Berg Balance Scale

CVA, Parkinson Disease, Pediatrics
Berg Balance Scale

• CVA
  • Highly recommended for inpatient and outpatient rehabilitation
  • Recommended for acute care
• Parkinson’s Disease
  • Recommended for H and Y stages 2 and 3
• G code-Changing and Maintaining Body Position
Berg Balance Scale

• Fourteen item performance-based test.
• Developed to determine the fall risk and the balance of the older adult.
• The therapist asks the patient to perform each item on the test with a specific set of directions and then records the score of how the patient performed. Each item has a score of 0 to four. Zero usually represents the inability to perform the task. The therapist then adds the scores from each item for a total score out of 56.
Equipment needed

• Chair with arms
• Stopwatch
• Ruler
• Step - size of step is not standardized
• Score sheet
• Space to administer test
Berg Balance Scale

• 1. SITTING TO STANDING INSTRUCTIONS: Please stand up. Try not to use your hands for support.

• (4) able to stand without using hands and stabilize independently

• (3) able to stand independently using hands

• (2) able to stand using hands after several tries

• (1) needs minimal aid to stand or to stabilize

• (0) needs moderate or maximal assist to stand
Berg Balance Scale

• 2. STANDING UNSUPPORTED INSTRUCTIONS: Please stand for two minutes without holding.
  • (4) able to stand safely 2 minutes
  • (3) able to stand 2 minutes with supervision
  • (2) able to stand 30 seconds unsupported
  • (1) needs several tries to stand 30 seconds unsupported
  • (0) unable to stand 30 seconds unassisted
• If a subject is able to stand 2 minutes unsupported, score full points for sitting unsupported. Proceed to item #4.
Berg Balance Scale

• 3. SITTING WITH BACK UNSUPPORTED BUT FEET SUPPORTED ON FLOOR OR ON A STOOL
  INSTRUCTIONS: Please sit with arms folded for 2 minutes.
• (4) able to sit safely and securely 2 minutes
• (3) able to sit 2 minutes under supervision
• (2) able to sit 30 seconds
• (1) able to sit 10 seconds
• (0) unable to sit without support 10 seconds
Berg Balance Scale

• 4. STANDING TO SITTING INSTRUCTIONS: Please sit down.
  • (4) sits safely with minimal use of hands
  • (3) controls descent by using hands
  • (2) uses back of legs against chair to control descent
  • (1) sits independently but has uncontrolled descent
  • (0) needs assistance to sit
Berg Balance Scale

5. TRANSFERS INSTRUCTIONS: Arrange chairs(s) for a pivot transfer. Ask subject to transfer one way toward a seat with armrests and one way toward a seat without armrests. You may use two chairs (one with and one without armrests) or a bed and a chair.

- (4) able to transfer safely with minor use of hands
- (3) able to transfer safely definite need of hands
- (2) able to transfer with verbal cueing and/or supervision
- (1) needs one person to assist
- (0) needs two people to assist or supervise to be safe
Berg Balance Scale

• 6. STANDING UNSUPPORTED WITH EYES CLOSED
   INSTRUCTIONS: Please close your eyes and stand still for 10 seconds.
   • (4) able to stand 10 seconds safely
   • (3) able to stand 10 seconds with supervision
   • (2) able to stand 3 seconds
   • (1) unable to keep eyes closed 3 seconds but stays steady
   • (0) needs help to keep from falling
Berg Balance Scale

• 7. STANDING UNSUPPORTED WITH FEET TOGETHER INSTRUCTIONS: Place your feet together and stand without holding.
  • (4) able to place feet together independently and stand 1 minute safely
  • (3) able to place feet together independently and stand for 1 minute with supervision
  • (2) able to place feet together independently but unable to hold for 30 seconds
  • (1) needs help to attain position but able to stand 15 seconds feet together
  • (0) needs help to attain position and unable to hold for 15 seconds
Berg Balance Scale

8. REACHING FORWARD WITH OUTSTRETCHED ARM WHILE STANDING INSTRUCTIONS: Lift arm to 90 degrees. Stretch out your fingers and reach forward as far as you can. (Examiner places a ruler at end of fingertips when arm is at 90 degrees. Fingers should not touch the ruler while reaching forward. The recorded measure is the distance forward that the finger reaches while the subject is in the most forward lean position. When possible, ask subject to use both arms when reaching to avoid rotation of the trunk.).

• (4) can reach forward confidently >25 cm (10 inches)
• (3) can reach forward >12 cm safely (5 inches)
• (2) can reach forward >5 cm safely (2 inches)
• (1) reaches forward but needs supervision
• (0) loses balance while trying/requires external support
Berg Balance Scale

• 9. PICK UP OBJECT FROM FLOOR FROM A STANDING POSITION INSTRUCTIONS: Pick up shoe/slipper which is placed in front of your feet.

