



**Rehabilitation Protocol:  
Liver Transplant: “Pre-habilitation”**

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## ◀ Overview

The liver is the second largest organ in the human body and it serves over 2000 metabolic functions. It is also responsible for removing toxins from the blood, making proteins and enzymes, storing vitamins and minerals, and producing bile. The liver can be damaged by acute injuries or over time by chronic failure. Liver disease is the 4th leading cause of death among Americans. The only cure is a liver transplant.

End-stage liver disease can affect all of the other organ systems in the body such as the pulmonary system, the cardiovascular system, and the muscular system. Common signs and symptoms include: jaundice, GI bleeding, ascites, peripheral edema, and encephalopathy. Patients also commonly present with fatigue, insomnia, itching, muscle cramps, infections, and mood changes.

When the pulmonary system is affected, there is often an increase in pulmonary effusions, atelectasis, decreased excursion of the diaphragm due to ascites, and pulmonary hypertension. The increased strain on the cardiovascular system can cause marked vasodilation, flushing of the extremities, decreased blood pressure, increased heart rate, and increased cardiac output. Muscle wasting and weakness is extremely common due to sarcopenia (the loss of muscle mass), which has been associated with an increased risk of mortality while waiting for a liver transplant.

Patients often wait up to 3 years for a new liver. Sadly, 1 in 5 patients will not live long enough to have a transplant. A MELD score is used to help determine how sick a patient is and is calculated using blood levels of total bilirubin, INR, and creatinine. It is scored from 6-40, with the higher score indicating a sicker patient. This score helps to determine a patient's place on the waitlist and is a good predictor for short-term (3 month) mortality.

While physical therapists are not the ones determining a patient's MELD score, the therapist can use other measures to help determine how sick a patient is. Frailty scores have been classically associated with aging, disability, comorbidities, increased risk for falls, hospitalizations, and increased mortality. Frail individuals are at a higher risk for poor outcomes when faced with a medical illness.

Frailty is assessed by using 2 key physiological features: Sarcopenia and decreased cardiopulmonary reserve. It can be measured with the Fried Frailty Index. Those with a high frailty score have a higher risk of dying while waiting for a liver transplant, regardless of MELD score. Physical therapists can help to improve the frailty score and therefore may have an impact on waitlist mortality for these patients.

There are many ways in which a physical therapist can have a direct impact on the quality of life for these patients by having them go through an evaluation and treatment program aimed at pre-habilitation.

## ◀ What can the physical therapist do?

Empowerment! Help with feelings of hopelessness, lack of control, and vulnerability

Focus on gradual, progressive walking program - Increase the number of steps per day

Light strength and stamina exercise

Encourage to adhere to nutritional plan

Counsel on energy conservation

## ◀ The Evaluation

Observation:  
Assess for ascites, muscle atrophy, color, general fatigue  
Take vital signs: Blood pressure, Heart Rate, O2 saturation  
Perform the Fried Frailty Index  
Perform quick assessment tests:  
    30 second chair rise test or 5 x sit/stand  
    Timed Up and Go (TUG)  
Perform more detailed balance/gait assessment tests if TUG does not meet threshold for safe community ambulation:  
    Berg Balance Scale (BBS)  
    Functional Gait Assessment (FGA)

Manual muscle testing of major muscle groups  
6-Minute Walk Test (or gait speed test such as the 4 meter gait speed test, if unable to walk for 6 minutes)

Balance screening (eg. Romberg, Tandem, SLS with eyes open/closed or on variable surfaces)

## ◀ Ongoing treatment planning

Address impairments and functional limitations as with any other physical therapy patient

Perform lower extremity strengthening (may have difficulty with supine and prone exercises due to ascites)

Bridge progression (if able to lie down), clams, hip abduction (S/L and standing), leg press, squats, step ups/downs, lateral band walks

Static and dynamic balance exercises

Decrease base of support, change standing surface, close eyes, etc.

