em idosos sedentários e praticantes caminhada. **Método:** Trata-se de estudo transversal observacional do qual participaram 51 idosos, 25 praticantes de caminhada (GCam) e 26 sedentários (GSed), submetidos à avaliação de mobilidade funcional (Timed Up and Go - TUG), da força de membros inferiores (teste senta-levanta), medo de cair (Escala Internacional de Eficácia de Quedas - FES-I), estilo de vida (questionário FANTASTICO) e Qualidade de vida (SF-36). **Resultados:** Não houve diferença entre os grupos em relação às médias de idade, distribuição de gênero e índice de massa corporal. Os participantes do GCam apresentaram mobilidade funcional significantemente melhor (9,45 ± 2,68 vs. 14,97 ± 6,55 segundos; $p = 0,001$) que os do GSed, e menos medo de cair (23,16 ± 5,33 vs. 29,04 ± 10,22; $p = 0,01$). O estilo de vida também foi superior entre os praticantes de caminhada (79,84 ± 5,52 vs. 67,19 ± 10,35; ($p = 0,0001$). Em relação à qualidade de vida, o GCam apresentou escores maiores nos domínios capacidade funcional ($p = 0,013$), limitações por aspecto físico ($p = 0,17$) e limitações por aspectos emocionais ($p = 0,05$). Já no domínio dor, o GCam apresentou pior resultado ($p = 0,05$) em relação ao GSed. **Conclusão:** Idosos praticantes regulares de caminhada possuem melhor resultados em relação à mobilidade funcional, habilidade de levantar e sentar, menos medo de cair, melhor estilo de vida e alguns domínios da qualidade de vida do que idosos sedentários.

Palavras-chave: Idoso, Limitação da Mobilidade, Aptidão Física, Estilo de Vida, Qualidade de Vida

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INTRODUCTION

Aging is an ever-growing phenomenon in Brazil and around the world.[1] Along this period of life, many changes are perceived in this population such as the physiological alterations onto locomotor performance, what can cause falls and diminished quality of life.[2-4]

Due to these changes, interventions with physical activities are required in order to positively influence their physical fitness and quality of life.[5]

It is known that the constant physical activities may yield benefits to the health of the elderly. Those could be increase in life expectancy[6], control and reduction of risk factors for cardiovascular,[7] bone,[8] and mental diseases,[9] or even the improvement of general well-being.[10] The regular practice of physical activity may cause an increase in the aerobic capacity, muscle strength, cognitive capacity, among other capacities and functions that show this intervention to be essential during the aging process.[11,12]

Despite all the benefits, physical inactivity is a global phenomenon that also affects elderly individuals.[13] Therefore, the encouragement of any type of regular physical activity in this age group should be paramont.[14]

Walking is one of the recommended physical activities for older individuals because it is a low-impact exercise involving large muscle groups that can contribute to social involvement and can result in interesting and healthy benefits.[15] Also, it does not require special skills or conditions and it is feasible for virtually all age groups as it involves low risk of injury.[16]

Once it is an easily accessible, low-cost activity with few contraindications, walking is a common physical activity among the elderly. This practice is known to play an important role in the primary and secondary prevention of cardiovascular disease,[17] and it is considered an excellent type of exercise.[18]

Nonetheless, the wide possible benefits of walking for elderly individuals have not been fully explored in the literature. Therefore, studies regarding the effects of walking on aspects related to motor skills such as muscle strength and functional mobility is suggested in order to know the real effects of this common practice on the lives of elderly individuals.

OBJECTIVE

The objective of this study was to compare the fear of falls, functional mobility, ability to stand and sit, style and quality of life of elderlies who practice walk as a physical activity.

METHODS

This was a crossectional study approved by the Independent Ethics Committee of Centro Universitário Adventista de São Paulo (approval 1.553.237). All participants signed the Informed Consent Form.

A convenience sample of 51 elders aging 60 years of above, of both sexes, from a primary care unit (PCU) of a southern region of Sao Paulo, district of Capao Redondo, was included.

The exclusion criteria were bedridden patients with physical limitations or with hemodynamic complications that limited or impede walking, use of lower limb prosthesis, presence of lower limb osteosynthesis, presence of uncontrolled arterial hypertension or diabetes, cognitive alterations, untreated visual disability, presence of dizziness, and arthropathies with pain intensity equal or above 4, measured by a Visual Analogue Scale (VAS).[19]

Twenty five of the 51 volunteers were regular participants of the PCU walking program. This program occurred twice a week with one hour duration. The individuals of the Walking Group (called GCam) had been subscribed in this activity for at least 6 months prior to the inclusion in this research and were present at least 75% of the walking sessions each month.