• (4) able to pick up slipper safely and easily
• (3) able to pick up slipper but needs supervision
• (2) unable to pick up but reaches 2-5cm (1-2 inches) from slipper and keeps balance independently
• (1) unable to pick up and needs supervision while trying
• (0) unable to try/needs assist to keep from losing balance or falling
Berg Balance Scale

10. TURNING TO LOOK BEHIND OVER LEFT AND RIGHT SHOULDERS WHILE STANDING INSTRUCTIONS: Turn to look directly behind you over toward left shoulder. Repeat to the right. Examiner may pick an object to look at directly behind the subject to encourage a better twist turn.

- (4) looks behind from both sides and weight shifts well
- (3) looks behind one side only other side shows less weight shift
- (2) turns sideways only but maintains balance
- (1) needs supervision when turning
- (0) needs assist to keep from losing balance or falling
Berg Balance Scale

• 11. TURN 360 DEGREES INSTRUCTIONS: Turn completely around in a full circle. Pause. Then turn a full circle in the other direction.

• (4) able to turn 360 degrees safely in 4 seconds or less
• (3) able to turn 360 degrees safely one side only in 4 seconds or less
• (2) able to turn 360 degrees safely but slowly
• (1) needs close supervision or verbal cueing
• (0) needs assistance while turning
Berg Balance Scale

• 12. PLACING ALTERNATE FOOT ON STEP OR STOOL WHILE STANDING UNSUPPORTED INSTRUCTIONS: Place each foot alternately on the step/stool. Continue until each foot has touched the step/stool four times.

• (4) able to stand independently and safely and complete 8 steps in 20 seconds

• (3) able to stand independently and complete 8 steps >20 seconds

• (2) able to complete 4 steps without aid with supervision

• (1) able to complete >2 steps needs minimal assist

• (0) needs assistance to keep from falling/unable to try
Berg Balance Scale

• 13. STANDING UNSUPPORTED ONE FOOT IN FRONT
   INSTRUCTIONS: (DEMONSTRATE TO SUBJECT) Place one foot
directly in front of the other. If you feel that you cannot place
your foot directly in front, try to step far enough ahead that the
heel of your forward foot is ahead of the toes of the other foot.
(To score 3 points, the length of the step should exceed the length
of the other foot and the width of the stance should approximate
the subject's normal stride width).
   • (4) able to place foot tandem independently and hold 30 seconds
   • (3) able to place foot ahead of other independently and hold 30
     seconds
   • (2) able to take small step independently and hold 30 seconds
   • (1) needs help to step but can hold 15 seconds
   • (0) loses balance while stepping or standing
Berg Balance Scale

• 14. STANDING ON ONE LEG INSTRUCTIONS: Stand on one leg as long as you can without holding.
• (4) able to lift leg independently and hold >10 seconds
• (3) able to lift leg independently and hold 5-10 seconds
• (2) able to lift leg independently and hold = or >3 seconds
• (1) tries to lift leg unable to hold 3 seconds but remains standing independently
• (0) unable to try or needs assist to prevent fall
Research

CVA
Reliability

• In a study of 112 patients at 14 days post CVA, the interrater reliability of the BBS was found to be .95. Patients were included in the study if this was their first onset of CVA and they had no other major diagnoses. On the 14th day of onset of CVA, the patient was tested with the BBS by two different therapists. The therapists were blinded to each other’s results.

Reliability

- Test-retest reliability of the BBS was established in a study with 20 subjects with history of CVA. Subjects were included in the study if they were able to walk, follow instructions and had a unilateral CVA. The onset of CVA of the subjects ranges from 6 months to 17 years. The subjects were tested with the BBS three times in three weeks on the same day of the week and the same time of day. The test retest reliability was .98 with 95% confidence limits.

Reliability

• Sixty-one participants with history of unilateral CVA more than 6 months at enrollment time, ability to walk with or without an assistive device for more than 15 meters and functional range of motion of the ankle. The participants were classified by severity of ankle plantarflexor tone and placed in 3 subgroups. Test-retest reliability was found to be excellent in all three subgroups .95 (.90-.97). The ICC scores for the subgroup with the least amount of ankle plantarflexor tone were .90 and the ICC score for the subgroup with the most amount of ankle plantarflexor tone was .97.

Validity

• The BBS has been shown to have excellent correlation with other outcome measurements. The BBS, Postural Assessment Scale for Stroke Patients (PASS), and the balance subscale for the Fugl-Meyer (FM-B) test were administered at 14, 30, 90, and 180 days after onset of CVA for 123 patients. The correlation of the BBS with the other two measures was found to be high at each stage. At 14, 30, 90, and 180 days, the correlation scores between the PASS and the BBS were .95, .95, .92, and .93 respectively. The correlation score between the FM-B and the BBS were .92, .90, .90 and .92 for the 14, 30, 90 and 180 days.

