

The Modified Wheelchair Skills Test (WST) and Questionnaire

This test version was adapted, with permission, to evaluate the difference a LUCI system can make for a power wheelchair driver using the Wheelchair Skills Program Manual, with questions taken from Wheelchair Skills Test (WST) Form - Power, and the Wheelchair Skills Test Questionnaire (WST-Q) Form - Power. Reference: Kirby, R. L., Swuste, J., Dupuis, D. J., MacLeod, D. A., & Monroe, R. (2002). The Wheelchair Skills Test: a pilot study of a new outcome measure. Archives of Physical Medicine and Rehabilitation, 83(1), 10-18.

The purpose of the Wheelchair Skills Test (WST) - Power is to evaluate a power wheelchair (PWC) driver's ability to successfully execute core skills needed to safely navigate the world in a PWC. **The test is not meant to be a threshold of a person's deservedness to drive a PWC, but rather the baseline for skills training they may require in order to be successful.** The WST is comprised of 26 individual skills that a PWC driver attempt's to execute with a clinician observing. The clinician then scores the PWC driver's capacity. The Wheelchair Skills Test Questionnaire (WST-Q) is a self-report tool addressing the same set of wheelchair skills that comprise the WST. The WST-Q has been found to strongly correlate with the objective Wheelchair Skills Test (WST) and offers advantages over the WST by requiring less time, equipment, and set-up, as well as enabling assessment of performance, confidence, and frequency with the client's real-world scenarios in mind. In order to effectively utilize the WST-Q, the client or proxy (e.g., caregiver, parent), must be able to communicate and answer the questions effectively.

As an internationally recognized, well-regarded evaluation of an individual's skills navigating in a PWC, the LUCI team has taken a subset of the WST and WST-Q skills that are relevant to the LUCI system to **demonstrate how a PWC driver's score may improve by simply introducing the addition of the LUCI smart sensor system.** No changes have been made to the test structure or scoring in this modified version. Conducting this test as part of a LUCI evaluation **provides payer groups with measurable differences that the LUCI system can make in a PWC driver's life.**

To familiarize yourself with the WST and WST-Q - Power and how to properly score each individual skill detailed in the Wheelchair Skills Program manual, visit: wheelchairskillsprogram.ca/en/skills-manual-forms/.

How to Use This Document

Administering and scoring the Modified WST and WST-Q:

- » Estimated administration time for this modified version of the WST after environmental set-up is ~20 minutes. Estimated administration time for this modified version of the WST-Q is ~10 minutes. Actual completion time may vary depending on client characteristics, testing environment, and the clinician's familiarity with the test.
- » Select the WST, WST-Q, or both, to measure your client's power wheelchair skills capacity (WST) and/or performance, confidence and frequency (WST-Q) without and then with the LUCI.
- » During administration of the outcome measure(s), use the questions and skill descriptions/scoring found below (WST-Q, p. 4; WST appendix, pp. 6-13)
- » Record your client's scores on the score sheets below (WST-Q, p. 3; WST, p. 5)
- » Use the following formula to calculate the final scores for both the WST and the WST-Q. Note that the final score is presented as a percentage ranging from 0-100%.

$$\begin{array}{l} \text{TOTAL WST} \\ \text{or WST-Q} \\ \text{Score} \end{array} = \frac{\text{SUM OF THE INDIVIDUAL SKILLS SCORES}}{([\# \text{ OF TOTAL SKILLS SCORED}] \times 3)} \times 100\%$$

Using the measurable outcomes for justification of the LUCI system, sample justifications:

