

The Falls Efficacy Scale–International and Activities-specific Balance Confidence Scores Predict



Falls in People with Multiple Sclerosis

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Objective: To compare, in People with MS (PwMS), how well the Falls Efficacy Scale-International (FES-I) and the Activities-specific Balance Confidence (ABC) scale predict who will fall in the following 6 months.

Background: PwMS fear falling and fall frequently.^{1,2} The FES-I was designed to assess concern about falling in the elderly.³ The ABC scale was designed to assess confidence in avoiding falls in the elderly.⁴ These two scales have also been used to measure fear of falling and perceived ability to avoid falls in PwMS.^{5,6} Scores on both scales are also related to fall risk in PwMS,^{5,6} but their ability to predict falls in this population has not been compared.

Design/Methods: In this prospective cohort study, 58 PwMS, aged 18-50 years, with EDSS scores ≤ 6.0 completed the FES-I, the ABC, and 6 monthly prospective fall calendars. Mean scores on the FES-I and the ABC were compared between those who fell and those who did not fall in the following 6 months. ROC curves were generated to assess the accuracy of the FES-I and the ABC in predicting falls in the following 6 months. The areas under the ROC curves were compared using a chi-square test.

		Not at all concerned 1	Somewhat concerned 2	Fairly concerned 3	Very concerned 4
1	Cleaning the house (e.g. sweep, vacuum or dust)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
2	Getting dressed or undressed	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
3	Preparing simple meals	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
4	Taking a bath or shower	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
5	Going to the shop	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
6	Getting in or out of a chair	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
7	Going up or down stairs	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
8	Walking around in the neighbourhood	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
9	Reaching for something above your head or on the ground	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
10	Going to answer the telephone before it stops ringing	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
11	Walking on a slippery surface (e.g. wet or icy)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
12	Visiting a friend or relative	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
13	Walking in a place with crowds	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
14	Walking on an uneven surface (e.g. rocky ground, poorly maintained pavement)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
15	Walking up or down a slope	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
16	Going out to a social event (e.g. religious service, family gathering or club meeting)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

For each of the following activities, please indicate your level of self-confidence by choosing a corresponding number from the following rating scale:
 0% 10 20 30 40 50 60 70 80 90 100%
 no confidence completely confident

***How confident are you that you will not lose your balance or become unsteady when you...**

- ...walk around the house? ___%
- ...walk up or down stairs? ___%
- ...bend over and pick up a slipper from the front of a closet floor ___%
- ...reach for a small can off a shelf at eye level? ___%
- ...stand on your tiptoes and reach for something above your head? ___%
- ...stand on a chair and reach for something? ___%
- ...sweep the floor? ___%
- ...walk outside the house to a car parked in the driveway? ___%
- ...get into or out of a car? ___%
- ...walk across a parking lot to the mall? ___%
- ...walk up or down a ramp? ___%
- ...walk in a crowded mall where people rapidly walk past you? ___%
- ...are bumped into by people as you walk through the mall? ___%
- ...step onto or off an escalator while you are holding onto a railing? ___%
- ...step onto or off an escalator while holding onto parcels such that you cannot hold onto the railing? ___%
- ...walk outside on icy sidewalks? ___%

Subject Demographics (n = 53)	
Age (mean, SD, range in years)	39.7 ± 8.3 (22-50)
EDSS, Median (range)	3 (0-6)
MS Subtype	
RRMS	50 (94.3%)
SPMS	3 (5.7%)
PPMS	0
Female, n (%) (F:M)	36 (67.9%) (2.1 : 1)

