

**WHEELCHAIR SKILLS PROGRAM (WSP)<sup>®</sup>  
VERSION 4.1**

**SPOTTER MANUAL**

**This manual and related materials can be downloaded from  
[www.wheelchairskillsprogram.ca](http://www.wheelchairskillsprogram.ca).**

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## 1. INTRODUCTION

### 1.1. Wheelchair Skills Program (WSP)

A General Introduction to the Wheelchair Skills Program (WSP) can be found in a separate document, posted on the web-site. The WSP includes the Wheelchair Skills Test (WST), the Wheelchair Skills Training Program (WSTP) and related materials. The WSP is a set of protocols for the assessment and training of wheelchair skills. The broad purpose of the WSP is to improve both the safety and performance of wheelchair use. However, because WSP participants are assessed and trained in wheelchair skills with which they may be unfamiliar, participation in the WSP can be dangerous. The Spotter Manual focuses on safety during WSP activities and the role of the spotter.

### 1.2. Dangers of Wheelchair Use

Wheelchair use can be dangerous. Each year, 5-18% of wheelchair users experience injuries related to wheelchair use. Of the injuries that are of at least moderate severity, about two-thirds are related to tip-over accidents or falling from the wheelchair.

### 1.3. What is a Spotter?

A spotter is a person who acts to reduce the likelihood of injury to another person who is performing an activity, without unnecessarily interfering with the performance of that activity.

### 1.4. Who Should Use the Spotter Manual?

The Spotter Manual is appropriate for all WSP personnel (spotters, testers and trainers). Spotter skills can also be useful as wheelchair users go about their everyday activities. Friends, family members and caregivers of wheelchair users are therefore encouraged to use the Manual. Wheelchair users themselves can benefit from spotter training, because they may need to instruct a bystander or passerby on how to best spot a skill that the wheelchair user finds difficult or hazardous.

### 1.5. Scope of the Spotter Manual

Spotter training is relevant for both manual and powered wheelchairs, and for wheelchairs operated either by the wheelchair occupants or caregivers. Most of the Manual focuses on manual wheelchairs operated by the wheelchair occupant, but there are descriptions of how these techniques need to be adapted for use when the caregiver is handling the wheelchair and when the wheelchair is powered.

Although the safety of WSP personnel (i.e. spotters, testers and trainers) and bystanders is also a concern, this Module primarily addresses the safety of the wheelchair user. Although there are a wide range of safety concerns associated with wheelchair use (e.g. hand scrapes, overuse injuries), this Manual deals only with the major acute risks that a spotter is expected to address (e.g. wheelchair tips and falls from the wheelchair). For the purposes of this Manual, only the core skills of the WST 4.1 are described. Other skills may be addressed in training, but the same principles apply.

### 1.6. Pre-requisites for Spotter Training

There are no minimum educational requirements prior to beginning spotter training. No prior

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wheelchair experience is needed.

### **1.7. Disclaimers**

The ultimate responsibility for safety during the performance of wheelchair skills lies with the person performing the skills. Even if a spotter acts properly, injuries can occur. Safely spotting a skill in the supervised WSP environment provides no guarantee that the spotter will safely spot the same or similar skills on other occasions in the same or similar settings. The best way to spot a skill may vary, depending upon the spotter, the wheelchair user, the wheelchair and the setting. The material provided in the Spotter Manual, although based on our experiences with WSP activities since 1996, represents only the consensus opinions of the WSP developers. There is no scientific evidence of which we are aware on the best way to spot wheelchair skills.

## **2. GOALS AND OBJECTIVES**

### **2.1. Goal of Spotter Training**

The goal of spotter training is to assist potential spotters in acquiring the necessary knowledge, skills and attitudes for the spotter role.

### **2.2. Objectives for the Spotter Manual**

On completion of spotter training, the competent spotter should be able to:

1. Answer questions about the spotter's role and spotting techniques.
2. Recognize potentially harmful methods of performing the skills and describe how and when to intervene if necessary.
3. Perform spotting properly.\*
4. Demonstrate appropriate attitudes related to the spotter role.\*

\* These elements require practical experience in addition to the Manual.

## **3. CURRICULUM**

Ideally, spotting should only be performed by those who have been formally trained and certified. However, such formal training is not yet widely available. Good results should be possible by careful attention to the available WSP materials, because they have been designed to be reasonably self-explanatory and to reflect normal practices.

