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Psychometric evaluation of the Sinhala version of the Falls Efficacy Scale-International in older adults with chronic obstructive pulmonary disease

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Abstract

Background: Fear of falling is common among older adults with Chronic Obstructive Pulmonary Disease (COPD) and is linked to activity restriction and poorer quality of life. The Falls Efficacy Scale-International (FES-I) is widely used to assess fear of falling; however, a validated Sinhala version was not available for this population.

Objective: To evaluate the psychometric properties of the Sinhala version of the 16-item Falls Efficacy Scale (FES-I) in older adults with COPD.

Methods: A cross-sectional study was conducted at the Central Chest Clinic and the National Hospital for Respiratory Diseases from August to September 2024. A total of 229 participants were recruited using a purposive sampling technique. The Falls Efficacy Scale-International (FES-I), translated into Sinhala, was used to assess fear of falling. Internal consistency was evaluated using Cronbach's alpha. Construct validity was examined through exploratory factor analysis. Receiver operating curve (ROC) analysis was conducted to assess specificity and sensitivity and to determine the optimal cut-off score.

Results: The mean age was 70.71±6.83 years, and the mean FES-I score was 33.21±9.0. Internal consistency of the Sinhala FES-I was excellent, with a Cronbach's alpha of 0.889. Exploratory factor analysis revealed four factors with eigenvalues ranging from 1.121 to 6.030. The four-factor model explained 69.3% of the total variance, indicating a multidimensional structure. Cut-off point for FES-I was 31.5, which differentiates between fallers from non-fallers with a sensitivity of 78.9% and a specificity of 60%.

Conclusions: The Sinhala version of the FES-I is a reliable and valid tool for assessing the level of fear of falling among Sinhala-speaking older adults with COPD in Sri Lanka.

Keywords: fear of fall, Falls Efficacy Scale, COPD, psychometric properties

Introduction

The fear of falling is a common problem among older adults. Concerns about falls could reduce activities of daily living [1–3]. Among older adults, fear of falling occurs in 20–85% of cases, and 20–55% experience restrictions on activities of daily living (ADL) due to fear of falling. Between 30% and 50% of older adults who live alone experience fear of falling, whether they fall or not [2,4]. Fear of falls has a significant impact on the quality of life by limiting social interaction, mobility, and overall sense of well-being. Slower gait speed, shorter stride length, increased stride width, and prolonged double-limb support time are spatiotemporal gait changes that influence fear

of fall in older adults [5]. Tinetti & Powell 1993 defined fear of falling as, "Lasting concern for falling, a perceived low self-confidence that leads individuals into avoiding activities that they remain capable of performing" [6]. Compared to the overall older population, older adults with COPD had a higher fear of falls. Impaired balance, lower quadricep strength, and reduced exercise capacity are associated with increased fear of falling among people with COPD. People with a history of falls have a higher fear of falling than those without a history of falls in the COPD population [7].

The fear of falling declines linearly after two to three years without experiencing a fall [8]. The Falls Efficacy Scale-International (FES-I), Activity-Specific Balance Confidence Scale (ABC), a short form of the FESI, Mobility Efficacy Scale (MES), and Survey of Activity and Fear of Falling in the Elderly (SAFFE) were used to measure worry about falling. By improving gait, balance, mood, and strength, exercise can help reduce the fear of falling. Balance training, Tai Chi, and Strength and resistance training are the interventions that can be used to minimise concerns about falling [9].

The Falls Efficacy Scale-International is a widely used questionnaire for assessing fear of falling in older adults [10-13]. Many studies have done cross-cultural adaptation and translations of the FES-I among community-dwelling older adults. The original 16-item Falls Efficacy Scale-International demonstrated a high Cronbach's alpha of 0.96, indicating excellent internal consistency [14]. It has been translated and has undergone cultural adaptations into Chinese [15], Turkish [16], Persian [17], Swedish [18], Brazilian Portuguese [19] and Greek [20]. Additionally, several studies have evaluated the psychometric properties of the FES-I among different study populations, including individuals with multiple sclerosis [21], hemiplegic stroke [22], Parkinson's disease [23], and chronic obstructive pulmonary disease [24]. All the studies reported excellent reliability, contrast validity and convergent validity in respective populations. However, no studies have validated the Sinhala version of the FES-I among older adults with COPD. Our study aimed to validate the Sinhala version of the FES-I among older adults with COPD in Sri Lanka.