Daily walking

# Traditional Definition of Frailty: Fried Model

(Criteria for Frailty as a Clinical Syndrome as proposed by Fried et al 2001)

- Frail: a person meets  $\geq 3$  of the criteria
- Prefrail: a person meets **1 or 2** of the criteria

(Score 1 point for each of the following true statements)

1. Unintentional weight loss of 10 lb or more in the past year
2. Self-reported exhaustion (person states they are exhausted 3 or more days per week)
3. Muscle Weakness (grip strength in lowest 20%: < 23 lb for women; < 32 lb for men)
4. Walking speed in the lowest 20% (< 0.8 m/sec)
5. Low level of activity (kcal/week - lowest 20%: 270 kcal/wk for women; 383 kcal/wk for men = equivalent to sitting quietly and/or lying down for the vast majority of the day)

Total points: \_\_\_\_\_

# Berg Balance Scale

## Description:

14-item scale designed to measure balance of the older adult in a clinical setting.

**Equipment needed:** Yardstick, 2 standard chairs (one with arm rests, one without), Footstool or step, Stopwatch or wristwatch, 15 ft walkway

**Scoring:** A five-point ordinal scale, ranging from 0-4. “0” indicates the lowest level of function and “4” the highest level of function. Score the LOWEST performance. Total Score = 56

**Interpretation:**

- 41-56 = independent**
- 21-40 = walking with assistance**
- 0 –20 = wheelchair bound**

**Berg K, Wood-Dauphinee S, Williams JI, Maki, B (1992).** Measuring balance in the elderly: validation of an instrument. *Can. J. Pub. Health* July/August supplement 2:S7-11

## Cut Off Scores:

- Score of < 45 indicates individuals may be at greater risk of falling (Berg, 1992)

**Berg K, Wood-Dauphinee S, Williams JI, Maki, B. (1992).** Measuring balance in the elderly: validation of an instrument. *Can. J. Pub. Health* July/August supplement 2:S7-11

- History of falls and BBS < 51, or no history of falls and BBS < 42 is predictive of falls
- (91% sensitivity, 82% specificity) (Shumway-Cook, 1997)
- Score of < 40 on BBS associated with almost 100% fall risk (Shumway-Cook, 1997)

(n = 44, mean age = 74.6 (5.4) years for non-fallers, 77.6 (7.8) for fallers)

**Shumway-Cook, A., Baldwin, M., et al. (1997).** Predicting the probability for falls in community-dwelling older adults. *Physical Therapy* 77(8): 812-819

Retrieved 10-5-2014 from Rehab Measures Database. <http://www.rehabmeasures.org/Lists/RehabMeasures/PrintView.aspx?ID=888>

**Comments:** Potential ceiling effect with higher level patients. Scale does not include gait items

## Minimal Detectable Change:

“A change of **4 points** is needed to be 95% confident that true change has occurred if a patient scores within 45-56 initially, **5 points** if they score within 35-44, **7 points** if they score within 25-34 and, finally, **5 points** if their initial score is within 0-24 on the Berg Balance Scale.”

**Donoghue D;** Physiotherapy Research and Older People (PROP) group, Stokes EK. (2009). How much change is true change? The minimum detectable change of the Berg Balance Scale in elderly people. *J Rehabil Med.* 41(5):343-6.

## Norms:

**Lusardi, M.M. (2004).** Functional Performance in Community Living Older Adults. *Journal of Geriatric Physical Therapy*, 26(3), 14-22.

# Berg Balance Scale

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Location: \_\_\_\_\_ Rater: \_\_\_\_\_

ITEM DESCRIPTION	SCORE (0-4)
1. Sitting to standing	_____
2. Standing unsupported	_____
3. Sitting unsupported	_____
4. Standing to sitting	_____
5. Transfers	_____
6. Standing with eyes closed	_____
7. Standing with feet together	_____
8. Reaching forward with outstretched arm	_____
9. Retrieving object from floor	_____
10. Turning to look behind	_____
11. Turning 360 degrees	_____
12. Placing alternate foot on stool	_____
13. Standing with one foot in front	_____
14. Standing on one foot	_____
Total	_____

## GENERAL INSTRUCTIONS

Please document each task and/or give instructions as written. When scoring, please record the lowest response category that applies for each item.