The objectives of the walking program is to stimulate physical activity and improve quality and style by preventing losses caused by sedentarism. This group is assisted by physiotherapists and other members of the Family Health team.

The sedentary elderly group (GSed, n = 26) was randomly selected from a list of all individuals registered at the PCU. They were required to meet the same inclusion criteria, however they did not participate in regular physical activity (two or more times a week) of any kind for at least 6 months.

All study participants were subjected to an initial assessment that covered functional mobility tests, lower limb strength, fear of falling, quality of life style. Functional mobility was assessed by the Timed Up and Go test. This test rates the individual mobility level, measuring in seconds the time taken by the volunteer to get up from a chair (without the help of his arms), walk a distance of 3 meters, return and sit again. The test was performed once for familiarization and the second time was used for data collection.[20]

To measure the strength of the lower limbs, the sit-to-stand test, which also assesses balance, was applied. The test was performed with the aid of an armless chair in which the participant sat with the spine erect, feet at shoulder-width apart and arms crossed over the chest. Each volunteer was asked to get up and sit five consecutive times as quickly as possible. The time taken to accomplish this task was recorded.[21-23]

To assess fear of falling, the Falls Efficacy Scale-International (FES-I) was applied. This scale assesses the fear of falling while performing 16 daily activities. The score ranges from 1 ("Not at all concerned") to 4 ("Very concerned"). The total score vary between 16 and 64, where the lower value corresponds to the absence of fear and the higher the value, the greatest fear of falling.[24]

To assess the quality of life, the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) questionnaire was applied.[25] The items are grouped into eight domains: physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health and a question for comparing current health conditions with that of one year before. The instrument analyzes both negative aspects (disease or illness) as well as positive aspects (well-being). Data were evaluated by transforming the answers into scores on a scale from 0 to 100 for each component, without a single value that summarizes the entire assessment.

Lifestyle was assessed by the Portuguese validated version of the Fantastic Lifestyle questionnaire, a generic instrument that considers the behavior of individuals in the previous month.[26] This is a 25-question questionnaire grouped into 9 domains: family and friends; physical activity; nutrition; tobacco/toxics; alcohol; sleep, seat belt, stress and safe sex; type of behavior; insight and career. Possible answers are organized on a Likert scale, and the sum of the points results in a score that rates the individual's lifestyle as excellent (85-100 points), very good (70-84 points), good (55-69 points), regular (35-54 points), and in "needs improvement" (0-34 points).

Data analysis was conducted with the Graph Pad Instat statistical package. Data are presented as means ± standard deviations. Comparisons between groups were made with t-test and Fisher's exact test. In all cases, the descriptive level α was set at 5% ($p < 0.05$).

RESULTS

Fifty one participants of both sexes, aging from 60 to 80 years were included. They formed the sedentary and walking groups (GSed and GCam respectively). They were

comparable regarding mean age, weight, hight, body mass index (BMI), and sex proportions, as shown in table 1.

By comparing the of lifestyle assessments, the results evidence that the GCam had better results when compared to the GSed (Table 2).

Regarding quality of life, the general score did not present significant differences both between groups. However, by analyzing the domains separately, the GCam had better scores when compared to GSed at functional capacity, limitations due to physical aspects, limitations due to emotional aspects and pain (Table 3).

DISCUSSION

The objective of this study was to compare fear of falling, functional mobility, ability to stand and sit, style and quality of life in sedentary elderly individuals and walkers. The results showed that individuals who walk regularly have better functional mobility, ability to get up and sit, less fear of falling, better lifestyle and also have better quality of life in some domains.

Both groups were similar regarding sociodemographic characteristics. Regarding BMI, it is noteworthy that both groups were overweight. Interestingly, the average BMI of GCam participants is in the obesity range. A likely explanation for this fact would be that these individuals have adhered to the walking program precisely because of obesity.

