DYNAMIC GAIT INDEX (DGI)/FUNCTIONAL GAIT ASSESSMENT (FGA)

Type of test:
- *Time to administer:* 15 minutes
- *Clinical Comments:* Familiarity with the ordinal scoring system prior to administering test as important, as scoring system varies among items. Standardized instructions seem cumbersome.

Purpose/population for which tool was developed: The Dynamic Gait Index (DGI) was developed as part of a profile for predicting likelihood of falls in older adults. The tool was presented in 1993 as a way to assess and document a patient's ability to respond to changing task demands during walking.[1, 2] The 8 items vary the walking task by changing walking speeds, adding head turning, turning and stopping, walking over and around obstacles, and ascending / descending stairs. Scoring focuses on changes in balance or changes in gait patterns during the various walking tasks. A shortened DGI was developed based on Rasch analysis of level of item difficulty for 123 persons with diagnosed balance or vestibular problems. It contains 4 items: horizontal head turns, vertical head turns, gait on level surfaces, and changes in gait speed; the shortened version has equivalent or superior psychometric properties compared to the 8 item version.[3]

When appropriate to use: This tool has been used with older adults with a history of falls and imbalance, [1-5] patients with bilateral vestibular loss,[6] patients with vestibular dysfunction with & without migraine headaches, [7-10] patients with chronic stroke,[11] Parkinson Disease[12] multiple sclerosis,[13] and essential tremor.[14]

Scaling: Each of the 8 items is scored from 0 – 3, on an ordinal scale, with the best possible total equal to 24 and the worst score equal to zero.
The Rasch measurement model, applied to data on 84 community-dwelling male veterans, showed that the 4-point rating scale appeared to "distinctly identify subjects at different ability levels."[15] The 4 item version is scored 0--12.

Equipment needed:
- Scoring form
- level walking area at least 20 feet in length
- stopwatch
- shoe box
- 2 cones (to serve as obstacles in walking pathway)
- stairs with railing
-

Directions:
Instructions for each item are included on the scoring form (attached). In 84 community dwelling male veterans, Rasch measurement model analysis showed that the most difficult items were "gait with horizontal head turns", "steps", and "gait with vertical head turns"; the easiest items were "gait on level surfaces", "change in gait speed", and "step around obstacles". Clinicians may want to consider changing the order of test administration (from easiest to most difficult) especially in clients with severe impairment.[15]

Reliability:

Reference	N =	Sample Description	Reliability Statistic
Intrarater Reliability: same rater within one session (or one day)			
Wolf, 2001 [5]	94	Adults (over age 75) with impaired balance; physical therapist raters were trained in a standardized test protocol and practiced this protocol before data collection.	ICC=.98
McConvey, 2005 [16]	10	Patients with multiple sclerosis; 11 Physical therapist raters watching videotaped gait	ICC= .76 to .986
Interrater Reliability:			
Wolf, 2001 [5]	94	Adults with impaired balance over age 75; physical therapist raters were trained in a standardized test protocol and practiced this protocol before data collection.	ICC=.99

Shumway Cook, 1997 [4]	5	Community-dwelling older adults with varying balance abilities; 5 physical therapist raters.	.96 to 1.00 (ratio of subject variability to total variability)
McConvey, 2005 [16]	10	Patients with multiple sclerosis; 11 Physical therapist raters watching videotaped gait	ICC = .983
Marchetti, 2006 [3]	39	Adults in tertiary-care setting, test and control; 6 paired physical therapist raters on 8 item version.	.54 to .80 Kappa
Internal Consistency: how items in a scale relate to each other and to the group of items as a whole			
Marchetti, 2006 [3]	226	123 of the subjects had known balance disorders; 103 subjects were controls without balance or vestibular dysfunction. All were community dwellers.	Chronbach's alpha 8 item version: 0.92 4 item version: 0.89
Chiu, 2006 [15]	84	Community-dwelling male veterans (mean age = 75)	Person separation reliability .80
Test-Retest Reliabilty			
Hall, 2006[10]	16	Adults with peripheral vestibular disorders,(same day, same raters).	ICC $_{(3,1)}$ = .86

Validity:

Construct / Concurrent Validity: It is difficult to always differentiate between these 2 types of validity. Evaluating this property requires a "gold standard" measure with which to compare the tests results. Such a "gold standard" is often not available.