- » **WST:** The Wheelchair Skills Test's (WST) reliability and validity have been studied in depth, with numerous peer-reviewed studies confirming its strong measurement properties across diverse populations and clinical contexts. A modified version of the WST was completed to measure capacity differences of **[Client Name]** without and then with the LUCI system. With a scoring scale of 0 to 100%, without LUCI, **[Client Name]** received a score of **[Score Percentage]**, and with LUCI **[he/she]** received a score of **[Score Percentage]**, demonstrating an improvement in capacity of **[%]** with the LUCI system, indicating a **[Significant, or other appropriate descriptor]** improvement in **[Client Name]**'s powered wheelchair mobility with the LUCI system.
- » **WST-Q:** The Wheelchair Skills Test – Questionnaire total scores are highly correlated with the objective Wheelchair Skills Test. In addition, the WST-Q has strong reliability and well-established validity, making it an effective tool to evaluate performance, confidence, and frequency of power wheelchair skills. A modified version of the WST-Q was completed to show **[Performance, Confidence, and/or Frequency - include what applies]** differences of **[Client Name]** without and then with the LUCI system. With a scoring scale of 0 to 100%, without LUCI, **[Client Name]** received a score of **[Score Percentage]** for Performance, **[Score Percentage]** for Confidence, and **[Score Percentage]** for Frequency. With LUCI **[he/she]** received a score of **[Score Percentage]** for Performance, **[Score Percentage]** for Confidence, and **[Score Percentage]** for Frequency. These results demonstrate an improvement in Performance of **[%]**, Confidence of **[%]**, and Frequency of **[%]** with the LUCI system, indicating a **[Significant, or other appropriate descriptor]** improvement in **[Client Name]**'s powered wheelchair mobility with the LUCI system.



Score Sheet for Modified WST-Questionnaire

Individual Skill	Description to client prior to asking Performance, Confidence and/or Frequency questions (see p. 4 charts)	Performance		Confidence		Frequency	
		PWC Only	PWC w/ LUCI	PWC Only	PWC w/ LUCI	PWC Only	PWC w/ LUCI
Rolls Forward	Moving the wheelchair forward, for example along a hallway.						
Rolls Backward	Moving the wheelchair backward, for example to back away from a table.						
Turns in Place	Turning the wheelchair around in a small space so that it is facing in the opposite direction.						
Turns While Moving Forwards	Turning the wheelchair around obstacles while moving forward.						
Turns While Moving Backwards	Turning the wheelchair around obstacles while moving backward.						
Maneuvers Sideways	Moving the wheelchair sideways in a small space, for example to get the side of your wheelchair next to a kitchen counter, and then back to where you started.						
Gets Through Hinged Door	Opening a hinged door, moving the wheelchair through it and closing it behind you, the coming back the other way.						
Ascends Slight Incline	Moving the wheelchair up a slight incline, for example a standard ramp.						
Descends Slight Incline	Moving the wheelchair down a slight incline under control.						
Ascends Steep Incline	Moving the wheelchair up a steep incline (about twice as steep as a standard ramp).						
Descends Steep Incline	Moving the wheelchair down a steep incline under control.						
Gets Over Obstacle	Getting the wheelchair over an obstacle that sticks up above the surface, for example a high threshold.						
Ascends Low Curb	Getting the wheelchair up a low curb, for example when entering a building.						
Descends Low Curb	Getting the wheelchair down from a low curb.						
Ascends High Curb	Ability to navigate a sidewalk, ramp, etc. and avoiding height changes that are larger than that recommended by the wheelchair manufacturer.*						
Descends High Curb	Ability to navigate a sidewalk, ramp, etc. and avoiding drop-offs that are higher than that recommended by the wheelchair manufacturer.*						
Avoids Moving Obstacle	Avoiding an obstacle while you and the obstacle are moving in the environment, including towards one another.						
Totals							

Questions & Scoring for Modified WST-Questionnaire

Performance question: "Could you do this skill today in your own setting?"		
Answer	Score	What this means
Yes, very well	3	I could do the skill safely and very well.
Yes, but not well	2	I could do the skill safely, but not well.
Yes, with help	1	I could do most, but not all, of the skill or I could direct another person to help me do it.
No	0	I have never done the skill or could not do it right now.
Testing error	TE	When answers have not been recorded (e.g., inadvertently or because the test subject did not understand the question).

Confidence question: "How confident are you that you could do this skill safely & consistently today in your own setting?"		
Answer	Score	What this means
Very confident	3	I am very confident.
Somewhat confident	2	I am somewhat confident.
Somewhat unconfident	1	I am somewhat unconfident.
Very unconfident	0	I am very unconfident.
Testing error	TE	When answers have not been recorded (e.g., inadvertently or because the test subject did not understand the question).

Frequency questions: "How often do you do this skill in your own setting?"		
Answer	Score	What this means
Always	3	Always when I need or want to.
Sometimes	2	Sometimes when I need or want to.
Rarely	1	Rarely when I need or want to.
Never	0	Never or less often than once a year.
Testing error	TE	When answers have not been recorded (e.g., inadvertently or because the test subject did not understand the question).