### **3.1. SPOTTER KNOWLEDGE**

To acquire the necessary knowledge, those interested in becoming spotters should read the provided WSP materials thoroughly and review the practice materials (e.g. videos on the website).

#### **3.1.1. Role of the Spotter**

The spotter is the person primarily responsible for ensuring the safety of the subject from the moment the WSP session begins until it is completed. The spotter focuses on the prevention of major acute injury. Wheelchair users, testers and trainers also play a role in preventing injury. During WSP activities, the roles of the tester and trainer are primarily to oversee the assessment

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and training of WSP participants. A discussion of the safety roles of the tester and trainer is beyond the scope of the Spotter Module. These issues are dealt with in the WST Manual and WSTP Manual.

### 3.1.2. Requirements for the Spotter Role

Any person serving as a spotter must have the requisite physical and cognitive attributes (e.g. vision, strength, balance, reaction time and judgment), knowledge, skills and attitudes needed to fulfill this role.

### 3.1.3. Hierarchy of WSP Personnel

Although it is possible and commonplace for the tester or trainer to simultaneously fulfill the role of the spotter, it is useful to consider the roles separately. Although related, the competencies of spotters are different from those of testers and trainers. Testers and trainers should have had spotter training before assuming their tester and trainer roles. If the spotter and tester or trainer roles are being fulfilled by different people, and there is a difference of opinion between the WSP personnel, the tester or trainer shall make the final decision, after carefully considering the opinion of the spotter.

With few exceptions, a single spotter can adequately minimize the likelihood of serious injury. However, for some situations (e.g. a heavy or impulsive wheelchair user), an additional spotter may be needed. If more than one spotter is used, one spotter should take the lead role.

### 3.1.4. Equipment and Supplies

The following equipment is recommended:

- **Spotter strap:** A spotter strap is used to assist the spotter in controlling a manual wheelchair, during skills in which there is the risk of a rear tip or of the wheelchair running away (e.g. down an incline). The necessary requirements of a spotter strap are a means of attaching one end of the strap to the wheelchair (around the cross-brace of a folding wheelchair or around a lower frame member of a rigid-frame wheelchair), a padded loop for the spotter's hand and sufficient tensile strength to withstand loads of 200kg or more. One design for such a strap can be found on our web-site. Alternatives (e.g. a piece of rope, a dog leash) are equally acceptable if they meet the criteria above.

For a wheelchair with an X-shaped cross-brace, the spotter strap is attached where the brace members intersect, to avoid any lateral movement of the strap. The low attachment point of the spotter strap helps in resisting forward movement of the rear wheels ("submarining") during a rear tip. For a rigid-frame wheelchair, the spotter strap is placed near the midline of a lower frame member, but additional means may be needed (e.g. winding the strap around the frame an extra time) to keep the strap centred. If a knapsack is present, the spotter strap should be placed between the knapsack and the backrest. Generally, a knapsack should not be removed during WSP activities, if it is regularly used by the wheelchair user, because it may affect the stability and performance of the wheelchair.

The length of the spotter strap should be adjusted to a length that is long enough to allow the spotter to stand upright with the elbow flexed about 60° from full extension for most skills but short enough that the spotter can be sufficiently close to the wheelchair to intervene. The

length of the spotter strap may be altered for some tasks (e.g. descending a curb in the forwards direction, when the spotter is on the upper level and the wheelchair moves to the lower level), if the spotter wishes to avoid leaning forward.

The spotter should hold the hand loop with the palm up and the loop across the palm at the base of the fingers, not just across the fingers themselves or around the wrist. The spotter strap should be held ready, but without tension in the strap, because tension can affect the performance of some skills. When not in use, the hand loop can be hung over the push-handle of the wheelchair.

- Seat belt: For any skills during which there is the risk of the subject pitching or sliding forward out of the wheelchair, a seat belt is recommended. If the subject's wheelchair is not equipped with one, one may be provided by the WSP personnel for training. The wheelchair user may decline to use the seat belt, after being instructed in its availability. A seat belt should not be provided by WSP personnel for WST testing purposes, if the subject does not ordinarily use one, because this would alter the natural state that is being assessed.
- Gloves: Fingerless gloves are often used by wheelchair users to protect the hands during wheelchair use. They may be provided by WSP personnel for training purposes. However, for testing, gloves should only be used if the wheelchair user has a pair of his/her own and has them at the time of testing.
- First aid kit: A first aid kit should be available, in the event that an injury occurs.