Population	*N =*	*Support for Validity*
Community-dwelling older adults with and without hx of falls	105	DGI is correlated with: the Berg Balance Scale (BBS) (0.67), with a balance self-perceptions test (0.76), with use of an assistive device (-0.44), and with a history of imbalance (-0.46).[1]
Patients with unilateral vestibular dysfunction (retrospective review)	137	DGI scores correlated with: ABC scale for persons with mild – moderate vestibular weakness (0.72); ABC scale for persons with severe vestibular weakness (0.48).[17]
Multiple sclerosis	10	DGI scores correlated inversely with: time to walk six meters (-0.80)[16]
Persons with and without balance or vestibular disorders (retrospective review)	81 (with balance disorders) 93 (without balance disorders)	DGI scores correlated inversely with 5-timed-sit-to-stand test scores (-0.68).[18]
Persons with vestibular disorders (Age range 14 – 88, mean=65)	32	DGI correlates with Gait speed (0 .82) measured as time to walk 11 meters, inversely with Four Square Step Test (-0.51), inversely with Timed Up and Go (TUG) (-0.56).[19]
Persons with vestibular dysfunction (Mean age = 64) (retrospective review)	70	DGI correlates with BBS (0.71).[20]
Multiple Sclerosis (Mean age = 45)	51	DGI correlates with BBS (0.78), ABC (0.54) and inversely with TUG (0.72) Dizziness Handicap Index (DHI) (-0.39), and Deambulation Index (0.8).[13]

Dynamic Gait Index (DGI)/Functional Gait Assessment (FGA)

Predictive Validity		
Population	**N =**	**Results**
Community-dwelling older adults, with and without history of falls.	44	DGI score was <u>not</u> a significant risk factor in a logistic regression model for falls. The Berg Balance Scale and history of imbalance were significant risk factors in this model for falls.[1]
Persons with vestibular dysfunction with history of migraines	62	The DGI score is included in an overall score of disability, calculated as follows: 100 x / 296; where ABC equals the score on the Activities Specific Balance Confidence; DHI equals the score on the Dizziness Handicap Inventory; and DGI equals the score on the Dynamic Gait Index. The maximum possible score is 100, with the following disability interpretation by the authors: • > 91 No impairment • 81 – 91 Minimal impairment • 41 – 80 Moderate impairment • <40 Severe Impairment [8]
Persons with vestibular disorders	247	Persons with DGI ≤ 19 were 2.58 times more likely to report falls in previous 6 months than persons with scores > 19/24. [7]
Independent community-dwelling older adults (Mean age = 74)	99	DGI scores were not predictive of falls within 1 year following testing [21]
Unilateral vestibular hypofunction (Ages 28-86 years old)	47	Initial DGI scores along with DVA scores (Dynamic Visual Acuity) were significant factors in a regression model for predicting fall risk reduction at discharge (sensitivity of the model = 77%) [22]
Patients with dizziness, with or without self-perceived unsteadiness.	38	Average DGI scores were <u>not</u> significantly different between patients with dizziness who perceived themselves to the "unsteady" vs. those who felt "steady." [23]
Patients with variety of vestibular disorders. (Mean age = 61) (retrospective review)	85	Mean DGI scores were significantly different between persons with mild or moderate dizziness handicap scores compared to those with severe handicap scores (p<.05). [24]
Self-reported fallers with vestibular dysfunction (retrospective review)	103	Persons with DGI score ≤ 18 were 2.7 times more likely to have reported a fall in the previous 6 months than those with scores > 18/24 (p = .03) [25]
Persons with essential tremor, with and without head tremor	58	DGI scores significantly different between controls and persons with ET with and without head tremor (Kruskal-Wallis p = .009) and between control group and ET group with head tremor (Mann-Whitney U p =.002)[14]

Sensitivity/specificity:

Population	N =	Cutoff Score and Description	Results
Identifying fallers vs non-fallers in persons with Parkinson's Disease	45	Cutoff score ≤ 19 Cutoff score ≤ 22 [12]	Sensitivity (57%) Specificity (90%) Sensitivity (89%) Specificity (48%)