Score Sheet for Modified WST

WSP Manual	#	Individual Skill	Skill Description	Score	
				Without LUCI	With LUCI
5.4.3	7.8	Rolls Forward	Moves the wheelchair forward a short distance on a smooth, level, firm surface and stops the wheelchair at a location that has been specified by the tester before the skill attempt begins.		
5.4.3	7.9	Rolls Backward	Moves the wheelchair backward a short distance on a smooth level surface and stops the wheelchair at a specified location.		
5.4.3	7.10	Turns in Place	Turns the wheelchair around to the left and right to face in the opposite direction, in as tight a space as possible.		
5.4.3	7.11	Maneuvers Sideways	Maneuvers (or shuffles) the wheelchair sideways to the left and right (like getting close to a counter for a cooking task).		
5.4.3	7.12	Turns While Moving Forward	Turns the wheelchair to the left and right while moving forward (like pulling through a doorway).		
5.4.3	7.13	Turns While Moving Backwards	Turns the wheelchair to the left and right while moving backwards (like backing into an elevator).		
5.4.3	7.19	Gets Through Hinged Door	Opens, passes through and closes a hinged door that opens away from the wheelchair, then repeats the task in the opposite direction.		
5.4.3	7.20	Ascends Slight Incline	Moves the wheelchair from a level surface up a slight incline to another level surface.		
5.4.3	7.21	Descends Slight Incline	Moves the wheelchair down a slight incline to a level surface, stopping within a short distance after reaching the level surface at the bottom of the incline.		
5.4.3	7.20	Ascends Steep Incline	Moves the wheelchair from a level surface up a steep incline to another level surface.		
5.4.3	7.21	Descends Steep Incline	Moves the wheelchair down a steep incline to a level surface, stopping within a short distance after reaching the level surface at the bottom of the incline.		
5.4.3	7.23	Gets Over Obstacle	Moves the wheelchair over an obstacle.		
5.4.3	7.24	Ascends Low Curb	Gets the wheelchair up a curb, approximately 2" tall.		
5.4.3	7.25	Descends Low Curb	Gets the wheelchair down a curb, approximately 2" tall.		
4.3	7.20	Avoids Moving Obstacle	While moving, individual avoids moving obstacle approaching from a different direction.		
Totals					

Appendix: Setup & Scoring for Modified WST

INDIVIDUAL POWERED WHEELCHAIR SKILL # 8

Rolls Forward - Simulated Hallway

Equipment & Setup

- » Smooth level surface 10 m long and 1.5 m wide.
- » Starting line at 0 m.
- » Finish line at 10 m that is clear to the tester but not necessarily apparent to the subject to avoid confusion with the stop location.
- » A stop target at least 1.5 m beyond the finish line.

Starting positions

Wheelchair: Stationary, facing the midpoint of the starting line, with the front-wheel axles behind it and the casters trailing backward (to avoid the subject experiencing an initial shimmy as the casters realign themselves in the direction of travel).

Capacity Scoring Criteria

- 3 - Advanced pass
 - » There should be no partial falls or transient tips.
- 2 - Pass
 - » The wheelchair is moved forward 10 m.
 - » All wheels in contact with the ground stay within the 1.5-m-wide path.
 - » The wheelchair stops in a controlled manner.
- 1 - Partial pass
 - » The subject meets 2 of the 3 pass criteria
- 0 - Fail: The subject does not meet 2 of the 3 pass criteria.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded:
 - » The time taken.
 - » The distance covered (if < 10 m).

SPOKEN INSTRUCTIONS

“Move the wheelchair forward within the path (indicate the boundaries) and stop when you reach (indicate the stop location)”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.8.

INDIVIDUAL POWERED WHEELCHAIR SKILL # 9

Rolls Backward - Simulated Backing Away from Table

Equipment & Setup

- » Smooth level surface 5.0 m long and 1.5 m wide.
- » Starting line at 0 m.
- » Finish line at 5 m that is clear to the tester but not necessarily apparent to the subject to avoid confusion with the stop location.
- » A stop target at least 1.5 m beyond the finish line.

Starting positions

Wheelchair: The back of the wheelchair facing the starting line and the axles of the rear-most wheels (that touch the ground) behind the starting line and the casters trailing forward (to avoid the subject experiencing an initial shimmy as the casters realign themselves in the direction of travel).