The regular practice of physical activity can prevent important consequences, such as falls, due to stimuli on musculoskeletal and somatosensory systems, what may cause the individual to achieve better conditions of corporal balance.[27] Oppositely, physical inactivity associated with senescence may reduce physical fitness on balance control and, therefore, they may predispose elderly individuals to falls.[27,28] An example on this matter is a recent study that, by comparing the balance of elderly with different levels of physical activity, evidenced that individuals who were very active had better corporal balance than those with sedentary lifestyle.[29]

Regarding the performance during the clinical assessments, all GCam participants obtained better results. Their functional mobility and dynamic balance (evaluated by Timed Up and Go) corroborates with a meta-analysis that found a value of 9.4 seconds for this test on elderly individuals.[30] However, the average time of GSed performance is consistent with that observed in individuals prone to falls,[31] with a TUG time greater than 14 seconds, i.e. an indicative of greater possibility of falling.

Although TUG is widely reported in the literature, probably because it is easy to conduct and not time-consuming,[32] it has a limited ability to predict falls in the elderly, and for this reason should not be used solely for this purpose.[33] Therefore, other clinical tests were also applied in the present study, such as the sit-to-stand test, which is related to lower limb strength and balance. When checking the time spent on this test, it is observed that, on average, the time spent by individuals from GSed exceeded 13.6 seconds, which, according to Guralnik et al.[21] indicates increased disability and morbidity. For Buatois et al.[22], the cutoff point at of the test in order to predict fall propensity would be 15 seconds. The average time taken in the GSed sit-to-stand test was very close to this value (15.3s).

In the age group of 60 to 69 years, which comprises the majority of participants in this study, the sit-to-stand time is expected to be around 11.4s.[23] GCam participants performed 11.1s on average, whereas GSed volunteers needed 15.3s, which higher than that expected for individuals above 80 years of age (14.8s).[23] Hence, the results of the present study indicate that elderly individuals who walk regularly as a physical exercise are within normal limits with respect to the time taken to get up and sit down, which probably contributed to the better execution on the TUG.

Fear of falling is characterized by anxiety during walking or excessive concern with falling, and may be related to factors such as depression, feelings of helplessness, social isolation, and changes that limit functional mobility.[34] Nonetheless, it is reasonable to consider that those who regularly engage in physical activity are less afraid of falling compared to sedentary people, once walking as a physical exercise may improve dynamic balance and emotional aspects regarding fear of falling.[9,35]

Still regarding the fear of falling, the average score obtained by GCam in the FES-I

Table 1. Characteristics of walking and sedentary groups

	Walking group	Sedentary group	p-value
n	25	26	
Women/Men	19/jun	14/dez	0.14
Age (years)	69.4 ± 7.3	70.8 ± 6.8	0.79
Weight (kg)	72.1 ± 10.7	68.1 ± 10.9	0.97
Height (cm)	154.2 ± 10.5	159.7 ± 9.1	0.29
BMI (Kg/m²)	30.4 ± 3.9	26.7 ± 3.8	0.49

BMI: body mass index; kg: kilograms; cm: centimeter; Kg/m²: kilogram per squared meter

Table 2. Result comparison of clinical and life style assessments

	Walking group	Sedentary group	p-value
Timed Up and Go (s)	9.4 ± 2.7	14.9± 6.5	0.001
FES-I	23.2 ± 5.3	29.0 ± 10.2	0.014
Sit-to-stand test (s)	11.2 ± 5.3	15.3 ± 9.3	0.06
Fantastic lifestyle questionnaire	79.8 ± 5.5	67.2 ± 10.3	<0.001

FES-I: Falls Efficacy Scale-International; s: seconds.

Table 3. Quality of life assessment comparison r

	Walking group	Sedentary group	p-value
SF-36 (total score)	59,0±20,1	51,5±24,8	0,35
Physical Functioning	75,4 ± 19,9	57,3 ± 29,2	0,013
Functional limitations	75,0 ± 29,7	49,1 ± 43,1	0,017
Pain	25,6 ± 22,0	38,4 ± 25,1	0,05
General Health	51,2 ± 12,5	57,1 ± 13,8	0,116
Energy/fatigue	50,8 ± 11,9	55,8 ± 13,5	0,166
Social functioning	51,1 ± 13,5	45,9 ± 12,7	0,164
Emotional well-being	78,6 ± 34,5	57,6 ± 40,6	0,05
Mental Health	56,8 ± 8,7	56,6 ± 9,4	0,94

was 23.2, which indicates a history of falls, at least occasionally.[24] The highest score observed in GSed (29.0) fits classification. However, the latter group is two points from being classified as those with recurrent fall.

