

Fear of falling and advanced activities of daily living in elderly

Medo de quedas e atividades avançadas da vida diária em idosos

Jessica Faria Souto¹, Pricila Cristina Correa Ribeiro², Roberto Alves Lourenço³

doi: <http://dx.doi.org/10.11606/issn.2238-6149.v29i3p215-222>

Souto JF, Ribeiro PCC, Lourenço RA. Fear of falling and advanced activities of daily living in elderly. *Rev Ter Ocup Univ São Paulo*. 2018 Sept-Dec;29(3):215-22.

ABSTRACT: The elderly population that never fell also experienced the fear of falls, which may lead to limitations in activities of daily living, this study investigated the association between fear of falling and Advanced Activities of Daily Living (AADL) in the elderly community. The sample consisted of 645 elderly (65 years or older), clients of a health care provider, of both sexes, interviewed by the FIBRA-RJ Study. The fear of falling was evaluated by the International Falls Efficiency Scale - Brazil (FES-I-BR). The AADLs were evaluated with literature-based inventory, with the maintenance of 7 or more AADLs, out of a total of 12, considered as better functionality. The prevalence of fear of falling was 5% lower for the elderly with worse functionality for AADL compared to those with better functionality. This association between fear of falling and AADL was independent of fragility, age, sex, history of falls, self-perception of health, depression, number of chronic diseases and medication. This study discusses whether disengagement in AADL would be an adaptive mechanism in old age and possible strategies for reducing the fear of falls in the elderly.

Keywords: Social participation; Aged; Fear; Activities of daily living; Accidental falls.

Souto JF, Ribeiro PCC, Lourenço RA. Medo de quedas e atividades avançadas da vida diária em idosos. *Rev Ter Ocup Univ São Paulo*. 2018 set.-dez.;29(3):215-22.

RESUMO: Considerando que o medo de quedas é vivenciado inclusive por idosos que nunca caíram, podendo levar a limitações nas atividades de vida diária, o presente estudo investigou a associação entre medo de cair e Atividades Avançadas de Vida Diária (AAVD) em idosos comunitários. A amostra foi composta por 645 idosos (65 anos ou mais), clientes de uma operadora de saúde, de ambos os sexos, entrevistados pelo Estudo FIBRA-RJ. Para avaliar o medo de cair foi utilizado a Escala Internacional de Eficácia de Quedas - Brasil (FES-I-BR). As AAVD foram avaliadas com inventário baseado na literatura, sendo a manutenção de 7 ou mais AAVD, do total de 12, considerada como melhor funcionalidade. A prevalência de medo de queda foi 5% menor para idosos com pior funcionalidade para AAVD comparado àqueles com melhor funcionalidade. Esta associação entre o medo de cair e AAVD foi independente da fragilidade, idade, sexo, histórico de quedas, autopercepção de saúde, depressão, número de doenças crônicas e de medicação. Discute-se neste estudo se o desengajamento nas AAVD seria um mecanismo adaptativo na velhice e possíveis estratégias para redução do medo de quedas em idosos.

Descritores: Participação social; Idoso; Medo; Atividades cotidianas; Autoeficácia; Acidentes por quedas.

This study is part of the master's dissertation of the Jessica Faria Souto.

11th Brazilian Conference on Hospital Psychology, Gramado, RS, 2017. IX Congress of Geriatrics and Gerontology of Minas Gerais, Belo Horizonte, MG, 2017. IX Research Seminar on Gerontology and Geriatrics. Campinas, SP, 2016. VIII Congress of Geriatrics and Gerontology of Minas Gerais, Ouro Preto, MG, 2015. 9th Congress of Geriatrics and Gerontology, São Paulo, SP, 2015.