Methods

A cross-sectional study was conducted at the Central Chest Clinic, Colombo, and the National Hospital for Respiratory Diseases (NHRD) from the 5th of August to the 14th of September in 2024. A total of 229 volunteer participants, aged 60 and above, were recruited. Participants were selected using a purposive sampling technique. Before joining the study, each participant was informed about the purpose of the study and got their written consent. Individuals were excluded if they had cardiac, orthopaedic, or neurological conditions that would affect their normal lower-limb function, or if they used assistive devices or were not fluent in Sinhala.

All participants were asked about their age, height, weight, marital status, and employment status. Participants answered questions about their perceived level of balance. They were also asked about their own feelings of balance, such as feelings of imbalance, unsteadiness, spinning, feeling of movement when sitting or standing, the sensation of going to fall, and feeling disoriented with a loss of sense of time or location. Also, asked whether they had experienced any falls during the last 12 months due to loss of balance. The number of falls was also recorded.

The FES-I scale was used to assess the fear of falling. The questionnaire contains 16 items, each item scored on a four-point scale ranging from 1 (not concerned at all) to 4 (very concerned). The total score ranges from 16 (absence of concern) to 64 (high concern). The construct validity of FES-I was assessed by comparing it with TUG and 6MWT.

Timed Up and Go Test: The Timed Up and Go test was used to evaluate functional mobility. The principal investigator instructed the patient to stand up, walk around 3 meters, return to the chair, and sit down. The timing started when the patients back lifted off the seat of the chair and stopped when their buttocks retouched the chair. The participant was instructed to complete the test at their normal gait speed, and an appropriate gait aid could be used if needed [25]. The participant was also asked to complete the trial.

Six-Minute Walk Test: The six-minute walk test was used to evaluate functional capacity. Performed according to American Thoracic Society guidelines [26]. The walking course had to be 30m in length, and it should have been a long, flat, straight corridor. Turnaround points were marked by two cones. The participant was asked to relax on a chair close to the starting position and ensure they wore clothes and shoes appropriately. Recorded distance covered in 6 minutes by the participant.

Translation of FES-I

The Sinhala version of the FES-I, translated by Dr. S.A.A. Seneviratne and Dr. Sudarshani Wasalathanthri, was used in this study [14]. Pre-test and pilot-test were conducted before performing the translated version of the questionnaire.

Statistical analysis

All the data were analysed using the Statistical Package for the Social Sciences (SPSS), version 29. Descriptive statistics were used to describe the sociodemographic data and prevalence of falls. Continuous data were summarised as mean ± standard deviation (SD), while categorical data were presented as frequencies and percentages. The internal

Table 1. Characteristics of the study population

Sociodemographic characteristic		Frequency (n=229)	Percentage (100%)
Age (years)	60-65	72	31.4
	66-70	51	22.2
	70>	106	46.4
Gender	Male	177	77.3
	Female	52	22.7
Ethnicity	Sinhalese	180	78.6
	Muslim	39	17.0
	Tamil	10	4.4
Marital status	Married	200	87.3
	Unmarried	25	11.0
	Divorced/Widow	4	1.7
Employment status	Employed	68	70.3
	Unemployed	161	29.7
Concern about the fear of falling	Low	11	4.8
	Moderate	46	20.0
	High	172	75.2
Faller status	Fallers	52	24.9
	Non-fallers	177	75.1

Table 2. Total variance explained by the model in the Sinhala version of the FES-I