Regarding lifestyle, there was a significant difference between both groups, with better results in the GCam participants. Quantifying lifestyle is a challenging and inaccurate task as it is made up of many dimensions, naturally difficult to be objectively measured. The questionnaire used in the present study, the FANTASTIC LIFESTYLE questionnaire was not originally developed for elderly individuals, but a recent study[36] that used it in elderly women found that the internal consistency analysis of the instrument reached a Cronbach's alpha of 0.77, therefore considered as acceptable reliability this population.

GCam participants' lifestyles were considered very good, whereas GSed individuals had their lifestyles rated as good.[26] It is possible that individuals who walk are those who care about health-related habits, what can explain the adherence to the walking programs, and that this, in its turn, has triggered other healthy habits. Adopting a healthy lifestyle that includes regular physical activity is known to be extremely beneficial as a way to prevent or control non-communicable diseases and disorders.[17,18]

Regarding quality of life, the results of the present study show significant differences between GCam and GSed in the domains functional capacity, physical limitations, pain and limitation due to emotional aspects. Nevertheless, no differences were observed between the groups in the domains of general health, energy/fatigue, social aspects and mental health.

The functional capacity domain is an important target in the evaluation and health promotion of elderly individuals. It is a central concern on the elderly's quality of life, that is directly influenced as the age increases. In the present study, a good result was observed in functional capacity on those included in GCam. This domain represents the individual's ability to perform activities of daily living, basic personal care activities such as dressing, bathing, getting out of bed and sitting, using the toilet, eating and walking short distances, consequently maintaining their autonomy.

The study by Jesus e Silva[37] found that elderly physical activity practitioners had a good quality of life, with an average score of 77.33 ± 41.25 in this domain, a similar result observed in our study for those in GCam. The limitation by physical aspects was the second best domain evaluated, reaching significantly better results for the elderly of GCam compared to GSed, which emphasizes physical activity as an important factor for maintaining autonomy in the elderly.

Concerning the pain domain, interestingly, the result obtained from GCam was inferior to GSed. Chronic pain (as a disease rather than a symptom) is known to impair the quality of life of the elderly,[38] which may have been the case in this study. It is possible that, due to various pains, the elderly sought walking as a physical activity and treatment. Still, another possible explanation would be that the regular practice of this physical activity is not being performed with due precautions, such as wearing appropriate shoes, pre-warming up, among other factors, what could trigger pain in these population.

A review study[39] reports that there is limited evidence regarding the benefits of physical activity on the quality of life of elderly people and considers that although walking is often performed by the elderly, the authors did not find other studies evaluating the effects of this activity on quality of life.

This study has some limitations. The assessment instruments used were indirect measures, however, all tests had already been validated and are commonly used in several studies and clinical practice as well. The cross-sectional nature of the study also does not allow establishing cause and effect relationships between the variables studied. Nevertheless, the results found were clearly different between the groups, leading us to believe that participation in walking groups may be beneficial for the improvement of functional mobility, balance, strength and reduction of the fear of falling, and it may also improve aspects of quality of life.

Promoting and maintaining a good level of physical activity in the elderly is known to be imperative when healthy aging is desired.[40] Hence, walking seems to be a good alternative. However, randomized controlled trials are suggested to test the effects of walking on pain and other relevant aspects in old age.

CONCLUSION

Elderly who undertake regular walking as a physical exercise may have better functional mobility, fitness to sit and stand, and quality of life, as well as less fear of falling and better performance on functional capacity, physical limitations, and emotional well-being when compared to sedentary counterparts.