**3.1.5. Obtaining the Subject's Permission to be Spotted.** Wheelchair users with advanced skills often perform these skills without spotters on a regular basis in their daily lives. Such users may be offended by being spotted unnecessarily. Alternatively, they may be legitimately concerned that inappropriate intervention by a spotter could interfere with the performance of a skill, thereby causing injury.

However, during the initial WST assessment, a spotter is mandatory, at least to the extent of the spotter positioning him/herself where he/she could intervene if necessary. During subsequent WSP activities, the tester or trainer may permit the subject to waive the spotter, if the tester or trainer is convinced that the subject will not be placed at undue risk by making this decision. It is the subject's right to refuse to be spotted. Indeed, to spot without the subject's permission could be considered a form of assault. However, if the WSP personnel believe that the subject's decision to waive a spotter is inappropriate, the WSP personnel should not permit the subject to participate in WSP activities.

**3.1.6. Starting Positions.** The starting position for the spotter(s) is generally near the wheelchair (within an arm's reach) where he/she will be best able to respond to any safety concerns. The exact position varies with the skill being attempted, the number of spotters involved and the method being used to complete the skill. Recommended starting positions for specific skills are specified in the Appendix.

**3.1.7. Subject Warnings.** Prior to beginning the initial testing or training session, the subject

should be instructed by the tester or trainer that some wheelchair skills can be dangerous and that the subject should not attempt any task that he/she is not comfortable performing. Also, to avoid overuse injury, the subject should be instructed by the tester or trainer to avoid overexerting him/herself in the mistaken belief that success on every skill is expected. These warnings may be repeated at any time during a WSP session. If the tester or trainer fails to issue these initial warnings, the spotter should tactfully remind him/her to do so.

If rear anti-tip devices (RADs) are adjusted or removed during WSP activities, the WSP personnel should inform the subject and restore the RADs to their original condition at the end of the session. When there are no effective RADs in place, the spotter should let the wheelchair occupant know whenever the spotter is not in place – the phrases “spotter on” and “spotter off” are a useful shorthand means of communicating this information, having explained to the subject what this means on the first occasion that the phrases are used.

**3.1.8. Stopping a WSP Session.** If a wheelchair user persists in potentially unsafe activities, despite the warnings of the WSP personnel, the WSP personnel should stop the session and take whatever steps are necessary to ensure safety (e.g. contacting the nursing or security staff). This decision will usually be made by the tester or trainer. However, the spotter has the right to refuse to participate further, if he/she is concerned about the safety of the subject or WSP personnel.

**3.1.9. Ensuring Safety During WSP Activities.** A spotter must be present for any formal WSP activities. The tester or trainer shall not permit the subject to attempt or complete any task that he/she has reason to believe that the subject will be unable to complete without risk. For some skills (e.g. the 15cm curb descent), the tester or trainer will ask the subject about whether or not the wheelchair user feels able to perform the skill. For such skills, if the subject believes that he/she would be able to perform the skill, the tester or trainer will then inquire about the intended method to be used. If an unsafe method is described, the tester or trainer will prevent the attempt of that skill. Despite these precautions, as a general rule, the tester or trainer will try to avoid preemptively disqualifying the subject and will allow him/her to attempt a skill.

Note that injuries can also occur between skill attempts, while the wheelchair is being moved from one skill site to another or even at rest (e.g. while the spotter steps away to take a phone call). It is the spotter’s responsibility to pay close attention to the subject both during and between skill attempts.

**3.1.10. When the Spotter Should Intervene.** The spotter should always intervene to prevent a complete tip of the occupied wheelchair, a complete fall from the wheelchair or a runaway. The spotter should not intervene to any greater extent than is minimally necessary to ensure that a serious injury is prevented. The spotter should not interfere with transient tips, which are self-limited by definition. For risks other than tips and falls, it is primarily the tester’s or trainer’s role to stop any skill attempt as soon as it is clear that it is unsafe or about to become unsafe. Any exceptions will be noted later in the section on individual skills in the Appendix.