Component	Initial Eigenvalues			*Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.030	37.690	37.690	**6.030**	**37.690**	**37.690**
2	2.148	13.424	51.114	**2.148**	**13.424**	**51.114**
3	1.791	11.194	62.309	**1.791**	**11.194**	**62.309**
4	1.121	7.008	69.316	**1.121**	**7.008**	**69.316**
5	.887	5.543	74.859			
6	.832	5.202	80.061			
7	.617	3.855	83.915			
8	.553	3.454	87.370			
9	.426	2.664	90.034			
10	.380	2.377	92.411			
11	.334	2.089	94.500			
12	.247	1.546	96.047			
13	.229	1.434	97.480			
14	.187	1.171	98.651			
15	.132	.826	99.477			
16	.084	.523	100.000			

consistency of the FES-I was evaluated by Cronbach's alpha. Exploratory factor analysis (EFA) was used to assess construct validity of the Sinhala version of the FES-I. By using scree plots and the Kaiser criterion, exploratory principal component analysis (PCA). Convergent validity was assessed by correlating FES-I scores with Timed Up and Go (TUG) performance and 6-minute walk distance (6MWD). Receiver operating characteristic (ROC) curve analysis was performed to determine sensitivity, specificity and an optimal cut-off score.

Results

A total of 229 eligible participants were recruited for this study. The mean age of the participants was 70.71±6.83 years. The mean fear of falling score of the sample was 33.21±9.0. Characteristics of the participants are given in Table 1. Participants who experienced at least one fall were considered as fallers. Among the participants, 24.9% (n=57) had fallen within the previous 12 months, with the number of falls ranging from one to two. About 22.7% (n=52) of

participants fell one time only. Participants aged above 70 years had significantly higher FES-I scores compared to those aged 66–70 years and 60–65 years (37.2 ±8.75, 30.82 ±7.8 and 28.92 ±7.6, p=0.001). Also, Fear of falling significantly increased with age (p=0.001, r=0.402). FES-I scores were higher in females (34.02±9.37) than males (32.97±8.98), and were not statistically significant (p=0.530). Fear of falling was significantly higher in fallers (39.5±7.44) compared to non-fallers (31.1±8.53).

Reliability

The internal consistency (Cronbach's α) of the Sinhala version of FES-I was 0.889, which was above the threshold level of 0.7.

Construct validity

Exploratory factor analysis (EFA) was conducted to examine the underlying structure of the Sinhala version of the FES-I. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.697. Bartlett's test of sphericity was statistically significant ($\chi 2=2237.2$; df=120; p=0.001). Therefore, no items were removed from the analysis. The principal component analysis (PCA) identified four factors with eigenvalues greater than 1, ranging from 1.121 to 6.030 (Table 2). The scree plot illustrating the factor structure is presented in Figure 1. The four-factor model explained 69.3% of the total variance of the model.

The first sub-factor with six items was named "outdoor mobility and community participation"; the second sub-factor was called "personal care", the third sub-factor with four items was named "household activities", and the fourth sub-factor with two items was named "challenging mobility tasks" (Table 3). Cronbach's alpha of the four sub-factors were 0.873, 0.819,0.71 and 0.767, respectively, which were above the threshold level of 0.7.

Convergent validity

FES-I showed a significant moderate negative correlation with 6-minute walk distance (r=-0.560, p=0.001) and a significant moderate positive correlation with the Timed-Up and Go test (r=0.481, p=0.001).

Identification of cut-off point

The receiver operating characteristic (ROC) curve was used to identify the cut-off point for the Sinhala version of the FES-I. Area under the curve (AUC) was 0.71 and cut-off score to differentiate between fallers and non-fallers was 31.5 points, with a sensitivity of 78.9% (capacity to identify fallers among older adults with COPD who are actual fallers) and a specificity value of 60% (capacity to identify non-fallers among older adults with COPD who are actual non-fallers).