In most items, the subject is asked to maintain a given position for a specific time. Progressively more points are deducted if:

- the time or distance requirements are not met
- the subject's performance warrants supervision
- the subject touches an external support or receives assistance from the examiner

Subject should understand that they must maintain their balance while attempting the tasks. The choices of which leg to stand on or how far to reach are left to the subject. Poor judgment will adversely influence the performance and the scoring.

Equipment required for testing is a stopwatch or watch with a second hand, and a ruler or other indicator of 2, 5, and 10 inches. Chairs used during testing should be a reasonable height. Either a step or a stool of average step height may be used for item # 12.

# Berg Balance Scale

## 1. SITTING TO STANDING

INSTRUCTIONS: Please stand up. Try not to use your hand 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 stabilize
- ( ) 0 needs moderate or maximal assist to stand

## 2. STANDING UNSUPPORTED

INSTRUCTIONS: Please stand for two minutes without holding on.

- ( ) 4 able to stand safely for 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 unsupported

If a subject is able to stand 2 minutes unsupported, score full points for sitting unsupported. Proceed to item #4.

## 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 for 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

## 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 assist to sit

## 5. TRANSFERS

INSTRUCTIONS: Arrange chair(s) for 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 cuing and/or supervision
- ( ) 1 needs one person to assist
- ( ) 0 needs two people to assist or supervise to be safe

## 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 safely
- ( ) 0 needs help to keep from falling

## 7. STANDING UNSUPPORTED WITH FEET TOGETHER

INSTRUCTIONS: Place your feet together and stand without holding on.

- ( ) 4 able to place feet together independently and stand 1 minute safely
- ( ) 3 able to place feet together independently and stand 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



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 the 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 fingers reach 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 (5 inches)
- ( ) 2 can reach forward 5 cm (2 inches)
- ( ) 1 reaches forward but needs supervision
- ( ) 0 loses balance while trying/requires external support

9. PICK UP OBJECT FROM THE FLOOR FROM A STANDING POSITION

INSTRUCTIONS: Pick up the 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 2-5 cm (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

10. TURNING TO LOOK BEHIND OVER LEFT AND RIGHT SHOULDERS WHILE STANDING

INSTRUCTIONS: Turn to look directly behind you over toward the 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

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 4 seconds or less
- ( ) 2 able to turn 360 degrees safely but slowly
- ( ) 1 needs close supervision or verbal cuing
- ( ) 0 needs assistance while turning

12. PLACE 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 in > 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

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 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

14. STANDING ON ONE LEG

INSTRUCTIONS: Stand on one leg as long as you can without holding on.

- ( ) 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  $\geq 3$  seconds
- ( ) 1 tries to lift leg unable to hold 3 seconds but remains standing independently.
- ( ) 0 unable to try of needs assist to prevent fall

( ) TOTAL SCORE (Maximum = 56)

## Appendix.

### Functional Gait Assessment<sup>P</sup>

Requirements: A marked 6-m (20-ft) walkway that is marked with a 30.48-cm (12-in) width.

#### 1. GAIT LEVEL SURFACE

Instructions: *Walk at your normal speed from here to the next mark (6 m [20 ft]).*

Grading: Mark the highest category that applies.

- (3) Normal—Walks 6 m (20 ft) in less than 5.5 seconds, no assistive devices, good speed, no evidence for imbalance, normal gait pattern, deviates no more than 15.24 cm (6 in) outside of the 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Walks 6 m (20 ft) in less than 7 seconds but greater than 5.5 seconds, uses assistive device, slower speed, mild gait deviations, or deviates 15.24–25.4 cm (6–10 in) outside of the 30.48-cm (12-in) walkway width.
- (1) Moderate impairment—Walks 6 m (20 ft), slow speed, abnormal gait pattern, evidence for imbalance, or deviates 25.4–38.1 cm (10–15 in) outside of the 30.48-cm (12-in) walkway width. Requires more than 7 seconds to ambulate 6 m (20 ft).
- (0) Severe impairment—Cannot walk 6 m (20 ft) without assistance, severe gait deviations or imbalance, deviates greater than 38.1 cm (15 in) outside of the 30.48-cm (12-in) walkway width or reaches and touches the wall.