1. Universidade Federal de Minas Gerais. Belo Horizonte, MG. ORCID: <https://orcid.org/0000-0002-7085-4349>. Email: jefsouto@gmail.com

2. Universidade Federal de Minas Gerais. ORCID: <https://orcid.org/0000-0001-9431-2707>. Email: pricilaribeiro@ufmg.br.

3. Universidade do Estado do Rio de Janeiro. ORCID: <https://orcid.org/0000-0003-0838-1285>. Email: roberto.lourenco@globocom.

Endereço para correspondência: Jessica Faria Souto. Rua Manoel Silverio Veloso, 25. Bairro California. Bocaiuva, MG. CEP: 39390-000.

INTRODUCTION

Fear of falling in the elderly can cause depression, loss of confidence, decreased quality of life, limitations in daily living, lack of physical conditioning, balance and gait changes, reduction or restriction of functional activities and social contacts^{1,2,3}. Fear of falls is reported, even, by the older public who never fell, although it is a more frequent phenomenon among elderly with a history of falls⁴.

For the most, the judgment of fear of falls has been realized from Bandura's social cognitive theory, from which self-efficacy related to falls is assessed with information on how confident the person is that he can perform his daily activities without falling⁵. According to Tinetti et al.⁶, the fear of falling expresses low self-efficacy related to falls, that is, lack of confidence in one's ability to prevent falls from happening. Thus, self-efficacy understood as a cognitive component of fear, is also a criterion to be included to assess the functionality of the elderly and may contribute to the targeting of strategies for the prevention and treatment of falls^{1,7}.

Research on the subject is scarce, despite growing awareness of the problem involving this fear^{3,8}. The main focus of studies on falls and the fear of falling among older people has been set in its physical determinants¹, and not so much in the psychological and social aspects. Thus, further studies are needed to understand the effect of psychosocial factors on fear of falls in the elderly.

Neri et al.¹⁰ show relevance of social involvement as a central element of active and healthy aging. It is known that the involvement of older people in Advanced Activities of Daily Living (AADL) allows him to value himself as an active and productive individual, due to his contact with social, intellectual, leisure, organizational and political actions, and roles. The AADLs comprise the set of social, productive and leisure activities related to participation and social involvement, which exceed those of self-care, survival and solution of practical problems¹².

The AADL are associated with decreased risk of death, with emotional well-being, the reduction of depressive symptoms and the better cognitive functioning^{12,13}. Therefore, with this in mind, the basic hypothesis of this study is that older people's performance in AADL can also influence the reduction of the fear of falling, and, consequently, improving self-efficacy concerning falls. The studies on psychosocial outcomes in the health of the elderly are scarce, making it relevant to understand the possible factors associated with fear of falls, since it may determine the focus, ensuring the effectiveness, of preventive strategies.

Although the relationship between functional capacity and fear of falls in the elderly was investigated, the studies prioritized instrumental activities (IADL) and basic activities of daily living (BADL)⁸. Dias and collaborators¹² pointed out that the evaluation, as well as prevention and intervention strategies of AADLs still does not occur systematically in gerontological clinics. Nevertheless, AADLs impairments can be precursors of IADL and BADL losses. This way, it is worth investigating the association between the fear of falling among older people with AADLs to prove the relevance of investing in these activities in the care of older people. The objective this study was to verify the association between the fear of falling and functionality for AADLs in the community elderly, controlling the effects of sociodemographic and clinical factors.

METHODOLOGY

Participants

The sample of this study comprises individuals who had participated in the baseline of the study Frailty in Brazilian Older People - Rio de Janeiro Section (FIBRA-RJ)¹⁴. The collection of baseline data was conducted from 2009 to 2010, at the Research Center of the *Universidade Estadual do Rio de Janeiro*, in the city of Rio de Janeiro, RJ, Brazil, with patients from a health insurance company. The inclusion criteria for participants of the FIBRA-RJ study were: paying for health insurance service for at least 12 months, being 65 years or older, residing in the city of Rio de Janeiro.