**3.1.11. Extent of Spotter Intervention.** The extent of spotter intervention may consist of a warning to a subject to stop or change the approach, minor physical contact from the spotter (even if the subject was able to complete the trial) or full intervention (e.g. if the subject required

the spotter to prevent him/her from potentially injuring him/herself). If there is significant intervention by WSP personnel during a skill attempt during the WST, the extent of intervention and the reason for it should be recorded by the tester in the Comments section of the WST Data Collection Form. Note that a spotter may occasionally intervene inappropriately. If this is a minor intervention, that neither hinders nor helps the subject, it can be ignored for the purposes of the WST. The spotter may assist the tester, by describing the nature and extent of the intervention, if it was not clear to the tester.

**3.1.12. Injury Determinants.** The likelihood and nature of injury varies, depending on the wheelchair user, the wheelchair and the nature of the skills being attempted. For instance, a wheelchair user who has poor vision, poor judgement or who is a risk-taker by nature, is more likely to be injured than one without these characteristics. Similarly, some wheelchairs are less stable than others. Although this can be an advantage when attempting skills that require the front wheels to be popped off the surface, the trade-off is that such wheelchairs are at a greater risk of an unintentional tip.

**3.1.13. Dealing with Injuries.** Despite the best precautions, injuries occasionally occur. The spotter may need to administer first aid (e.g. cleaning and covering an abrasion). The spotter should have a plan (e.g. calling 911) for dealing with any emergency that is beyond his/her level of training.

**3.1.14. Common Types of Risks and How to Prevent Them.** There are several types of common incidents that can cause injury. Those that require spotter intervention and a general approach to preventing them will be described in this section. Risks during specific skills and an approach to preventing them will be described later in the Appendix. Other less acute or less serious injuries (e.g. pinches, scrapes and jarring) are difficult to prevent, because they occur without sufficient time for intervention. These can best be dealt with by training the subject in how to avoid such risks during subsequent activities. Preventing or dealing with the less acute or less serious risks is the responsibility of the tester and trainer.

- **Rear tips:** A rear tip occurs when the pitch of the wheelchair exceeds the rear stability limit to the extent that the wheelchair user cannot save him/herself and the wheelchair falls backwards. This may occur while the wheelchair is stationary or moving. If the wheelchair user lets go of the rear wheels during a rear tip, the wheelchair will roll quickly forwards while tipping backwards. The forward movement is called “submarining”.

There are two primary methods that the spotter can use to prevent a full rear tip:

1. For most skills that pose a risk of a rear tip, the spotter should be positioned behind the wheelchair with one hand holding the spotter strap. It is suggested that the spotter stand in a lunge position (with the forward foot on the opposite side to the hand holding the spotter strap) and close enough to the backrest so that, if the subject does tip backwards, the spotter can rest the wheelchair on his/her forward thigh for additional support. When using this spotting technique during a skill that requires the spotter to be elevated above the subject (e.g. when descending a curb or incline in the forwards direction) the spotter may use a longer spotter strap to reduce any forward bending which may injure the spotter’s back. If the spotter

catches the subject but cannot return the wheelchair to its upright position, the spotter should inform the subject and then slowly lower the wheelchair backward to the ground. Once the wheelchair is on the ground and the subject is safe, the spotter should seek additional help to return the wheelchair to the upright position.

2. It is also possible to resist a rear tip from the front. The spotter should be positioned just to the side of the front wheels and with a hand near the subject's leg or a part of the wheelchair that will not come off if downward and backwards force is applied to it. When a rear tip occurs, the spotter can pull down on the leg or wheelchair part and resist its forward movement ("submarining") to return the casters to the ground.
- Forward tips and/or falls: A forward tip occurs when the pitch of the wheelchair exceeds the forward stability limit to the extent that the wheelchair tips forward. This may occur while the wheelchair is stationary or moving. The tip may be partial, but sufficient to allow the wheelchair occupant to slide or fall forward out of the wheelchair. In some instances, such as during a sudden deceleration, the subject may slide or fall forward out of the wheelchair without any tip. When there is a risk of a forward tip/fall and the wheelchair is stationary, the spotter should be positioned in front and just to one side of the wheelchair. If there is a risk of a forward tip/fall and the wheelchair is moving forward, the spotter may be positioned behind the wheelchair with one hand in front of (but not touching) the wheelchair user's shoulder to prevent a forward tip/fall. A seatbelt can be useful, but there are limitations to its use during some WSP activities (section C.1.4). If a second spotter is available, he/she can be positioned to limit the extent of a forward tip or fall.
  - Sideways tips/falls: A sideways tip occurs when the pitch of the wheelchair exceeds the sideways stability limit to the extent that the wheelchair tips sideways. This may occur while the wheelchair is stationary or moving. The spotter should be positioned to the side to which the tip/fall is expected to occur.
  - Combination tip/fall risks: Tips and falls do not always occur in the pure rear, forward or sideways directions. For instance, when descending an incline with one footrest elevated and the other lowered, a combined forward and sideways tip may occur when the lowered footrest strikes the ground below the incline-level transition. Another combination possibility is when different risks present themselves sequentially. For instance, during an attempt to overcome a threshold with the momentum approach, there is the risk of a rear tip when the wheelchair user attempts to pop the casters high enough to clear the threshold. If the casters do not clear the threshold, the sudden deceleration of the wheelchair can cause a forward tip or fall. When such combination risks are present, the spotter should choose a position where all risks can be minimized. This position will vary, depending upon the skill being attempted and the wheelchair set-up. A second spotter, although not required, can be helpful in such situations.
  - Runaways: A runaway occurs when the wheelchair user loses control of the wheelchair (e.g. when descending an incline) and is unable to bring it to a stop. To prevent the