Table 3. Factor loadings for the Sinhala version of the FES-I

Factor	Domains			Factor loading
1	Outdoor mobility and community participation	8	Walking around in the neighbourhood	0.849
		11	Walking on a slippery surface (e.g. wet or icy)	0.642
		12	Visiting a friend or relative	0.616
		13	Walking in a place with crowds	0.597
		14	Walking on an uneven surface (e.g. rocky ground, poorly maintained pavement)	0.756
		16	Going out to a social event (e.g. religious service, family gathering, or club meeting)	0.670
2	Personal care	2	Getting dressed or undressed	0.905
		6	Getting in or out of a chair	0.683
		9	Reaching for something above your head or on the ground	0.606
		10	Going to answer the telephone before it stops ringing	0.620
3	Household Activities	1	Cleaning the house (e.g. sweep, vacuum, dust)	0.555
		3	Preparing simple meals	0.484
		4	Taking a bath or shower	0.746
		5	Going to the shop	0.763
4	Challenging mobility tasks	7	Going up or downstairs	0.803
		15	Walking up or down a slope	0.807

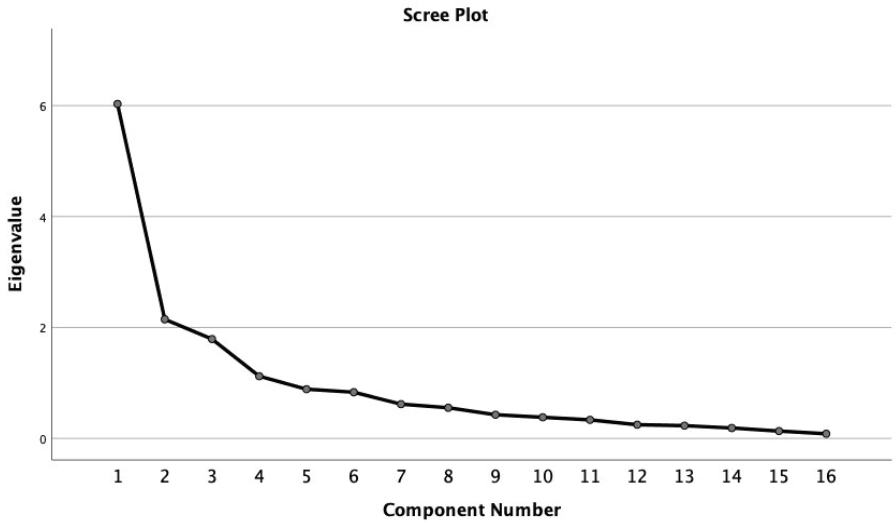

Figure 1. The scree plot of FES-I.

Discussion

The primary objective of this study was to assess the psychometric properties of the Sinhala version of the FES-I scale among older adults with COPD in Sri Lanka. To the best of our knowledge, there is no prior validation study of the Sinhala version of the FES-I among COPD patients in a local clinical setting. Most commonly, the FES-I was translated and validated among community-dwelling older adults [14–19]. Several studies have validated the FES-I in various populations, including people with Parkinson's disease, multiple sclerosis, and stroke [21–23]. We identified one study that validated the FES-I among Brazilian individuals with COPD [24].

In the present study, exploratory factor analysis identified four factor solutions for the Sinhala version of the FES-I among COPD patients, comprising outdoor mobility and community participation, personal care, household activities, and challenging mobility tasks. According to this multidimensional structure, older adults with COPD experienced fear of falling in several distinct domains of daily life. In contrast, many studies reported two two-factor structure described as less demanding and high-demanding physical activities. Factor 2 in the FES-I original consisted of items 8,9,11,13,14, and 15 [14]; in the Brazilian version, of items 7,11,14, and 15 [19]; in Turkish, of items 4, 11 and 14 and described factor 2 as fear of slipping during activity [16]. In the present study, items 2, 6, 9, and 10, which were related to personal care, were included under factor 2. Differences in study populations and cultural contexts may explain the differences in factor solutions. Older adults with COPD experienced a broad range of functional limitations, and their fear of falling may be influenced by the type of tasks and environment rather than physical demand alone.