A total of 9,769 individuals fulfilled these criteria. To select the study population, we stratified it by sex and age group, the total sample in each stratum being obtained by random sampling. The FIBRA-RJ interviewed 847 older people in their own homes, following the standard protocol of the study (available on: www.geronlab.com/). From this, in this study, we analyzed the data of 645 participants, after excluding the ones who fulfilled the following criteria: incomplete responses in the variables of interest; have severe cognitive impairment associates with dementia, identified by the Mini Mental State Examination¹⁵; answers given by a relative familiar and not by patients themselves; use of the wheelchair or provisional or definitive bed retention; serious sequelae from stroke with loss in strength and/or aphasia; Parkinson's disease in severe or unstable stage, with severe impairment of motor, speech or affection skills; severe hearing or sight impairment, strongly hindering communication; and be in terminal stage.

All participants signed the informed consent form, that, along with the study, was approved by the Research

Ethics Committee of the *Hospital Universitário Pedro Ernesto*, and of the *Universidade do Estado do Rio de Janeiro* (case número 1850-CEP/HUPE).

Tools

Fear of falling FES-I-Brazil was used in the Falls Efficacy Scale – International (FES-I) version, after being adapted and validated for use in the Brazilian population. The FES-I-Brazil measures the opinion of the older population on the possibility of falling when doing each of the 16 described activities, having as response options: “not concerned at all”, “a little concerned”, “very concerned” and “extremely concerned”. The values range from 16 points for individuals not concerned at all with falling to 64 points for extremely concerned individuals. This variable was classified according to a cut of 23 points.

Performance in Advanced Activities of Daily Life (AADLs). We used a structured inventory with a list of activities obtained based on literature^{11,16} aimed at verifying the involvement of older people in 12 activities of social, leisure, cultural, organizational, political and productive nature. For each of the 12 inventory activities, participants need to choose between the following options: “never done it before”, “stopped doing it” and “still do it”. People with better functionality for AADLs were those who responded “still do it” for 7 or more activities. This score was chosen from the median value for the total sample of activities reported as “still do it”.

Clinical and functional variables. Number of falls in the last year (0, 1–2, 3); number of comorbidities reported as diagnosed by a physician, in the last 12 months, among the following chronic diseases: heart disease, hypertension, stroke, diabetes, cancer, arthritis or rheumatism, lung diseases, depression and osteoporosis (patients had to answer “yes” or “no” for each of them), categorized in 0–1, 2–3, ≥ 4 ; number of medications used regularly, categorized into 0–3, 4–6, ≥ 7 ; use of walking aids (“yes”/“no”); self-report of impaired hearing and sight (“if he/she had difficulty to see or hear” [“yes”/“no”]). Self-perception on health was assessed with the question “in general, how do you see your own health”, with the following response choices: “very good”, “good”, “regular”, “bad” and “really bad”, which were to 2 strata for analysis: “very good” and “good”; “regular”, “bad” and “really bad”.

Participation in the basic activities of daily living (BADL) was evaluated through the Brazilian version of the Katz index, whose answers suggest “dependence”, “independence” or “need for help” to perform such activities¹⁷.

Performance in instrumental activities of daily living (OADL) was determined by the Lawton and Brody¹⁸ scale, which could capture dependence or independence in each activity. The participants who needed help to carry out at least one of the evaluated activities were considered dependent. The fragility syndrome was evaluated after the five indicators proposed by Fried et al.¹⁹ were identified: unintentional weight loss, low grip strength, exhaustion, low gait speed and low level of physical activity¹⁴. From these criteria, they were divided into the following groups: non-fragile, pre-fragile and fragile. The level of physical activity was assessed in the last year (best/worst/same). From the reduced Brazilian version of the geriatric depression scale (GDS-15), patients had the option to answer “yes” or “no” to each of the depressive symptoms described. The cutting point is of 5/6.