runaway of a manual wheelchair, the spotter should be positioned behind the wheelchair holding the spotter strap. If the wheelchair user loses control, the spotter should pull back on the spotter strap or grasp the push handle to bring the wheelchair to a controlled stop. During the resulting deceleration, the spotter should be alert to the possibility that the subject may fall forward out of the wheelchair, and should position the other hand on the front of the shoulder. A second spotter, although not required, can be helpful in such situations.

- Major pinches: Most pinches are either minor in severity or occur too quickly for the spotter to intervene. The two exceptions, both of which are potentially severe enough to intervene and for which the spotter usually has enough time to intervene, are when the fingers get pinched in the hinged side of a door (skill #15 in the Appendix) or under the seat rails of the wheelchair when unfolding it (skill #20 in the Appendix).

### **3.1.15. Special Considerations When the Caregiver is Being Spotted**

If a caregiver is the subject of testing or training, he/she is expected to behave in a manner that is safe for both the wheelchair occupant and the caregiver. The spotter in such situations should remain close enough to intervene if the caregiver fails to exercise due caution. A spotter strap, held by the spotter, is not practical when spotting a caregiver, because this would interfere with the caregiver.

### **3.1.16. Special Considerations When the Wheelchair is Powered**

For powered wheelchairs, the spotter's primary strategy is to be in a position where the power can be turned off and, if that fails, to take over the controller (e.g. joystick). The spotter should also be alert to impending tips or falls. A spotter strap, held by the spotter, is not practical when spotting a powered wheelchair. A second spotter, although not required, can be helpful in such situations.

**3.1.17. Risks Involved in Specific Skills.** The nature of the skill being attempted should alert the spotter to the types of injuries that might occur. In the Appendix are listed the most common types of risks that should be watched for by the spotter. For a more detailed description of what is involved in performing these skills, the spotter should consult the WST 4.1 Manual.

## **3.2. SPOTTER SKILLS**

In addition to the knowledge needed to function as a spotter, there are motor skills involved. When learning any motor skill, the principles of motor-skill leaning (e.g. related to feedback, practice) apply. These are discussed in the WSTP Manual. Spotting should be practiced, preferably with an instructor acting as a simulated wheelchair user. The reason for having an instructor serve in this capacity is that the instructor can simulate realistic situations (e.g. rear tip-over) to which the spotter must be able to respond. Another person should "spot the spotter" during such demonstrations, to insure that the instructor in the wheelchair is not injured if the learner does not spot correctly.

### 3.3. SPOTTER ATTITUDES

A competent spotter should demonstrate appropriate attitudes for the role. He/she should:

- be pleasant, courteous and friendly
- show respect for the subject and others with whom he/she is working
- be attentive and careful in his/her interactions with subjects
- take his/her responsibilities seriously
- be assertive enough to ensure safety, if he/she is concerned about the danger involved

### 4. EVALUATION

Evaluation should be used throughout spotter training to focus and guide the learning process. Knowledge objectives can be evaluated using on-line, written or oral exams. Questions may be posed about live or videotaped scenarios. Skill objectives require that the spotter respond appropriately to potentially dangerous situations. These may be in the form of spotting actual wheelchair users as they attempt skills, or spotting an evaluator who is able to simulate dangerous situations. Attitude objectives can be best evaluated as spotters work with actual wheelchair users as they attempt skills. Simulated cases can also be used.