Capacity scoring criteria

- 3 - Advanced pass
 - » The subject carries out the skill in a highly proficient or advanced matter.
- 2 - Pass
 - » The wheelchair is moved backward 5 m.
 - » All wheels in contact with the ground stay within the 1.5-m-wide path.
 - » The wheelchair stops in a controlled manner.
 - » The subject looks backward over each shoulder at least once to monitor that the path is clear. These two shoulder checks can be performed immediately after one another or be separated in time. If a subject can turn around in one direction to the extent that their head is facing backward, that is an acceptable way to monitor their path.
- 1 - Partial pass
 - » The subject meets 2 of the 4 pass criteria.
- 0 - Fail: The subject does not meet 2 of the 4 pass criteria.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded:
 - » The time taken.
 - » The distance covered (if < 5 m).

SPOKEN INSTRUCTIONS

“Move the wheelchair backward within the path (indicate the boundaries) and stop when you reach (indicate the stop location)”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.9.

Turns in Place

Equipment & Setup

- » Smooth level surface.
- » Two lines, each 3.0 m long, at right angles (90°) to each other that intersect at the “starting point”, the midpoint of both lines.
- » Marks (e.g., colored dots) on each of the 4 resulting lines to indicate the distance from the starting point (eg., at 0.5, 1.0, and 1.5 m).
- » Means (e.g., a protractor, goniometer or magnetic compass) of identifying the extent to which the wheelchair has turned.

Starting positions

Wheelchair: The wheelchair should be positioned with the mid-point between the axles of the drive wheels directly over the starting point.

Capacity Scoring Criteria

- 3 - Advanced pass
 - » No part of the wheelchair in contact with the ground should pass outside the marks 1.0 m from the starting point.
 - 2 - Pass
 - » Angle reached at least 160° in both directions.
 - » No part of the wheelchair in contact with the ground should pass outside the marks 1.5 m from the starting point.
 - 1 - Partial pass
 - » Angle reached at least 160° in one direction.
 - 0 - Fail: Part of the wheelchair in contact with the ground passes outside the marks 1.5 m from the starting point.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded:
- » The angle reached if < 160°
 - » The direction and extent of displacement in any direction from the starting point.
 - » If three-point turns are used, the number of cycles needed.

SPOKEN INSTRUCTIONS

“Keeping the wheelchair in as tight a space as possible, turn the wheelchair around until you are facing in the opposite direction... Now turn the chair in the other direction.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.10.

Maneuvers Sideways

Equipment & Setup

- » A lateral target (e.g., a wall or a movable object).
- » A means (e.g., a line on the floor) of identifying the starting position 1.0 m away from the lateral target.
- » A means (e.g., marks of different colors on the floor) of identifying the extent to which the wheels in contact with the floor move forward or backward during the sideways maneuver.
- » The set-up for the “turns in place” skill can be used.

Starting positions

Wheelchair: Widest part of the wheelchair should be 1.0 m lateral to the lateral target. For powered wheelchairs, this will usually be the drive wheels themselves.

Capacity scoring criteria

- 3 - Advanced pass
 - » The farthest forward or backward distance from the starting position that the wheels in contact with the ground have moved during the maneuver) is < 1.0 m.
 - 2 - Pass
 - » The subject must meet the criteria in both directions.
 - » On completion of each sideways maneuver, the lateral distance (between the widest aspect of the wheelchair and the lateral target) must be < 10 cm. The wheelchair may touch the lateral target.
 - » On completion of each sideways maneuver, the angle between the wheelchair and the lateral barrier must be < 20 °.
 - » The farthest forward or backward distance (from the starting position that the wheels in contact with the ground have moved during the maneuver) is < 1.5 m.
 - 1 - Partial pass
 - » The subject meets the criteria in one direction but not both.
 - » The subject partially meets the criteria in both directions.
 - » The subject can direct a caregiver to perform the skill.
 - 0 - Fail: The subject does not meet the criteria in either direction
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded: The lateral distance from target, angle between the PWC and lateral target, # of cycles required

SPOKEN INSTRUCTIONS

“Get this wheel (indicate the one closest to the initial target) as close as you can to this target (indicate it), using as little forward-backward space as possible, and ending facing forward as you are now.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.11.