Socio-demographic variables. Sex, age, schooling. The evaluation was performed from self-reports. The age was obtained from the birth date informed by older patients, which were grouped into four age ranges: 65–69, 70–74, 75–79, and 80 years and more. Information on schooling was obtained after having asked patients about the number of years of study they had, categorizing them from 1 to 4 years (illiterate); from 5 to 8; and 9 years or more of schooling. Social support was assessed by asking “If you need help to execute any of these activities of daily living, do you have someone to reach out to?” and “Do you have a relative, friend or neighbor who could take care of you in case of need?” (“yes”/“no”)

Data analysis

The Pearson’s Chi-square test was performed to associate each of the independent variables with the fear of falling. Variables significantly associated ($p < 0.001$) with the outcome variable were maintained in the Poisson’s regression model. Poisson regression was used to estimate the adjusted prevalence ratios (and their respective 95% confidence intervals), considering that this analysis could provide more consistent estimates when compared to logistic regression, given the high prevalence of the analyzed outcome. All results presented on relative frequencies and association measures were considered by the sampling weight. All the answers of the participants were recorded and analyzed in the program *SPSS for Windows 21.0 (Statistical Package for Social Sciences)*.

RESULTS

Among the 645 analyzed patients, 263 (40.8%) feel fear of falling, while 382 (59.2%) do not. Table 1 shows

the socio-demographic characteristics associated with fear of falling.

Table 1. Socio-demographic characteristics associated with the fear of falling

	Fear of falling	
	No n (%)	Yes n (%)
Functionality to AAVD*		
Worst	217 (57.2%)	169 (64.7%)
Best	165 (42.8%)	94 (35.3%)
Age*		
65–69	80 (20.9%)	42 (16.0%)
70–74	103 (27.0%)	56 (21.3%)
75–79	105 (27.4%)	58 (22.1%)
≥80	94 (24.6%)	107 (40.7%)
Sex*		
Female	240 (58.7%)	204 (75.1%)
Male	142 (41.3%)	59 (24.9%)
Income*		
≤1	45 (11.8%)	37 (14.1%)
1.01–3	57 (14.9%)	38 (14.2%)
3.01–5	103 (27.0%)	62 (23.8%)
5.01–10	107 (28.0%)	88 (33.4%)
>10	70 (18.3%)	38 (14.5%)
Schooling*		
Illiterate	5 (1.0%)	9 (3.0%)
1–4	57 (14.8%)	45 (17.3%)
5–8	70 (18.2%)	65 (24.6%)
≥9 years	250 (66.0%)	144 (55.1%)
History of falls*		
0	311 (81.2%)	157 (59.7%)
1–2	63 (16.7%)	86 (32.7%)
≥3	8 (2.1%)	20 (7.6%)

*p<0.001
n (%): number of individuals in the unweighted sample (weighted by the percentage of the sampling weight)

All the socioeconomic, clinical and functional variables showed a significant association with fear of falling in the bivariate analyses, including AADLs, whose association has shown that the higher the functionality, the lower the fear of falling (PR = 1.05; CI = 1.00 – 1.09). However, in the multivariate model, the association between AADLs and the fear of falling changed, i.e. we observed a higher prevalence of fear of falling for those with greater

functionality compared to those with less functionality for AADLs (Table 2).

Table 2. Prevalence ratio and 95% confidence intervals for the association between functionality for AAVD, the fear of falling, and clinical and psychosocial characteristics

	PR (CI 95%)	p-value
Functionality for AAVD		
Worst	0.95 (0.91–0.99)	<0.05
Best	1	
Fried Fragility Index		
Fragile	1.09 (1.02–1.17)	<0.05
Pre-fragile	1.07 (1.03–1.12)	<0.05
No case	1	
Age		
≥80	1.08 (1.02–1.15)	<0.05
75–79	0.97 (0.91–1.03)	0.255
70–74	0.96 (0.90–1.03)	0.217
65–69	1	
Sex		
Female	1.09 (1.04–1.14)	<0.05
Male	1	
History of falls		
≥3	1.13 (1.03–1.24)	<0.05
1–2	1.14 (1.09–1.19)	<0.05
0	1	
Self-perception of health		
Negative	1.09 (1.05–1.14)	<0.05
Positive	1	
GDS		
With suspicion of depression	1.14 (1.09–1.19)	<0.05
Without suspicion of depression	1	
Number of comorbidities		
≥4	1.08 (1.01–1.17)	<0.05
2–3	1.03 (0.98–1.08)	0.253
0–1	1	
Number of medications		
≥7	1.07 (1.01–1.13)	<0.05
4–6	1.02 (0.97–1.07)	0.502
0–3	1	