Validity

• The BBS also has a strong relationship with measures of gait speed and endurance. A sample of twenty-six volunteers between the ages of 36-79 were tested with measures of body structure and function in addition to the BBS, Six-Minute Walk test and 10 meter gait speed. The inclusion criteria for the sample was: a history of CVA at least 6 months prior to the study, ability to walk 30 feet without assistance, and independence with stand to sit. The BBS and the Six-Minute walk test had correlation of .67. The BBS and the 10-meter gait speed test had a correlation of -.83.

Validity

• Studies have shown that the BBS has the ability to predict functional ability.

• In a study mentioned earlier involving 123 patients with history of CVA, the BBS was administered at 14, 30, and 90 days after onset of CVA and compared with the score of the walking subscale of Motor Assessment Scale at 180 days. The Spearman correlation was found to be excellent between all three measurements and the MAS (.82, .84, .91). Authors in another study found that the BBS administered at 14 and 30 days post CVA was able to predict the score of the Barthel Index administered at 90 days post CVA. The correlation was strong with a score of .75 at 14 days and .82 at 30 days. This study involved 226 subjects with history of one CVA.
Sensitivity and Specificity

• The sensitivity and specificity of each of the 14 BBS test items in comparison with the total Berg Score was the focus of a study by Alzayer, et al. The authors used the data collected to determine which items on the BBS were the most accurate in classifying community dwelling people with CVA and multiple falls. The subjects in this study were at least a year from onset of CVA and were able to walk 10m independently with or without an assistive device. The cut off score for the total BBS was found to be 52 with a sensitivity of .90 and a specificity of .41.
Berg Balance Scale

• Although the Berg Balance Scale does not have strong psychometrics for predicting falls in patients post CVA, it does relay information about what activities may challenge the balance of the patient. Future studies should focus on the best combination of outcome measures to determine fall risk. The BBS is reliable and can show change. A recent study found the minimal detectable change of the BBS to be 4.66 in patients that are more than 6 months post CVA. If a patient status post CVA is referred to an outpatient physical therapy clinic with a history of falls, this patient is already at risk to fall. The BBS can be used to determine if physical therapy has made a change in the performance of balance challenging activities.
Research

Parkinson Disease
MDC

• 37 subjects with PD, H&Y 1-4, on medication
• Minimal Detectable Change-5

Measure of function

• BBS correlates with UPDRS, TUG, gait speed and forward and backward reach tests
• BBS is a good overall measure of function for people with Parkinson

Validity

- 38 men with PD
- H&Y 2-4
- Strong correlations with H&Y scale and Unified Parkinson’s Disease Rating Scale (UPDRS) motor scale
- Useful as a screening tool and for ongoing assessment tool for patients with PD.

Research

Pediatrics
P-BERG

- [http://journals.lww.com/pedpt/Fulltext/2003/01520/Pediatric_Balance_Scale_A_Modified_Version_of_the.6.aspx](http://journals.lww.com/pedpt/Fulltext/2003/01520/Pediatric_Balance_Scale_A_Modified_Version_of_the.6.aspx)
- 14 test items
- 5 levels of scoring (0-4)
- Modified BERG
# Pediatric Balance Scale

## TABLE 1.
The Berg Balance Scale and the Pediatric Balance Scale

<table>
<thead>
<tr>
<th>Berg's Balance Scale Items</th>
<th>Pediatric Balance Scale Items</th>
</tr>
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<tbody>
<tr>
<td>1 Sitting to standing</td>
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</tr>
<tr>
<td>2 Standing unsupported</td>
<td>2 Standing to sitting</td>
</tr>
<tr>
<td>3 Sitting unsupported</td>
<td>3 Transfers</td>
</tr>
<tr>
<td>4 Standing to sitting</td>
<td>4 Standing unsupported</td>
</tr>
<tr>
<td>5 Transfers</td>
<td>5 Sitting unsupported</td>
</tr>
<tr>
<td>6 Standing with eyes closed</td>
<td>6 Standing with eyes closed</td>
</tr>
<tr>
<td>7 Standing with feet together</td>
<td>7 Standing with feet together</td>
</tr>
<tr>
<td>8 Reaching forward with outstretched arm</td>
<td>8 Standing with one foot in front</td>
</tr>
<tr>
<td>9 Retrieving object from floor</td>
<td>9 Standing on one foot</td>
</tr>
<tr>
<td>10 Turning to look behind</td>
<td>10 Turning 360 degrees</td>
</tr>
<tr>
<td>11 Turning 360 degrees</td>
<td>11 Turning to look behind</td>
</tr>
<tr>
<td>12 Placing alternate foot on stool</td>
<td>12 Retrieving object from floor</td>
</tr>
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