Turns While Moving Forward

Equipment & Setup

- » As for the “Turns in Place” skill
- » One pylon or equivalent (e.g., a plastic drinking cup) (with base diameter less than 10 cm and at least 10 cm high) positioned over the intersection of the two lines. The line on one side of the pylon is the starting line and the line on the other side of the pylon is the finish line.
- » Alternatively, the tester can set up two pylons at least 2 m apart. The subject can follow a figure-8 path, making a left turn around one pylon and a right turn around the other.

Starting positions

Wheelchair: The front of the wheelchair facing the pylon and at least 0.5 m from it.

Capacity scoring criteria

- 3 - Advanced pass
 - » During the turns in both directions, no part of the wheelchair or body touching the ground strays beyond the 1.0 marks.
 - 2 - Pass
 - » The pylon may be touched but should not be displaced by more than 2 cm.
 - » The finishing position for each turn is when the front wheels of the wheelchair move beyond the finish line.
 - » During the turns in both directions, no part of the wheelchair or body touching the ground strays beyond the 1.5 m marks.
 - 1 - Partial pass
 - » The 1.5 m criterion is met in one direction but not the other.
 - 0 - Fail
 - » During the turn in both directions, a part of the wheelchair or body touching the ground strays beyond the 1.5 m marks.
- TE - Testing error: The tester cannot assess the skill for some reason.
Comments recorded:
» May record in three-point turns are used and, if so, the number of cycles.

SPOKEN INSTRUCTIONS

“Move the wheelchair forward around the pylon (indicate it), passing as close as you can to it without touching it.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.12.

Turns While Moving Backward

Equipment & Setup

- » Same setup as for the “turns while moving forward” skill above.

Starting positions

Wheelchair: The back of the wheelchair facing the pylon and at least 0.5 m from it.

Capacity Scoring Criteria

- 3 - Advanced pass
 - » During the turns in both directions, no part of the wheelchair or body touching the ground strays beyond the 1.0 marks.
 - 2 - Pass
 - » The pylon may be touched but should not be displaced by more than 2 cm.
 - » The finishing position for each turn is when the front wheels of the wheelchair move beyond the finish line.
 - » During the turns in both directions, no part of the wheelchair or body touching the ground strays beyond the 1.5 m marks.
 - 1 - Partial pass
 - » The 1.5 m criterion is met in one direction but not the other.
 - 0 - Fail: During the turn in both directions, a part of the wheelchair or body touching the ground strays beyond the 1.5 m marks.
- TE - Testing error: The tester cannot assess the skill for some reason.
Comments recorded: May record in three-point turns are used and, if so, the number of cycles.

SPOKEN INSTRUCTIONS

“Move the wheelchair backward around the pylon, passing as close as you can to it without touching it.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.13.

Gets Through Hinged Door

Equipment & Setup

- » Hinged door about 80 cm wide, with no resistance to opening. If only a self-closing door is available, the tester can manually neutralize the closing force.
- » There should be enough space, before and after the door as well as to the side of the door, to allow the subject to maneuver.

Starting positions

Wheelchair: Facing the mid-point of the closed door with the front wheels about 0.5 m from it.

Capacity Scoring Criteria

- 3 - Advanced pass: The subject carries out the skill in a highly proficient or advanced matter.
- 2 - Pass
- » The skill in each direction is completed when the door closes firmly.
 - » Any technique (e.g., forward or backward) is acceptable.
- 1 - Partial pass
- » The subject is successful in one but not both directions.
 - » The subject can open the door in both directions but is unable to close it.
 - » The subject can pass through the door and close it in both directions, but not open it.
- 0 - Fail: A finger pinch seems likely between the door and the frame. The spotter should intervene to prevent injury.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded: General comments

SPOKEN INSTRUCTIONS

“Open the door, move the wheelchair through it, and close the door behind you. Now, go through the door the other way.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.19.

Ascends Slight Incline

Equipment & Setup

- » Incline with slope of 5°, at least 2.5 m long and at least 1.5 m wide. A lip on both sides of the incline is desirable to prevent injuries.
- » The incline should end at the upper end on a level surface or platform that is large enough to allow wheelchairs of all types, caregivers, and WST personnel to turn around on safely. A lip around open edges of the platform is recommended. However, if level areas are not readily available at the upper and lower ends of an incline, the WST can still be administered on a section of the incline.
- » There should be little or no lip at the lower junction of the floor and incline.