PR (CI 95%): Prevalence ratio and 95% confidence interval 95% obtained with Poisson's regression and weighted with sampling weight, adjusted for AADL, BADL, IADL, age, schooling, fragility, sex, history of falls, social support, self-perception of health, GDS-15 rating, number of comorbidities, medications, dependency on walking aids, impaired hearing and sight.

The prevalence of the fear of falling was 5% lower for older people of worse functionality for AADLs compared to those of higher functionality; 9% higher for those who are fragile and 7% higher for pre-fragile individuals when compared to the non-fragile; 8% higher for the oldest ones (≥ 80 years) when compared to the aged between 65 and 69; 9% higher for women compared to men; 13% higher for those who fell 3 or more times and 14% higher for those who fell 1 or 2 times when compared to the ones who have never fell; 9% higher for those who see their own health as negative compared to those who see it as positive; 14% higher for those with suspicious of depression when compared to patients without suspicious of depression; 8% higher for those with 4 or more comorbidities when compared to who has from 1 to 7% more for people that take 7 medications or more when compared to the ones who take up until 3 medications.

DISCUSSION

Based on evidence that the involvement in AADLs brings many benefits to the older people^{12,13}, we hoped to observe the association between greater functionality for AADLs with the lowest prevalence of fear of falling. However, differently from what we expected, the results of this study showed that the fear of falling among the older people with worse functionality for AADLs was lower than among the older people with better functionality for, that is, the less engaged group showed the highest self-efficacy regarding falls.

The association between having less fear of falling and worst AADLs may stem from lower exposition of older people with the worse functional condition to environmental dangers and adversities experienced when getting out of the home environment. In addition, the obtained association may correspond to an adaptive mechanism for these older people to deal with losses associated with aging, according to Baltes and Baltes²⁰ in their lifespan theory, about selection, optimization and compensation strategies (SOC theory). According to these authors, the selection strategy involves addressing the goals prioritized from compatibility with the available resources; optimization implies the use of the internal and external resources available to achieve the defined goals, while compensation implies the use of achievable mechanisms and alternatives for the functioning maintenance. Based on this mechanism, one can assume that older individuals can select the AADLs in which they are more competent and that demand less of their physical, emotional and social resources. Thus, the decrease in activity level would be beneficial in the sense that older

people's capabilities could be saved for activities associated with greater well-being; promoting loss minimization and maximization of profit.

We also have to consider the explanations of the socioemotional selectivity theory derived from SOC regarding older people who redistribute their own socioemotional resources as their perspectives on future change. According to this theory, older people tend to actively reduce their social networks and restrict their social contact to people who provide significant positive emotional experiences, which optimizes psychological well-being in old age. The assumptions of this theory may explain the decrease in the level of AADLs observed in this study; encouraged by emotional regulation, older people can focus on activities at their own households, abandoning those not carried out with their closest social group. Regarding this, the findings of this study are relevant to the understanding of psychological phenomena, such as self-efficacy associated with common events at an old age, such as falling. Moreover, understanding these phenomena based on the psychology of aging models can enhance gerontological interventions, as these theories contribute to the discussion on the changes that occur with aging.

It is known that not only physical conditions and skills work on self-efficacy, but also social influence, previous experiences and observation of others experience. Thus, it is possible to assume that older people with worse functionality for AADLs are being deprived of experiences that increase their chances of being afraid of falling. One could also assume that they have been avoiding these activities, as self-efficacy can also work as predictive of future behavior.

