ORGANIZATION NEWS

Highlights from the Rehabilitation Measures Database

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Measurement Characteristics and Clinical Utility of the Berg Balance Scale Among Individuals With Stroke

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Balance impairments that result from stroke have been associated with fall risk and limited independence in activities of daily living and walking ability.[1,2] Approximately 50% to 70% of individuals fall within the first year after having a stroke, which frequently results in a hip fracture.[1,3] Because balance has a substantial impact on function for individuals poststroke, it is frequently assessed and treated during stroke rehabilitation. The Berg Balance Scale (BBS) is one of the most commonly used instruments to assess balance deficits during stroke rehabilitation; it assists in identifying individuals who are at risk for falls.[4] This 14-item, public-domain test can be administered in less than 20 minutes using items commonly available in rehabilitation clinics. The BBS has excellent reliability and validity in acute and chronic stroke, and is feasible to administer in clinical settings. Minimal detectable change scores can assist clinicians in measuring improvements in balance as the result of treatment.

This Rehabilitation Measures Database summary provides a review of the psychometric properties of the BBS in the stroke population, including reliability, validity, standard error of measurement, minimum detectable change, and interpretation of the results. A full review of the BBS and reviews of over 100 other instruments can be found at www.rehabmeasures.org.

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Rehabilitation MEASURES	**Measure Name:** The Berg Balance Scale		**Acronym:** BBS	**Summary Authors:** Moore J, Raad J
Population Reviewed: Stroke, others reviewed at www.rehabmeasures.org		**Admin Time:** 15 to 20 minutes	**Items:** 14	**Score:** 0/56 (min / max)

Purpose and Administration Instructions:

- Assesses static and dynamic balance, as well as fall risk
- All items should be completed without upper extremity support unless otherwise indicated on the testing document

Required Equipment:	**Training:**
Stop watch, chair with arm rests, measuring tape/ruler, slipper, 6 inch step stool	None required

Validity:

- Convergent Validity: *Excellent* in acute stroke[5]
- Predictive Validity:
  - *Excellent* in acute stroke[5]
  - *Excellent* correlation with length of stay: 93% of individuals who scored > 20 on the BBS at admission were discharged to home[6]

Reliability:

- Test-retest Reliability: *Excellent* in chronic stroke[7]
- Inter/Intra-rater Reliability: *Excellent* in acute stroke[5,8]
- Internal Consistency: *Excellent* in acute stroke[5,8,9]

Floor / Ceiling Effects:

Acute Stroke:
- Large floor effects (43%) at 14 days post stroke[5]
- Moderate ceiling effects (13%) at 38 days post stroke[10]

MCIDs:

Not established in stroke

Scoring Instructions:

- All items are summed to calculate a total score
- Patients at the floor can be assessed with the Postural Assessment Scale for Stroke Patients[5]

Range of SEM's:

Acute Stroke:[11] Individuals who ambulate:
- with assistance   2.93 points
- with stand-by-assist   2.15 points
- independently   2.26 points

Chronic Stroke:[7*]   1.79 points

MDCs:

Acute Stroke:[11] Individuals who ambulate:
- with assistance   8.1 points
- with stand-by-assist   6.0 points
- independently   6.3 points

Chronic Stroke:[7*]   2.5 points

Score Interpretation:

- Score of 56 indicates functional balance, <45 indicates fall risk in the elderly population[12]

Considerations:

- The BBS may take longer than other balance measures to administer
- Declines in performance with increasing age have been observed in both men and women

*Calculated using data from Listen (1996)

Abbreviations:

SEM: Standard Error of Measurement
MDC: Minimal Detectable Change

Cut-off Criteria:		
	r	ICC
Excellent	$\geq$ .6	$\geq$ .75
Adequate	.31-.59	.40 -.74
Poor	$\leq$ .3	< .4