Starting positions

Wheelchair: On the level at the bottom of the incline, with the leading wheels of the wheelchair facing the incline and at least 0.5 m away. Some subjects may prefer to start farther away if they wish to use momentum to get up the ramp. This is the subject's choice, but the tester should not suggest this solution.

Capacity scoring criteria

- 3 - Advanced pass: The subject carries out the skill in a highly proficient or advanced matter.
- 2 - Pass
- » The subject may navigate in the forward or backward direction.
 - » If the skill is performed in the backward direction, shoulder checks are an important measure to ensure that the wheelchair is moving in the intended direction and for safety reasons.
 - » The end of the skill occurs when all wheels in contact with the surface are completely off the incline at the top or at least 2.5 m up the incline if there is no platform at the top. The subject or wheelchair may contact the ramp lips or rails without penalty.
- 1 - Partial pass
- » The subject ascends at least 1.5 m.
 - » The subject successfully handles a slope of lesser degree (e.g., if a 2.5° slope is available for the slight incline).
- 0 - Fail: The subject ascends < 1.5 m. and/or a wheel moves outside the lateral boundaries of the incline.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded:
- » If the foot supports or rear anti-tip devices make enough contact with the surface at the lower transition to significantly interfere with progression.
 - » If a transient wheelchair tip occurs.

SPOKEN INSTRUCTIONS

“Move the wheelchair up the ramp.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.20.



Descends Slight Incline

Equipment & Setup

- » As for the “Ascends Incline Skills” (incline with slope of 5°).
- » Stop location: An area extending at least 1.5 m from the bottom of the incline in which the subject can stop.

Starting positions

Wheelchair: All wheels are on the level surface at the top of the incline with the leading wheels of the wheelchair facing the incline and at least 0.5 m away. If there is no platform at the top of the incline, the leading wheels should be at least 2.5 m from the lower incline-level transition and the wheelchair may face downhill or sideways.

Capacity Scoring Criteria

- 3 - Advanced pass: The subject carries out the skill in a highly proficient or advanced matter.
- 2 - Pass
 - » The end of the skill occurs when all wheels in contact with the surface are completely off the incline at the bottom and the wheelchair has been brought to a controlled stop.
 - » The subject or wheelchair may contact the ramp lips or rails without penalty.
- 1 - Partial pass
 - » The subject descends at least 1.5 m under control.
 - » The subject descends the full incline under control but does not come to a complete stop at bottom.
 - » The subject successfully handles a slope of lesser degree (e.g., if a 2.5 slope is available for the slight incline).
- 0 - Fail
 - » The subject descends < 1.5 m under control.
 - » A runaway requires the spotter’s intervention.
 - » A wheel moves outside the lateral boundaries of the incline.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded: Distance needed to stop at bottom, clearance of footplates.

SPOKEN INSTRUCTIONS

“Move the wheelchair down the ramp under control and stop when you reach the (indicate stop location).”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.21.

Ascends Steep Incline

Equipment & Setup

- » Incline with slope of 10°, at least 2.5 m long and at least 1.5 m wide.. A lip on both sides of the incline is desirable to prevent injuries.
- » The incline should end at the upper end on a level surface or platform that is large enough to allow wheelchairs of all types, caregivers, and WST personnel to turn around on safely. A lip around open edges of the platform is recommended. However, if level areas are not readily available at the upper and lower ends of an incline, the WST can still be administered on a section of the incline.
- » There should be little or no lip at the lower junction of the floor and incline.

Starting positions

Wheelchair: On the level at the bottom of the incline, with the leading wheels of the wheelchair facing the incline and at least 0.5 m away.

Capacity Scoring Criteria

- 3 - Advanced pass: The subject carries out the skill in a highly proficient or advanced matter.
- 2 - Pass
 - » The subject may navigate in the forward or backward direction.
 - » If the skill is performed in the backward direction, shoulder checks are an important measure to ensure that the wheelchair is moving in the intended direction and for safety reasons.
 - » The end of the skill occurs when all wheels in contact with the surface are completely off the incline at the top or at least 2.5 m up the incline if there is no platform at the top. The subject or wheelchair may contact the ramp lips or rails without penalty.
- 1 - Partial pass
 - » The subject ascends at least 1.5 m.
 - » The subject successfully handles a slope of lesser degree (e.g., if a 7.5° slope)
- 0 - Fail
 - » The subject ascends < 1.5 m.
 - » A wheel moves outside the lateral boundaries of the incline.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded: If the foot supports or rear anti-tip devices make enough contact with the surface at the lower transition to significantly interfere with progression or if a transient wheelchair tip occurs.