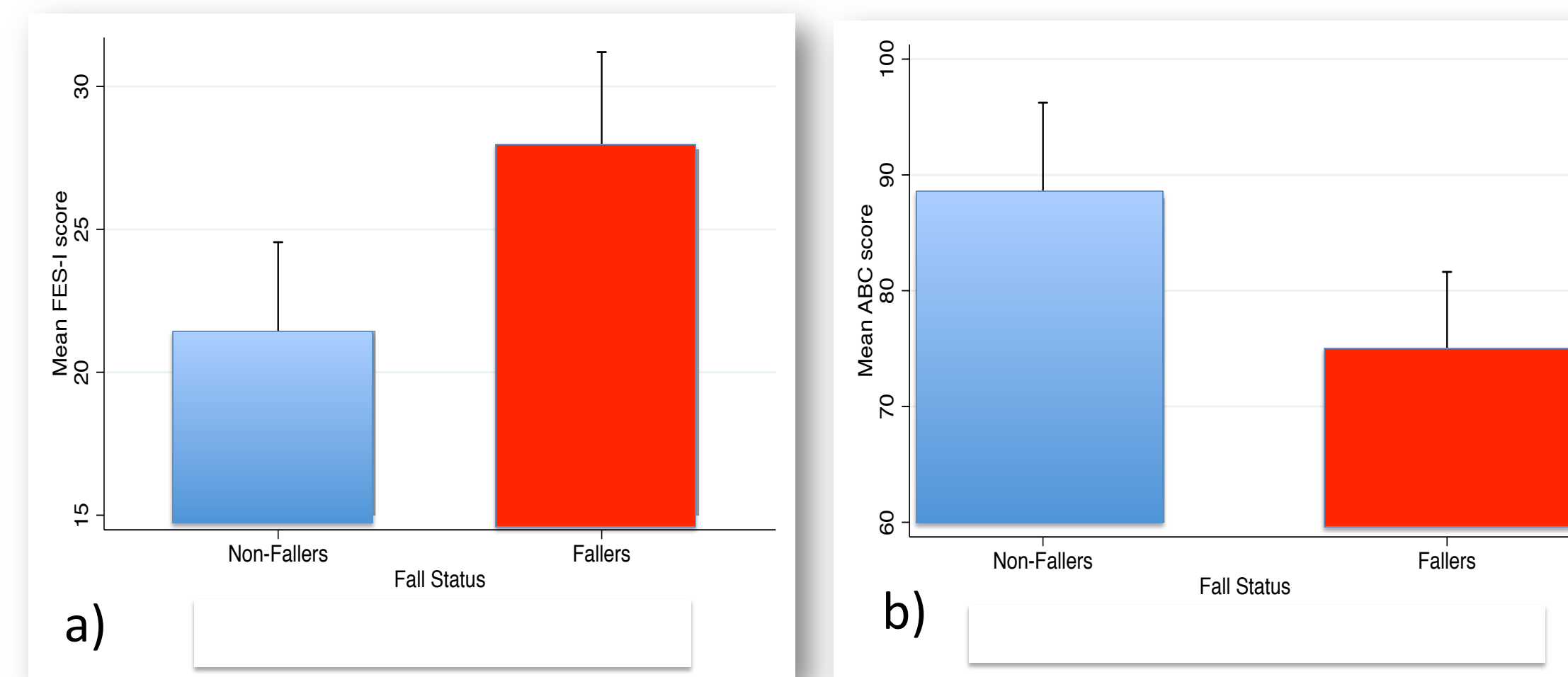


Figure 2: Comparison of (a) mean FES-I score and (b) mean ABC-score between fallers and non-fallers in prospective 6 months

Results: 53 subjects completed the study and were included in the analysis. 37 (69.8%) subjects fell at least once in the 6-month period. Mean FES-I and ABC scores were significantly different for those who did or did not fall in the following 6 months (FES-I: fallers 27.8 ± 10.2 versus non-fallers 21.4 ± 5.8; p=0.03. ABC: fallers 74.4 ± 21.7 versus non-fallers 87.9 ± 15.6; p=0.03). Area under the curve (AUC) for the FES-I was 0.698 and for the ABC was 0.727. These AUCs were not significantly different (p=0.39).