REFERENCES

1. Miranda GMD, Mendes ACG, Silva ALA. O envelhecimento populacional brasileiro: desafios e consequências sociais atuais e futuras. Rev Bras Geriatr Gerontol. 2016;19(3):507-19. DOI: https://doi.org/10.1590/1809-98232016019.150140
2. Veras R. Envelhecimento populacional contemporâneo: demanda, desafios e inovações. Rev Saúde Pública. 2009;3(43):548-54. DOI: https://doi.org/10.1590/S0034-89102009000300020
3. Alfieri FM, Moraes MCL. Envelhecimento e o controle postural. Saúde Col. 2008; 4(19):30-3.
4. Alfieri FM, Silva CR, Alcântara CC, Santos KIS, Melo FC. Equilíbrio e mobilidade funcional em indivíduos independentes para o autocuidado de diferentes faixas etárias. Rev Kairós. 2016;18(4):151-63.
5. Brovold T, Skelton DA, Bergland A. Older adults recently discharged from the hospital: effect of aerobic interval exercise on health-related quality of life, physical fitness, and physical activity. J Am Geriatr Soc. 2013;61(9):1580-5. DOI: https://doi.org/10.1111/jgs.12400
6. Moore SC, Patel AV, Matthews CE, Berrington de Gonzalez A, Park Y, Katki HA, et al. Leisure time physical activity of moderate to vigorous intensity and mortality: a large pooled cohort analysis. PLoS Med. 2012;9(11):e1001335. DOI: https://doi.org/10.1371/journal.pmed.1001335
7. Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. CMAJ. 2006;174(6):801-9. DOI: https://doi.org/10.1503/cmaj.051351
8. Kemmler W, von Stengel S. Exercise frequency, health risk factors, and diseases of the elderly. Arch Phys Med Rehabil. 2013;94(11):2046-53. DOI: https://doi.org/10.1016/j.apmr.2013.05.013
9. Hatta A, Nishihira Y, Higashiura T. Effects of a single bout of walking on psychophysiologic responses and execute function in elderly adults: a pilot study. Clin Interv Aging. 2013;8:945-52. DOI: https://doi.org/10.2147/CIA.S46405
10. Lee YJ, Hung WL. The relationship between exercise participation and well-being of the retired elderly. Aging Ment Health. 2011;15(7):873-81. DOI: https://doi.org/10.1080/13607863.2011.569486
11. Mazzeo RS, Cavanagh P, Evans WJ, Fiatarone M, Hagberg J, McAuley E, et al. Exercise and physical activity for older adults. Med Sci Sports Exerc. 1998;30: 992-1008.
12. Falck RS, Davis JC, Milosevic E, Liu-Ambrose T. How much will older adults exercise? A feasibility study of aerobic training combined with resistance training. Pilot Feasibility Stud. 2017;3:2. DOI: https://doi.org/10.1186/s40814-016-0116-5
13. Queiroz BM, Coqueiro RS, Leal Neto JS, Borgatto AF, Basrbosa AR, Fernandes MH. Physical inactivity among non-institutionalized elderly individuals: a population-based study. Cien Saude Colet. 2014;19(8):3489-96. DOI: https://doi.org/10.1590/1413-81232014198.19882013
14. Killingback C, Tsofliou F, Clark C. Older people's adherence to community-based group exercise programmes: a multiple-case study. BMC Public Health. 2017;25;17(1):115. DOI: https://doi.org/10.1186/s12889-017-4049-6