It is important to pay attention to the current "glamorization of coexistence groups for older people" and "forced socialization" that make them engage in socialization activities by ignoring the existence of heterogeneity in old age. Despite the benefits of social engagement to the physical and mental health of the older people, depending on the functional profile of the patient, reducing the number of activities may be a good idea in the sense that reducing AADL involvement could work as a preventive and well-being promoting strategy. Corroborating with what was previously said, Pereira and collaborators²³ described that when falling, older people's perception unsafe public places becomes a protective factor. Thus, there is need for more investments to make the urban space more accessible and safer for the older population, as spaces outside the home environment may be seen as unsafe, increasing the fear of falling.

In this research, older people with worse functionality

for AADL showed lower prevalence of falls than those with best functionality for AADL. In the external environment, older people's sense of control on the things they find unsafe is affected, which may lead to more severe consequences for falls and to the fear of falling. The consequences to the falls contribute more to the increase in the fear of falling than the actual fall. In this study, considering the sample size of older people who have fallen was not significant enough, we could not study the consequences of the falls. Thus, we suggest that future studies evaluate the consequences of falls as an intervening variable in the relationship between self-efficacy associated with falls and the AADL.

It is important to highlight that most of the study population could not carry out some of the AADL of the survey questionnaire due to its sociocultural context. Group activities for older people, for example, had low frequency within the population under study; 62.6% of our patients have never taken part of such activities before. According to Pinto and Neri²⁴, participating in this type of extension program requires resource availability, as well as compatibility with previous occupations; with levels of education and income; with family commitments; and with habits and interests of older men and women. Participation frequency was also low for voluntary work (64.2% of participants have never done it before), which Dick and Neri²⁴ attribute to the fact of volunteering not being widespread in Brazilian culture.

In a review study, Dias and collaborators¹² highlighted the difficulty to create a universal scale for measuring the AADL functionality due to the high variability between individuals. The authors show that opting to include this type of activity in daily life depends on subjective, psychosocial, and cultural factors, on the patient's lifestyle, economic conditions and motivation. Furthermore, corroborating with Oliveira et al.¹⁶, the frequency/intensity of involvement with these activities would be a more accurate way of assessing functionality when compared to the amount of conducted AADLs. In this study, we used an inventory that has been widely used in the Brazilian context^{13,16} to describe older people's engagement in social activities. However, we recommend researchers to come up with different instruments to promote a more systematical evaluation when compared to AADL.

The study population comprised healthy older people and we have not compared them to other who presented higher levels of functional loss in basic and instrumental

activities of daily living. There is need for further studies to evaluate the association of self-efficacy regarding falls among older people with a greater variability of functional profiles. Antes and collaborators⁸, for example, noted that with a profile of greater physical health impairment, the reduction of social contacts may be associated with the greatest fear of falling.

Regarding clinical and psychosocial characteristics, the results of this study support the findings that pointed out to aging, the female sex, history of falls, the suspicion of depression, the worst perception of health and the worst level of activity as factors associated with the increase in the fear of falling^{1,3,8}. It is worth mentioning that in a previous study, with the same sampling, Malini et al.²⁵ had already pointed out to these associations between various clinical, functional and psychological variables and the fear of falling. However, this study showed that, under the effect of the AADL, some of these demographic and clinic characteristics lose their effect, such as: schooling, functional dependence for basic and instrumental activities, hearing and visual impairment, the use of a walking stick and presence of someone to count on. Hence, we can conclude that the impact of AADL functionality is extremely important to the fear of falls, so that these findings contribute to broadening the understanding of older people care, including the study of phenomena both of physical and psychological character. This way, the proposed model goes beyond the explanations of biomedical models when seeking for explanations for gerontological issues with the inclusion of biopsychosocial determinants, i.e., goes beyond biological dimensions, more commonly studied in care of older people.

