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Assessing Risk of Falling.

A Comparison of Three Different Measures.

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Background

Various risk assessment measures have been developed to assess fall risk. Diagnostic accuracy and the precision of fall risk assessments are low and there is a scarcity of evidence regarding clinical effectiveness. The aim of the study was to evaluate the diagnostic accuracy and clinical effectiveness of three different fall risk assessment methods.

Table 1 Baseline characteristics

	t1 (Baseline)	N
Age, Mean (SD)	83.52 (8.15)	124
Sex (female), N (%)	62 (50%)	124
Fear of falling, N (%)	58 (48.3%)	120
Clinical judgment by study nurse: positive for risk of falling, N (%)	74 (62.2%)	119
STRATIFY: at risk, N (%)	31 (25.6)	121
MMSE, Mean (SD)	27.98 (1.80)	95
BI, Mean (SD)	66.97 (21.88)	122
MNA, Mean (SD)	22.09 (3.51)	115

N: Number, STRATIFY: St. Thomas's risk assessment tool, MMSE: Mini-Mental Sate Examination, BI: Barthel Index, MNA: Mini Nutritional Assessment

Methods

A single-site, prospective, longitudinal design was used. Participants were patients being admitted to a geriatric rehabilitation hospital. The St. Thomas's risk assessment tool (STRATFY) (Oliver et al. 1997), clinical assessment, and a self-report assessment (the fear of falling) were used to assess fall risk at two time points (at baseline and 3-week follow-up). The primary outcome was fall events. Contingency tables were used to calculate accuracy and precision. Fisher's exact test was used to test the clinical effectiveness.

Table 2 Diagnostic accuracy of risk assessments for falling

	Clinical assessment	STRATIFY	Self-report
Sensitivity	66.7%	37.5%	55.6%
Specificity	40.7%	62.5%	57.9%
PPV	10.0%	10.7%	11.1%
NPV	92.5%	91.7%	93.2%

PPV: Positive Predictive Value, NPV: Negative Predictive Value

Results

A total of 124 patients participated in the study (see Table 1). The clinical assessment demonstrated the highest sensitivity. STRATIFY showed the highest specificity but the lowest sensitivity (see Table 2). The self-report technique was associated with a decrease in the number of fall events (see Table 3).

Table 3 Associations between assessments and fall events

	Baseline		Follow-up	
	Phi[1]	Sig.[2]	Phi[1]	Sig.[2]
Clinical assessment	r = 0.129	*p* = 0.177	r = 0.043	*p* = 0.738
Standardized assessment (STATIFY)	r = 0.037	*p* = 0.823	r = 0.039	*p* = 0.706
Self-report	r = 0.211	**p = 0.026**	r = 0.076	*p* = 0.496

[1] Phi-coefficient, [2] Significance, *p*: P-value

Discussion

Given the lack of diagnostic accuracy and precision of all three assessment techniques and the lack of evidence regarding clinical effectiveness, the effectiveness of these fall risk assessments can be challenged. It is questionable whether time-consuming assessments are necessary. At least in settings in which fall prevention programs are a part of standard care, additional assessments may not be required.

***Reference**: Oliver D, Britton M, Seed P, Martin FC, Hopper AH (1997): Development and evaluation of evidence based risk assessment tool (STRATIFY) to predict which elderly inpatients will fall: case-control and cohort studies. BMJ, 351(7115):1049-1053*