#### 2. CHANGE IN GAIT SPEED

Instructions: *Begin walking at your normal pace (for 1.5 m [5 ft]). When I tell you "go," walk as fast as you can (for 1.5 m [5 ft]). When I tell you "slow," walk as slowly as you can (for 1.5 m [5 ft]).*

Grading: Mark the highest category that applies.

- (3) Normal—Able to smoothly change walking speed without loss of balance or gait deviation. Shows a significant difference in walking speeds between normal, fast, and slow speeds. Deviates no more than 15.24 cm (6 in) outside of the 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Is able to change speed but demonstrates mild gait deviations, deviates 15.24–25.4 cm (6–10 in) outside of the 30.48-cm (12-in) walkway width, or no gait deviations but unable to achieve a significant change in velocity, or uses an assistive device.
- (1) Moderate impairment—Makes only minor adjustments to walking speed, or accomplishes a change in speed with significant gait deviations, deviates 25.4–38.1 cm (10–15 in) outside the 30.48-cm (12-in) walkway width, or changes speed but loses balance but is able to recover and continue walking.
- (0) Severe impairment—Cannot change speeds, deviates greater than 38.1 cm (15 in) outside 30.48-cm (12-in) walkway width, or loses balance and has to reach for wall or be caught.

#### 3. GAIT WITH HORIZONTAL HEAD TURNS

Instructions: *Walk from here to the next mark 6 m (20 ft) away. Begin walking at your normal pace. Keep walking straight; after 3 steps, turn your head to the right and keep walking straight while looking to the right. After 3 more steps, turn your head to the left and keep walking straight while looking left. Continue alternating looking right and left every 3 steps until you have completed 2 repetitions in each direction.*

Grading: Mark the highest category that applies.

- (3) Normal—Performs head turns smoothly with no change in gait. Deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Performs head turns smoothly with slight change in gait velocity (eg, minor disruption to smooth gait path), deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width, or uses an assistive device.

- (1) Moderate impairment—Performs head turns with moderate change in gait velocity, slows down, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width but recovers, can continue to walk.
- (0) Severe impairment—Performs task with severe disruption of gait (eg, staggers 38.1 cm [15 in] outside 30.48-cm (12-in) walkway width, loses balance, stops, or reaches for wall).

#### 4. GAIT WITH VERTICAL HEAD TURNS

Instructions: *Walk from here to the next mark (6 m [20 ft]). Begin walking at your normal pace. Keep walking straight; after 3 steps, tip your head up and keep walking straight while looking up. After 3 more steps, tip your head down, keep walking straight while looking down. Continue alternating looking up and down every 3 steps until you have completed 2 repetitions in each direction.*

Grading: Mark the highest category that applies.

- (3) Normal—Performs head turns with no change in gait. Deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Performs task with slight change in gait velocity (eg, minor disruption to smooth gait path), deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width or uses assistive device.
- (1) Moderate impairment—Performs task with moderate change in gait velocity, slows down, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width but recovers, can continue to walk.
- (0) Severe impairment—Performs task with severe disruption of gait (eg, staggers 38.1 cm [15 in] outside 30.48-cm (12-in) walkway width, loses balance, stops, reaches for wall).

#### 5. GAIT AND PIVOT TURN

Instructions: *Begin with walking at your normal pace. When I tell you, "turn and stop," turn as quickly as you can to face the opposite direction and stop.*

Grading: Mark the highest category that applies.

- (3) Normal—Pivot turns safely within 3 seconds and stops quickly with no loss of balance.
- (2) Mild impairment—Pivot turns safely in >3 seconds and stops with no loss of balance, or pivot turns safely within 3 seconds and stops with mild imbalance, requires small steps to catch balance.
- (1) Moderate impairment—Turns slowly, requires verbal cueing, or requires several small steps to catch balance following turn and stop.
- (0) Severe impairment—Cannot turn safely, requires assistance to turn and stop.