Cronbach's alpha values above 0.80 are considered a high level of internal consistency [27]. The present study demonstrated excellent internal consistency, with a Cronbach's alpha of 0.899. Our results are comparable to those of other studies that used the FES-I, including the original FES-I (α=0.96), the FES-I adapted to Germany (α=0.90), Greece (α=0.92), Brazil (α=0.93), Turkey (α=0.94) and Australia (α=0.79).

Additionally, a study conducted among the Brazilian COPD population reported similar results, with a Cronbach's alpha of 0.90, which is comparable to our findings. Convergent validity was assessed by looking at the magnitude and direction of the correlation of the Sinhala version of FES-I scores to other performances.

The current study observed a positive moderate correlation between the FES-I scores and TUG, indicating that low FES-I scores are associated with lower TUG time. Similarly, positive correlations were found between Greek FES-I and TUG (r=0.638, p=0.001)[20], the Turkish version of the FES-I and TUG (r=0.743, p=0.001)[16] and the Chinese version of the FES-I and TUG (r=0.22, p=0.001) [15]. In the current study, there was also a moderate negative correlation between the FES-I scores and 6MWD, indicating that lower FES-I scores are associated with greater distance covered in the 6MWT, and this finding is consistent with a previous study conducted among the Brazilian COPD population [24.]

Fear of falling is associated with age and sex. The current study demonstrated that advancing age increased fear of fall. The study conducted in Germany, the Netherlands, and the UK was consistent with these findings [28]. A previous study reported that females with COPD had significantly higher fear of falling compared to males with COPD [29.] We found a difference in fear of falling between males and

females, but it was not statistically significant and led to a type II error. This study included nearly half of the patients (50%) as females, whereas our study population consisted of 22.7% females. A Canadian study reported that, among individuals with COPD, fear of fall was higher in those with a history of fall compared to those without a history of falls10 and results consistent with current findings.

There is no gold standard for establishing the validity of the cut-off point [30]. The calculated cut-off point is considered appropriate. To differentiate fallers from non-fallers in a Brazilian older adult population, a cutoff point of 23 was reported for the Brazilian version of the FES-I [19]. For the Turkish version of FESI, cut-off point was 24 [16]. The current study identified a cutoff point of 31.5 that discriminates fallers from non-fallers. Inconsistent results may be due to differences in the study population and socio-cultural background. Another comparable study among patients with multiple sclerosis and dystonia identified cutoffs of 35.5 and 29.5 to discriminate fallers from non-fallers [21,31].

Conclusion

The Sinhala version of the FES-I is a reliable and valid tool for assessing the level of fear of falling among Sinhala-speaking older adults with COPD in Sri Lanka. Identified domains provide valuable insight into the specific area of concern, supporting the development of targeted interventions for this population. Balance training, Tai chi, Strength training, cognitive behavioural therapy, and multicomponent exercise programs are interventions that can be implemented for this study population. For future research, we recommend assessing the scale's responsiveness by evaluating changes in fear of falling before and after the implementation of a relevant intervention.

Declaration Conflicts of Interest: The authors declare no conflicts of interest.

Declaration Sources Funding: Self-funded.

Ethical approval: Ethical approval for the study was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Colombo, Sri Lanka. Permission was obtained from the Directors and Consultant Respiratory Physicians of the National Hospital for Respiratory Diseases and Central Chest Clinic in Colombo.

Criteria for authorship: Sooriyaarachchi and Wettasinghe: conception, design of the study, data analysis and manuscript drafting. Sooriyaarachchi: Data collection. Both authors read and approved the final manuscript.