Identifying fallers vs. non-fallers	44	Cutoff score equal or less than 19: (adults over 65)[1]	Sensitivity (59%); Specificity (64%) BBS was shown to have greater sensitivity and specificity than DGI in the same study.
Identifying persons with balance dysfunction	174	Cutoff score ≤ 22 (young and older adults, with or without balance disorders) [18]	Sensitivity (82%) Specificity (88%)
Identifying persons with balance or vestibular disorders	226	Cutoff score <12 (on 4 Item DGI) of adults with mean age 56.7 with or without balance disorders [3]	Sensitivity (85%) Specificity (74%) The AUC for 8-item DGI was .89 with cutoff score <24 , for 4-item DGI was .87 showing similar sensitivity and specificity.
Persons with balance or vestibular disorder who reported a fall in previous 6 months	123	Cutoff score ≤ 19 (on 8 Item) Cutoff score ≤ 9 (4 Item) Adults with mean age 62.3 [3]	Sensitivity (68%), Specificity (60%) Sensitivity (56%), Specificity (62%)
Identifying fallers vs non-fallers in persons with multiple sclerosis	51	Cutoff score < 12 [13]	Sensitivity (45%) Specificity (80%) BBS, using a cutoff score of 44, was shown to have less sensitivity but more specificity than DGI in the same study

Responsiveness/Sensitivity to change:

Population Descriptor	N=	Reference and Intervention	Responsive Yes/No	Ave. change after intervention Group differences significant?
		VESTIBULAR DYSFUNCTIONS		
Patients with vestibular dysfunction	62 Hx of migraines (N=31) No hx /migraines (N=31)	**Wrisley, 2002** [8] Rx: Physical Therapy, mean of 4 visits	Yes	Mean change after Rx: With Migraines = +4 (p<.001) Without Migraines = +4 (p = .001)
Diagnosis of Bilateral vestibular disorder	24	**Brown, 2001** [6] Rx: customized PT (mean visits = 4.6)	Yes	Mean change after Rx: +4 (p = .005)
Central vestibular dysfunction	48	**Brown, 2006** [26] Rx: Customized PT (Mean visits = 5)	Yes	Mean change after Rx: +3.8 (p< .01)
Unilateral vestibular hypofunction	47	**Hall, 2004** [22] Rx: vestibular rehabilitation	Yes	Group showed significant increases in DGI after Rx (p < .001)
Patients seen for vestibular and balance rehab	20 (mean age = 65)	**Badke, 2004** [27] Rx: customized exercise program; (1-20 visits)	Yes	Mean change after Rx: +4.4 (p< .01)
Patients with vestibular disorders (chronic dizziness)	43	**Meli, 2006** [28] Rx: vestibular rehabilitation, 2 hrs, 12 sessions, plus home exercise program (HEP) 2x/day.	Yes?	Mean before Rx = 20.88 (2.12) Mean after Rx = 23.09 (1.44) Before Rx: 25% of pts scored ≤19/24; After Rx:0 scored ≤ 19/24

Diagnosis of BPPV: Benign paroxysmal positional vertigo	88 overall 22 tested with DGI	***Dannenbaum, 2004[9]*** Rx: Vestibular rehabilitation program, VRP, consisting of modified Epley, Semont, Brandt-Daroff, or log roll repositioning exercises + eye-head and balance exercises + HEP	Yes	Mean before Rx: 18.4 (3.2) Mean after Rx:22.6(1.7) (p<.01, *t*-test)
GENERAL BALANCE DYSFUNCTIONS				
Patients with chronic stroke	8	***Fritz, 2007[11]*** Rx: 3 hours CIMT for 10 consecutive workdays, 1:1 with DPT student	Yes	Mean baseline = 10.3 (3.1) Mean after Rx = 14.3 (4.9)
Adults over 75 with impaired balance	94 Experimental Grp: (N=37) Control Group: (N=40)	***Wolf, 2001[5]*** *Experimental Group:* Individualized balance program, x12 *Control Group:* Individualized extra attention, 12 visits	Yes	Mean change after Rx: Experimental = +4 Control = + 0.2 Between group differences = (p < .001)
COMMUNITY-LIVING, SEDENTARY				
Physically inactive older adults	256	***Li, 2004[29]*** *Length/frequency/Intensity* 60 min sessions, 3x/wk for 6 months Experimental (N=125): Tai Chi Control (N=131): Exercise stretching	Yes	After Rx: Control showed no change in score; Tai Chi grp showed increase (p<.001) 6 mo post intervention follow-up: Tai Chi grp showed less decline (p=.05)