#### 6. STEP OVER OBSTACLE

Instructions: *Begin walking at your normal speed. When you come to the shoe box, step over it, not around it, and keep walking.*

Grading: Mark the highest category that applies.

- (3) Normal—Is able to step over 2 stacked shoe boxes taped together (22.86 cm [9 in] total height) without changing gait speed; no evidence of imbalance.
- (2) Mild impairment—Is able to step over one shoe box (11.43 cm [4.5 in] total height) without changing gait speed; no evidence of imbalance.
- (1) Moderate impairment—Is able to step over one shoe box (11.43 cm [4.5 in] total height) but must slow down and adjust steps to clear box safely. May require verbal cueing.
- (0) Severe impairment—Cannot perform without assistance.

(Continued)

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### 7. GAIT WITH NARROW BASE OF SUPPORT

Instructions: *Walk on the floor with arms folded across the chest, feet aligned heel to toe in tandem for a distance of 3.6 m [12 ft]. The number of steps taken in a straight line are counted for a maximum of 10 steps.*

Grading: Mark the highest category that applies.

- (3) Normal—Is able to ambulate for 10 steps heel to toe with no staggering.
- (2) Mild impairment—Ambulates 7–9 steps.
- (1) Moderate impairment—Ambulates 4–7 steps.
- (0) Severe impairment—Ambulates less than 4 steps heel to toe or cannot perform without assistance.

### 8. GAIT WITH EYES CLOSED

Instructions: *Walk at your normal speed from here to the next mark (6 m [20 ft]) with your eyes closed.*

Grading: Mark the highest category that applies.

- (3) Normal—Walks 6 m (20 ft), no assistive devices, good speed, no evidence of imbalance, normal gait pattern, deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width. Ambulates 6 m (20 ft) in less than 7 seconds.
- (2) Mild impairment—Walks 6 m (20 ft), uses assistive device, slower speed, mild gait deviations, deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width. Ambulates 6 m (20 ft) in less than 9 seconds but greater than 7 seconds.
- (1) Moderate impairment—Walks 6 m (20 ft), slow speed, abnormal gait pattern, evidence for imbalance, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width. Requires more than 9 seconds to ambulate 6 m (20 ft).
- (0) Severe impairment—Cannot walk 6 m (20 ft) without assistance, severe gait deviations or imbalance, deviates greater than 38.1 cm (15 in) outside 30.48-cm (12-in) walkway width or will not attempt task.

### 9. AMBULATING BACKWARDS

Instructions: *Walk backwards until I tell you to stop.*

Grading: Mark the highest category that applies.

- (3) Normal—Walks 6 m (20 ft), no assistive devices, good speed, no evidence for imbalance, normal gait pattern, deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Walks 6 m (20 ft), uses assistive device, slower speed, mild gait deviations, deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width.
- (1) Moderate impairment—Walks 6 m (20 ft), slow speed, abnormal gait pattern, evidence for imbalance, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width.
- (0) Severe impairment—Cannot walk 6 m (20 ft) without assistance, severe gait deviations or imbalance, deviates greater than 38.1 cm (15 in) outside 30.48-cm (12-in) walkway width or will not attempt task.

### 10. STEPS

Instructions: *Walk up these stairs as you would at home (ie, using the rail if necessary). At the top turn around and walk down.*

Grading: Mark the highest category that applies.

- (3) Normal—Alternating feet, no rail.
- (2) Mild impairment—Alternating feet, must use rail.
- (1) Moderate impairment—Two feet to a stair; must use rail.
- (0) Severe impairment—Cannot do safely.

**TOTAL SCORE: \_\_\_\_\_ MAXIMUM SCORE 30**

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\* Adapted from Dynamic Gait Index.<sup>1</sup> Modified and reprinted with permission of authors and Lippincott Williams & Wilkins (<http://lww.com>).