Among the strengths of this study, we highlight the sampling, as it comprises a large number of community individuals and have investigated the association between AADLs with the FES-I-Brazil, an unexplored theme in the gerontological field. The effect of AADLs on the fear of falling was contrary to our initial hypothesis in this investigation and shows the complexity of AADLs within the care of older people. There is need for studies on the approached themes as prevention and health promotion strategies need to go beyond simple incentives of these activities among older people. We believe further investigation is necessary to expand the understanding on the effects of this engagement in old age, as well as to contribute to the psychology of aging.

Acknowledgements: Brazilian National Research Council (CNPq-555087/2006-9), Carlos Chagas Filho Support Foundation to Research of the state of Rio de Janeiro, Brazil (FAPERJ-E-171,469/26/2006, E-26/110,294/2007), Minas Gerais Research Foundation - FAPEMIG (CHE-APQ-01145-14).

Funding agencies: Brazilian National Research Council-CNPq (Nº 555087/2006-9) and Minas Gerais Research Foundation-FAPEMIG (CHE-APQ-01145-14).

Contributions of each author to the article: JF Souto – elaborated the manuscript; performed statistical analysis, data interpretation and wrote the manuscript. PCC Ribeiro – elaborated the research project; wrote the manuscript; oversaw the analysis of data; and finalized the text of the manuscript. RA Lourenço – participated in the preparation of the research project and the critical review of the manuscript.