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References

1. Cruz DT da, Duque RO, Leite ICG. Prevalence of fear of falling in a sample of elderly adults in the community. *Rev Bras Geriatr Gerontol.* 2017;**20**(3):309–18. doi:10.1590/1981-22562017020.160176
2. Sapmaz M, Mujdeci B. The effect of fear of falling on balance and dual task performance in the elderly. *Exp Gerontol.* 2021;**147**:111250. doi:10.1016/j.exger.2021.111250
3. Scholz M, Haase R, Trentzsch K, Weidemann ML, Ziemssen T. Fear of falling and falls in people with multiple sclerosis: a literature review. *Mult Scler Relat Disord*. 2021;**47**:102609. doi:10.1016/j.msard.2020.102609
4. Liu M, Hou T, Li Y, et al. Fear of falling is as important as multiple previous falls in terms of limiting daily activities: a longitudinal study. *BMC Geriatr.* 2021;**21**(1):308. doi:10.1186/s12877-021-02305-8
5. Cruz-Jimenez M. Normal changes in gait and mobility problems in the elderly. *Phys Med Rehabil Clin N Am*. 2017;**28**(4):713–25. doi:10.1016/j.pmr.2017.06.005
6. Tinetti ME, Powell L. Fear of falling and low self-efficacy: a cause of dependence in elderly persons. *J Gerontol.* 1993;**48**(Spec No):35–8. Available from: http://geronj.oxfordjournals.org/
7. Oliveira CC, Lee AL, McGinley J, et al. Falls by individuals with chronic obstructive pulmonary disease: a preliminary 12-month prospective cohort study. *Respirology.* 2015;**20**(7):1096–101. doi:10.1111/resp.12600
8. Schoene D, Heller C, Aung YN, Sieber CC, Kemmler W, Freiberger E. Influence of fear of falling on quality of life in older people: a systematic review. *Clin Interv Aging.* 2019;**14:**701–19.doi:10.2147/CIA.S197857
9. Kendrick D, Kumar A, Carpenter H, et al. Exercise for reducing fear of falling in older people living in the community. *Cochrane Database Syst Rev*. 2014;2014(11):CD009848. doi:10.1002/14651858.CD009848.pub2
10. Beauchamp MK, Hill K, Goldstein RS, Janaudis-Ferreira T, Brooks D. Impairments in balance discriminate fallers from non-fallers in COPD. *Respir Med*. 2009;**103**(12):1885–91. doi:10.1016/j.rmed.2009.06.008
11. Beauchamp MK, O'Hoski S, Goldstein RS, Brooks D. Effect of pulmonary rehabilitation on balance in persons with chronic obstructive pulmonary disease. *Arch Phys Med Rehabil.* 2010;**91**(9):1460–5. doi:10.1016/j.apmr.2010.06.021
12. Beauchamp MK, Sibley KM, Lakhani B, et al. Impairments in systems underlying control of balance in COPD. *Chest.* 2012;**141**(6):1496–503. doi:10.1378/chest.11-1708
13. Roig M, Eng JJ, MacIntyre DL, et al. Falls in people with chronic obstructive pulmonary disease: an observational cohort study. *Respir Med.* 2011;**105**(3):461–9. doi:10.1016/j.rmed.2010.08.015
14. Yardley L, Beyer N, Hauer K, Kempen G, Piot-Ziegler C, Todd C. Development and validation of the Falls Efficacy Scale-International (FES-I). *Age Ageing.* 2005;**34**(6):614–19. doi:10.1093/ageing/afi196
15. Kwan MMS, Tsang WWN, Close JCT, Lord SR. Development and validation of a Chinese version of the Falls Efficacy Scale International. *Arch Gerontol Geriatr.* 2013;**56**(1):169–74. doi:10.1016/j.archger.2012.10.007