SPOKEN INSTRUCTIONS

“Move the wheelchair up the ramp.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.20.



Descends Steep Incline

Equipment & Setup

- » As for the “Ascends Incline Skills” (incline with slope of 10°).
- » Stop location: An area extending at least 1.5 m from the bottom of the incline in which the subject can stop.

Starting positions

Wheelchair: All wheels are on the level surface at the top of the incline with the leading wheels of the wheelchair facing the incline and at least 0.5 m away. If there is no platform at the top of the incline, the leading wheels should be at least 2.5 m from the lower incline-level transition and the wheelchair may face downhill or sideways.

Capacity Scoring Criteria

- 3- Advanced pass: The subject carries out the skill in a highly proficient or advanced matter.
- 2 - Pass
 - » The end of the skill occurs when all wheels in contact with the surface are completely off the incline at the bottom and the wheelchair has been brought to a controlled stop.
 - » The subject or wheelchair may contact the ramp lips or rails without penalty.
- 1 - Partial pass
 - » The subject descends at least 1.5 m under control.
 - » The subject descends the full incline under control but does not come to a complete stop at the bottom.
 - » The subject successfully handles a slope of lesser degree (e.g., if a 2.5 slope is available for the slight incline).
- 0 - Fail
 - » The subject descends < 1.5 m under control.
 - » A runaway requires the spotter’s intervention.
 - » A wheel moves outside the lateral boundaries of the incline.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded: Distance needed to stop at bottom, clearance of footplates.

SPOKEN INSTRUCTIONS

“Move the wheelchair down the ramp under control and stop when you reach the (indicate stop location).”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.21.

Gets Over Obstacle

Equipment & Setup

- » Path on a smooth level surface that is at least 1.5 m wide, at least 3 m long before the obstacle (for subjects who use a moving approach) and at least 1.5 m after the obstacle.
- » Obstacle about 3.8 cm high, 7.6 cm across (in the line of progression) and at least 1.5 m wide, rectangular in cross-section (i.e., a vertical front face).
- » The obstacle should be secured to sufficiently withstand horizontal forces.
- » The obstacle may be free-standing or braced across a doorway.

Starting positions

Wheelchair: Facing the obstacle with the leading wheels at least 1.5 m from it.

Capacity scoring criteria

- 3 - Advanced pass
 - » If the subject in a powered wheelchair approaches the obstacle with excessive speed, leading to unnecessary jarring and potential loss of control, an advanced-pass score should not be awarded, and a comment should be recorded.
- 2 - Pass
 - » All parts of the wheelchair must pass beyond the obstacle.
 - » Any technique is permitted, such as forward or backward approaches.
 - » If the skill is performed in the backward direction, shoulder checks are an important measure to ensure that the wheelchair is moving in the intended direction and for safety reasons.
- 1 - Partial pass
 - » At least the leading wheels (that are in contact with the ground) are over the obstacle.
- 0 - Fail
 - » The subject does not complete most of the evaluation criteria, is unsafe or unwilling.
- TE - Testing error: The tester cannot assess the skill for some reason.
- Comments recorded: May record the direction if the skill is performed in the backwards direction.

SPOKEN INSTRUCTIONS

“Get your wheelchair over the obstacle.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.23.



Ascends Low Curb

Equipment & Setup

- » The low curb should be 5 cm high.
- » The nosing of the curb may be gently rounded.
- » Bracing a simulated curb (e.g., a wooden platform or folded table) against a solid object (e.g., a wall) or weighting it is usually needed to prevent it from moving when it is struck by the wheelchair.
- » Path on a smooth level surface that is at least 1.5 m wide and at least 3 m long before the curb (for subjects who use a moving approach). The pathway on the upper level leading away from the curb edge should be at least 1.5 m wide and at least 1.5 m long.

Starting positions

Wheelchair: All wheels are on the level surface below the curb, facing the curb and at least 1.5 m from it.

Capacity Scoring Criteria

3 - Advanced pass: The subject carries out the skill in a highly proficient or advanced manner.