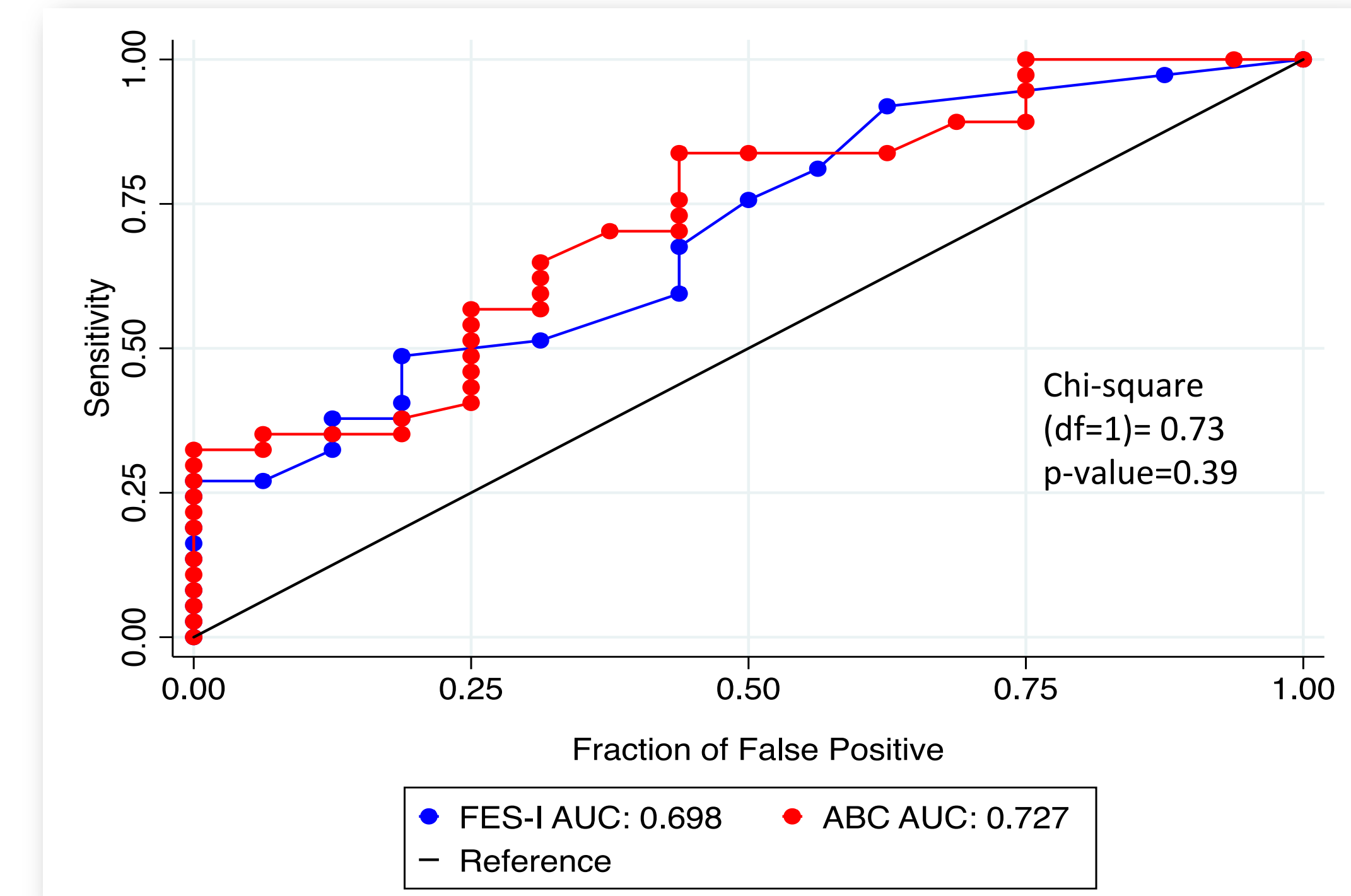


Figure 3: Comparison of ROC curves for FES-I and ABC scores for predicting falls in following 6 months.

Conclusion: The FES-I and the ABC scale have a similar ability to predict which PwMS will or will not fall in the following 6 months. Thus, to identify PwMS who are at risk for falling, the use of either scale as a screening tool is justified.

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Figure 1: (a): Falls Efficacy Scale-International (b)Activities-specific Balance Confidence Scale