16. Ulus Y, Durmus D, Akyol Y, Terzi Y, Bilgici A, Kuru O. Reliability and validity of the Turkish version of the Falls Efficacy Scale International (FES-I). *Arch Gerontol Geriatr.* 2012;**54**(3):429–33. doi:10.1016/j.archger.2011.06.010
17. Baharlouei H, Salavati M, Akhbari B, et al. Cross-cultural validation of the Falls Efficacy Scale International among Persian-speaking elderly adults. *Arch Gerontol Geriatr.* 2013;**57**(3):339–44. doi:10.1016/j.archger.2013.06.005
18. Nordell E, Andreasson M, Gall K, Thorngren KG. Evaluating the Swedish version of the Falls Efficacy Scale-International. *Adv Physiother.* 2009;**11**(2):81–7. doi:10.1080/14038190802318986
19. Camargos FFO, Dias RC, Dias JMD, et al. Cross-cultural adaptation and psychometric evaluation of the Falls Efficacy Scale-International in elderly Brazilians. *Rev Bras Fisioter.* 2010;**14**(3):237–43.
20. Billis E, Strimpakos N, Kapreli E, et al. Cross-cultural validation of the Falls Efficacy Scale International in Greek older adults. *Disabil Rehabil.* 2011;**33**(19–20):1776–84. doi :10.3109/09638288.2010.546937
21. Choobsaz H, ShahAli S, Salehi R, Noorizadeh Dehkordi S, Shanbehzadeh S. Discriminative ability of the Falls Efficacy Scale International in Iranian people with multiple sclerosis. *Mult Scler Relat Disord.* 2020;**42**:102083. doi:10.1016/j.msard.2020.102083
22. Azad A, Mehraban AH, Mehrpour M, Mohammadi B. Clinical assessment of fear of falling after stroke: validity, reliability and responsiveness of the Persian FES-I. *Med J Islam Repub Iran.* Available from: http://mjiri.iums.ac.ir
23. Jonasson SB, Nilsson MH, Lexell J. Psychometric properties of four fear of falling scales in Parkinson's disease. *BMC Geriatr.* 2014;**14**(1):66. doi:10.1186/1471-2318-14-66
24. Scremim CF, Simões BFPMC, de Barros JA, Valderramas S. Validity and reliability of the Brazilian version of the Falls Efficacy Scale in COPD. *Pulmonology.* 2020;**26**(5):268–74. doi:10.1016/j.pulmoe.2020.01.008
25. Liwsrisakun C, Pothirat C, Chaiwong W, et al. Diagnostic ability of the Timed Up & Go test for balance impairment in COPD. *J Thorac Dis.* 2020;**12**(5):2406–14. doi:10.21037/jtd.2020.03.47
26. Arena R, Myers J, Williams MA, et al. Assessment of functional capacity in clinical and research settings: a scientific statement from the American Heart Association. *Circulation.* 2007;**116**(3):329–43. doi:10.1161/CIRCULATIONAHA.106.184461
27. Fitzpatrick R, Davey C, Buxton MJ, Jones DR. Evaluating patient-based outcome measures for use in clinical trials. *Health Technol Assess.* 1998;**2**(14):1–74. Available from: www.hta.ac.uk/htacd.htm
28. Kempen GIJM, Todd CJ, van Haastregt JCM, et al. Cross-cultural validation of the Falls Efficacy Scale International in older people: results from Germany, the Netherlands and the UK. *Disabil Rehabil.* 2007;**29**(2):155–62. doi:10.1080/09638280600747637
29. Alsubheen SA, Beauchamp M, Ellerton C, et al. Age and sex differences in balance outcomes in COPD patients at risk of falls. *COPD.* 2022;**19**(1):166–73. doi:10.1080/15412555.2022.2038120
30. Delbaere K, Close JCT, Mikolaizak AS, et al. The Falls Efficacy Scale International (FES-I): longitudinal validation. *Age Ageing.* 2010;**39**(2):210–16. doi:10.1093/ageing/afp225
31. Boyce MJ, Lam L, Chang F, et al. Validation of fear of falling and balance confidence scales in dystonia. *J Neurol Phys Ther.* 2017;**41**(4):239–44. doi:10.1097/NPT.0000000000000198