2 - Pass

- » Any technique is permitted, such as forward or backward approaches.
- » If the skill is performed in the backward direction, shoulder checks are an important measure to ensure that the wheelchair is moving in the intended direction and for safety reasons.
- » The task is complete when all wheels are on the upper surface, with the wheelchair user seated upright in the wheelchair.
- » The subject may remove the foot supports but must do so independently.
- » The wheelchair user may get out of the wheelchair to accomplish the task.
- » Curb-climbing aids may be used if the wheelchair is equipped with these devices, but the subject must be able to activate and inactivate the aids independently.

1 - Partial pass

- » If moving forward, the subject gets the front wheels (that are in contact with the ground), but not the rear wheels, up onto the upper level.
- » If moving backward, the subject gets the rear wheels (that are in contact with the ground), but not the front wheels, up onto the upper level.
- » The subject successfully ascends a smaller level change (e.g., 2.5 cm high for the “ascends low curb” skill or 10 cm high for the “ascends high curb” skill), if one is available.

0 - Fail: The subject does not complete most of the evaluation criteria, is unsafe or unwilling.

TE - Testing error: The tester cannot assess the skill for some reason.

Comments recorded: If the skill is performed other than in the forward direction.

SPOKEN INSTRUCTIONS

“Get the wheelchair up on the curb.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.24.



Descends Low Curb

Equipment & Setup

- » As for the “ascends curb” skill above.
- » Because many subjects can descend level changes from a higher level than they can ascend, some alternative means (e.g., an incline) of getting to the upper level.

Starting positions

Wheelchair: All wheels are on the level surface above the curb edge, facing the edge, with the leading wheels at least 0.5 m away from it.

Capacity scoring criteria

3 - Advanced pass: The subject carries out the skill in a highly proficient or advanced manner.

2 - Pass

- » Any technique is permitted, such as forward or backward approaches.
- » If the skill is performed in the backward direction, shoulder checks are an important measure to ensure that the wheelchair is moving in the intended direction and for safety reasons.
- » The task is complete when all wheels are on the lower level, the wheelchair user is seated upright in the wheelchair and the wheelchair is free to roll away (i.e., not hung up on the foot supports or rear anti-tip devices).
- » The wheelchair user may get out of the wheelchair to accomplish the task.
- » The subject may remove the foot supports and reposition but must be able to do so independently.
- » For the high curb, simply rolling off the curb in the forward direction is not usually permitted unless the wheelchair has a long wheelbase.

1 - Partial pass: The subject successfully descends a smaller level change (e.g., 2.5 cm), if one is available.

0 - Fail: The subject does not complete most of the evaluation criteria, is unsafe or unwilling. The tester should stop the wheelchair user from proceeding, and award the “fail” score, if the wheels are not squarely aligned with the edge of the curb.

TE - Testing error: The tester cannot assess the skill for some reason.

Comments recorded: The technique user (e.g., forward, backward)

SPOKEN INSTRUCTIONS

“Get the wheelchair down to the lower level.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 5.4.3 Skill 7.25.

Avoids Moving Obstacle

Equipment & Setup

- » Corridor or pathway. A shorter distance (e.g. 10 m) can provide the opportunity to assess this skill.
- » An unoccupied manual wheelchair or equivalent for the tester to push into the individual’s path. Although using his/her body as the moving obstacle is permitted, the tester is not expected to endanger him/herself.

Starting positions

Wheelchair: Leading wheel axles facing and behind the starting line.

Tester: the tester stands behind the unoccupied wheelchair that is being used as the moving obstacle, holding the push-handles, near the pathway but not in it. The tester should be able to see the approaching subject.

Capacity Scoring Criteria

2 - Pass

- » The subject avoids any contact with the moving obstacle without the tester needing to take evasive action.
- » The subject may avoid contact by stopping, slowing down and/or changing direction.

1 - Pass with difficulty

- » The subject has minimal but insignificant contact (i.e. insufficient to potentially cause injury to the wheelchair occupant or another person).

0 - Fail

- » Task incomplete.
- » The subject has significant contact and/or safety concern (i.e., has the potential to cause injury to the wheelchair occupant or another person)

SPOKEN INSTRUCTIONS

“Avoid bumping into anyone or anything that gets in your way.”

View videos, training techniques, and additional guidance on this individual skill in the WSP Manual 4.3 Skill 7.20.