15. Pousas FM, Rodrigues AS, Duarte IA, Bispo AS. Estudo comparativo das alterações na aptidão cardiovascular em idosos praticantes e não participantes de caminhada em Alvarenga, MG. Mundo Saúde. 2007;31(4):489-93.
16. Davison RCR, Grant S. Is walking sufficient exercise for health? Sports Med. 1993;16:369-73.
17. Murtagh EM, Murphy MH, Boone-Heinonen J. Walking: the first steps in cardiovascular disease prevention. Curr Opin Cardiol. 2010;25(5):490-6. DOI: https://doi.org/10.1097/HCO.0b013e32833ce972
18. Morris JN, Hardman AE. Walking to health. Sports Med. 1997;23(5):306-32. DOI: https://doi.org/10.2165/00007256-199723050-00004
19. Chapman RS, Syrjala KL. Measurement of pain. In: Bonica JJ. The management of pain. Londres: Lea & Febiger; 1990. p. 580-94.
20. Podsiadlo D, Richardson S. The timed "Up & Go": a test of basic functional mobility for frail elderly persons. J Am Geriatr Soc. 1991;39(2):142-8. DOI: https://doi.org/10.1111/j.1532-5415.1991.tb01616.x
21. Guralnik JM, Ferrucci L, Pieper CF, Leveille SG, Markides KS, Ostir GV, et al. Lower extremity function and subsequente disability: consistency across studies, predictive models, and value of gait speed alone compared with the short physical performance battery. J Gerontol A Biol Sci Med Sci. 2000;55(4):221-31. DOI: https://doi.org/10.1093/gerona/55.4.M221
22. Buatois S, Miljkovic D, Manckoundia P, Gueguen R, Miget P, Vançon G, et al. Five times sit to stand test is a predictor of recurrent falls in healthy community-living subjects aged 65 and older. J Am Geriatr Soc. 2008;56(8):1575-7. DOI: https://doi.org/10.1111/j.1532-5415.2008.01777.x
23. Bohannon RW. Reference values for the five-repetition sit-to-stand test: a descriptive meta-analysis of data from elders. Percept Mot Skills. 2006;103(1): 215-22. DOI: https://doi.org/10.2466/pms.103.1.215-222
24. Camargos FFO, Dias RC, Dias JMD, Freire MTF. Adaptação transcultural e avaliação das propriedades psicométricas da Falls Efficacy Scale - International em idosos Brasileiros (FES-I-BRASIL). Rev Bras Fisioter. 2010;14(3):237-43. DOI: https://doi.org/10.1590/S1413-35552010000300010
25. Ciconelli RM, Ferraz MB, Santos WS, Meinão I, Quaresma MR. Tradução para a língua portuguesa e validação do questionário genérico de qualidade de vida SF-36 (Brasil SF-36). Rev Bras Reumatol. 1999;39(3):143-50.
26. Anëz CRR, Reis RS, Petroski EL. Versão brasileira do questionário "Estilo de Vida Fantástico": tradução e validação para adultos jovens. Arq Bras Cardiol. 2008;2(91):102-09.
27. Skelton DA. Effects of physical activity on postural stability. Age Ageing. 2001;30(4):33-9. DOI: https://doi.org/10.1093/ageing/30.suppl_4.33
28. Silva EC, Duarte NB, Arantes PMM. Estudo da relação entre o nível de atividade física e o risco de quedas em idosas. Fisioter Pesq. 2011;18(1):23-30. DOI: https://doi.org/10.1590/S1809-29502011000100005
29. Dias RA, Borba W, Martins MS, Alfieri FM. Nível de atividade física e equilíbrio em idosos da comunidade. Lecturas Ed Física y Dep. 2014; 19(194):1.
30. Bohannon RW. Reference values for the timed up and go test: a descriptive meta-analysis. J Geriatr Phys Ther. 2006;29(2):64-8. DOI: https://doi.org/10.1519/00139143-200608000-00004
31. Shumway-Cook A, Brauer S, Woollacott M. Predicting the probability for falls in community-dwelling older adults using the Timed Up & Go Test. Phys Ther. 2000;80(9):896-903.
32. Alfieri FM, Riberto M, Gatz LS, Ribeiro CPC, Battistella LR. Uso de testes clínicos para verificação do controle postural em idosos saudáveis submetidos a programas de exercícios físicos. Acta Fisiatr. 2010;17(4):153-8.
33. Barry E, Galvin R, Keogh C, Horgan F, Fahey T. Is the Timed Up and Go test a useful predictor of risk of falls in community dwelling older adults: a systematic review and meta-analysis. BMC Geriatr. 2014;1(14):14. DOI: https://doi.org/10.1186/1471-2318-14-14
34. Antes DL, Schneider IJC, Benedetti TRB, D'orsi E. Medo de queda recorrente e fatores associados em idosos de Florianópolis, Santa Catarina, Brasil. Cad Saúde Pública. 2013;29(4):758-68. DOI: https://doi.org/10.1590/S0102-311X2013000800013
35. Okubo Y, Osuka Y, Jung S, Rafael F, Tsuimoto T, Aiba T, et al. Walking can be more effective than balance training in fall prevention among community-dwelling older adults. Geriatr Gerontol Int. 2016;16(1):118-25. DOI: https://doi.org/10.1111/ggi.12444
36. Lima ARS, Portes LA, Oliveira NC, Alfieri FM. Limiar de tolerância de dor à pressão, estilo de vida, força muscular e capacidade funcional em idosas com sarcopenia. Acta Fisiatr. 2016;23(2):73-7.
37. Jesus DF, Silva AF. Percepção da qualidade de vida por idosos praticantes e não praticantes de exercícios resistidos: análise do projeto vida corrida. Lecturas Ed Física y Dep. 2010;15(149):1.
38. Cunha LL, Mayrink WC. Influência da dor crônica na qualidade de vida em idosos. Rev Dor. 2011;12(2):120-4. DOI: https://doi.org/10.1590/S1806-00132011000200008
39. Oliveira AC, Oliveira NMD, Arantes PMM, Alencar MA. Qualidade de vida em idosos que praticam atividade física - uma revisão sistemática. Rev Bras Geriatr Gerontol. 2010;13(2):301-12. DOI: https://doi.org/10.1590/S1809-98232010000200014
40. Olanrewaju O, Kelly S, Cowan A, Brayne C, Lafortune L. Physical activity in community dwelling older people: a systematic review of reviews of interventions and context. PLoS One. 2016;11(12):e0168614. DOI: https://doi.org/10.1371/journal.pone.0168614