REFERENCES

1. Scheffer AC, Schuurmans MJ, Dijk N, Hooft TD, Rooij SE. Fear of falling: measurement strategy, prevalence, risk factors and consequences among older persons. *Age Ageing*. 2008;37(1):19-24. doi: 10.1093/ageing/afm169.
2. Dias RC, Freire MTF, Santos EGS, Vieira RA, Dias JMD, Perracini MR. Características associadas à restrição de atividades por medo de cair em idosos comunitários. *Braz J Phys Ther*. 2011;5(15):406-13. doi: 10.1590/S1413-35552011000500011.
3. Malini FM, Lopes CS, Lourenço RA. Medo de quedas em idosos: uma revisão da literatura. *Pedro Ernesto University Hosp J*. 2014;13(2):38-44. doi: 10.12957/rhupe.2014.10127.
4. 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). *Braz J Phys Ther*. 2010;3(14):237-43. doi: 10.1590/S1413-35552010000300010.
5. Bandura A, Adams NE, Beyer J. Cognitive processes mediating behavioral change. *J Personality Social Psychol*. 1977;35(3):125-39. doi: 10.1037/0022-3514.35.3.125.
6. Tinetti ME, Richman D, Powell L. Falls efficacy as a measure of fear of falling. *J Gerontol*. 1990;45(1):239-43. doi: 10.1093/geronj/45.6.P239.
7. Delbaere K, Close JC, Mikolaizak AS, Sachdev PS, Brodaty H, Lord SR. The Falls Efficacy Scale International (FES-I): a comprehensive longitudinal validation study. *Age Ageing*. 2010;39(2):210-6. doi: 10.1093/ageing/afp225.
8. Antes DL, Schneider IJC, Benedetti TRB, D'Orsi E. Medo de queda recorrente e fatores associados em idosos de Florianópolis. *Cad Saúde Pública*. 2013;29(4):758-68. doi: 10.1590/S0102-311X2013000400013.
9. Hadjistavropoulos T, Delbaere K, Fitzgerald TD. Reconceptualizing the role of fear of falling and balance confidence in fall risk. *J Aging Health*. 2011;23(1):3-23. doi: 10.1177/0898264310378039.
10. Neri AL, Costa TB, Marincolo JCS, Ribeiro LHM. Atividade física, envolvimento social, produtividade e satisfação com a vida. In: Neri AL, Guariento ME. *Fragilidade, saúde e bem-estar em idosos: dados do estudo FIBRA Campinas*. Campinas: Alínea; 2011.
11. Reuben D, Laliberte L, Hiris J, Mor V. A hierarchical exercise scales to measure function at the Advanced Activities of Daily Living (AADL) level. *J Am Geriatr Soc*. 1990;38(8):855-61. doi: 10.1111/j.1532-5415.1990.tb05699.x.
12. Dias EG, Duarte Y, Almeida MHM, Lebrão ML. Caracterização das atividades avançadas. *Rev Ter Ocup Univ São Paulo*. 2011;1(22):45-51. doi: 10.11606/issn.2238-6149.v22i1p45-51.
13. Sposito G, Neri AL, Yassuda MS. Atividades avançadas de vida diária (AAVDs) e o desempenho cognitivo em idosos residentes na comunidade: dados do estudo FIBRA Polo UNICAMP. *Braz J Ger Gerontol*. 2016;19(1):7-20. doi: 10.1590/1809-9823.2016.15044.
14. Moreira VG, Lourenço RA. Prevalence and factors associated with frailty in an older population from the city of Rio de Janeiro, Brazil: the FIBRA-RJ Study. *Clinics*. 2013;68(7):979-85. doi: 10.6061/clinics/2013(07)15.
15. Brucki SMD, Nitrini R, Caramelli P, Bertolucci, PHF, Okamoto IH. Sugestões para o uso do Mini-exame do Estado Mental no Brasil. *Arq Neuro-Psiquiatr*. 2003;61(3-B):777-81. doi: 10.1590/S0004-282X2003000500014.
16. Oliveira EM, Silva HS, Lopes A, Cachioni M, Falcão DVS, Batistone SST, et al. Atividades avançadas de vida diária (aavd) e desempenho cognitivo entre idosos. *Psico-USF*. 2015;1(20):109-20. doi: 10.1590/1413-82712015200110.
17. Lino VTS, Pereira SRM, Camacho LAB, Ribeiro Filho ST, Buksman S. Adaptação transcultural da escala de independência em atividades de vida diária (escala de Katz). *Cad Saúde Pública*. 2008;24(1):103-12. doi: 10.1590/S0102-311X2008000100010.
18. Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. *Gerontologist*. 1969;9(3):179-86. doi: 10.1093/geront/9.3_Part_1.179.
19. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci*. 2001;56(3):146-56. doi: 10.1093/gerona/56.3.M146.
20. Baltes PB, Baltes MM. Psychological perspectives on successful aging: The model of selective optimization with compensation. In: Baltes PB, Baltes MM. *Successful aging. Perspectives from behavioral sciences*. Cambridge: Cambridge University Press; 1990. p.1-34.

21. English T, Carstensen LL. Selective narrowing of social networks across adulthood is associated with improved emotional experience in daily life. *Int J Behav Dev.* 2014;38(2):195-202. doi: 10.1177/0165025413515404.
22. Moura GA, Souza LK. Autoimagem, socialização, tempo livre e lazer: quatro desafios à velhice. *Textos Contextos (Porto Alegre).* 2012;11(1):172-83. doi: 10.15448/1677-9509.
23. Pereira GN, Morsch P, Lopes DG, Trevisan MD, Ribeiro A, Navarro JH, et al. Social and environmental factors associated with the occurrence of falls in the elderly. *Cien Saúde Coletiva.* 2013;18:3507-14. doi: 10.1590/S1413-81232013001200007.
24. Pinto JM, Neri AL. Doenças crônicas, capacidade funcional, envolvimento social e satisfação em idosos comunitários: Estudo Fibra. *Cien Saúde Coletiva.* 2013;18(12):3449-60. doi: 10.1590/S1413-81232013001200002.
25. Malini FM, Lourenço RA, Lopes CS. Prevalence of fear of falling in older adults, and its associations with clinical, functional and psychosocial factors: The Frailty in Brazilian Older People-Rio de Janeiro Study. *Ger Gerontol Int.* 2015;16(3):336-44. doi: 10.1111.ggi.12477.