Adults, inactive, community-living	256
	(mean age = 77)
		Li, 2005[30]
		3x/week x 6 months w/instructor
		Control group, n=131
		stretching classes
		Intervention group, n=125
		Yang Tai Chi classes
			Yes	Baseline: Control 19.76(2.89)
				
				                 Rx: 19.40(2.48)
				6 mos: Control 20.12(3.07)
				   P<.001 Rx: 21.43(2.62)
				12 mos follow-up: 19.47(3.24)
				    P<.05 Rx : 21.10(2.68)
				Significant change with Rx on analyses of repeated measures; no significant change in control group

Ceiling or floor effect: Persons need to be able to ambulate at least 20 feet in order to be tested with the DGI, thus it would not be appropriate for very low functioning patients. Ceiling effects of 7.8% - 72% have been reported in combined test and control subjects by several authors.[3, 13, 14]

Interpreting results: The score of this Index has been interpreted as a measure of functional balance during walking. Scores equal to or less than 19 (of 24) are associated with an increased risk of falling.[1] The test appears to be responsive to showing change after intervention in persons with vestibular disorders and older adults with impaired balance.

Reference Data:

Young and older adults, with or without balance disorders based on vestibular testing [18]			
Subjects	*N*	*DGI Scores*	
		Mean (SD)	**95% CI**
Young controls (Mean age = 41; range 23 -57)	32	23.9 (.3)	23.9 – 24
Older controls (Mean age = 73; range 63-84)	49	22.2 (1.7)	21.5 – 22.5
Young, with balance disorder (Mean age = 48; range 14-59)	47	18.0 (4.4)	16.7 – 19.4
Older, with balance disorder (Mean age = 75, range 61-90)	46	15.8 (5.1)	14.3 – 17.3
Younger adults, with surgical excision of schwannoma or matched healthy controls [31]			
Mean 14 months after schwannoma removal, no physical therapy (Mean age = 52, range 43 -57)	12	19.7(0.8)	Difference from control (-5.5 -- -1.8)
Controls (Mean age 52, range 43 -57)	12	23.3(0.2)	

Other: To avoid ceiling effect a modified version of the DGI, called the Functional Gait Assessment (FGA) was created [32] and reference data established. [33] The FGA uses 7 of the 8 tasks of the DGI (eliminates walking around the obstacle) plus adds 3 items and specifies a standardized surface (Gait Grid⊚). Risk for falls is suggested to be < or = to 22/30 in a 6 month prospective cohort study of 35 older adults aged 60 to 90. This score provided a100% sensitivity, 72% specificity, LR+ of 3.6 and LR- of 0 to predict prospective falls.[34]

Table 1.
Functional Gait Assessment Total Scores by Decade

Age (y)	N	Minimum Score	Maximum Score	Mean	SD	95% Confidence Interval
40–49	27	24	30	28.9	1.5	28.3-29.5
50–59	33	25	30	28.4	1.6	27.9-29.0
60–69	63	20	30	27.1	2.3	26.5-27.7
70–79	44	16	30	24.9	3.6	23.9-26.0
80–89	33	10	28	20.8	4.7	19.2-22.6
Total	200	10	30	26.1	4.0	25.5-26.6

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Appendix.

Functional Gait Assessment

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.

(0)   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.

_____**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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[a] Adapted from Dynamic Gait Index.1 Modified and reprinted with permission of authors and Lippincott Williams & Wilkins (http://lww.com).

Walker, M.L. (2007). **Reference Group Data for the Functional Gait Assessment**. *Physical Therapy* (87)11, 1468-1477.

Table 1.

Functional Gait Assessment Total Scores by Decade

Age (y)	N	Minimum Score	Maximum Score	Mean	SD	95% Confidence Interval
40–49	27	24	30	28.9	1.5	28.3–29.5
50–59	33	25	30	28.4	1.6	27.9–29.0
60–69	63	20	30	27.1	2.3	26.5–27.7
70–79	44	16	30	24.9	3.6	23.9–26.0
80–89	33	10	28	20.8	4.7	19.2–22.6
Total	200	10	30	26.1	4.0	25.5–26.6