### 5. FURTHER TRAINING

Participants who have successfully completed the Spotter Module are encouraged to pursue further spotter training as a WST tester and WSTP trainer.

## APPENDIX

### Risks Requiring Spotter Intervention and Spotter Starting Position by Individual Skill

#	Individual Skills	Risks Requiring Spotter Intervention	Spotter Starting Position
1.	Moves controller away and back	<ul style="list-style-type: none"> <li>• Runaway.</li> </ul>	<ul style="list-style-type: none"> <li>• Beside the wheelchair, on the side of the controller.</li> </ul>
2.	Turns controller on and off	<ul style="list-style-type: none"> <li>• Runaway.</li> </ul>	<ul style="list-style-type: none"> <li>• Beside the wheelchair, on the side of the controller.</li> </ul>
3.	Selects drive modes and speeds	<ul style="list-style-type: none"> <li>• Runaway.</li> </ul>	<ul style="list-style-type: none"> <li>• Beside the wheelchair, on the side of the controller.</li> </ul>
4.	Controls tilt function	<ul style="list-style-type: none"> <li>• Runaway.</li> </ul>	<ul style="list-style-type: none"> <li>• Beside the wheelchair, on the side of the controller.</li> </ul>
5.	Controls recline function	<ul style="list-style-type: none"> <li>• Runaway.</li> </ul>	<ul style="list-style-type: none"> <li>• Beside the wheelchair, on the side of the controller.</li> </ul>
6.	Disengages and engages motors	<ul style="list-style-type: none"> <li>• Runaway.</li> </ul>	<ul style="list-style-type: none"> <li>• Beside the wheelchair, on the side that the subject leans toward.</li> </ul>
7.	Operates battery charger	<ul style="list-style-type: none"> <li>• Electrical shock.</li> </ul>	<ul style="list-style-type: none"> <li>• Beside the wheelchair, on the side that the subject leans toward.</li> </ul>
8.	Rolls forward 10m	<ul style="list-style-type: none"> <li>• Rear tip when accelerating.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap with one hand.</li> </ul>
9.	Rolls forward 10m in 30s	<ul style="list-style-type: none"> <li>• Rear tip when accelerating.</li> </ul>	<ul style="list-style-type: none"> <li>• As for #8, with which #9 is assessed in combination.</li> </ul>
10.	Rolls backward 5m	<ul style="list-style-type: none"> <li>• Rear tip when stopping.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap.</li> </ul>
11.	Turns 90° while moving forward	<ul style="list-style-type: none"> <li>• Rear tip when accelerating.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap, unless the subject has safely performed the “rolls forward 10m” skill (#8), in which case the spotter needs to be merely nearby.</li> </ul>
12.	Turns 90° while moving backward	<ul style="list-style-type: none"> <li>• Rear tip when stopping.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap, unless the subject has safely performed the “rolls backward 5m” skill (#5.10), in which case the spotter needs to be merely nearby.</li> </ul>

13.	Turns 180° in place		<ul style="list-style-type: none"> <li>• Near the wheelchair.</li> </ul>
14.	Maneuvers sideways		<ul style="list-style-type: none"> <li>• Near the wheelchair.</li> </ul>
15.	Gets through hinged door in both directions	<ul style="list-style-type: none"> <li>• Forward or sideways tip or fall due to reaching and pulling on door handle.</li> <li>• Pinching fingers in the gap between the door and the frame on the hinged side of the door.</li> </ul>	<ul style="list-style-type: none"> <li>• Near the wheelchair and the door.</li> </ul>
16.	Reaches 1.5m high object	<ul style="list-style-type: none"> <li>• Forwards or sideways tip or fall when reaching, leaning or standing up.</li> <li>• Standing on footrest.</li> </ul>	<ul style="list-style-type: none"> <li>• Near the wheelchair and close to the target.</li> </ul>
17.	Picks object from floor	<ul style="list-style-type: none"> <li>• Forwards or sideways tip or fall when reaching, leaning or standing up.</li> <li>• Standing on footrest.</li> </ul>	<ul style="list-style-type: none"> <li>• Near the wheelchair and the floor object.</li> </ul>
18.	Relieves weight from buttocks	<ul style="list-style-type: none"> <li>• Forwards or sideways tip or fall when leaning.</li> </ul>	<ul style="list-style-type: none"> <li>• Near the wheelchair, on the side towards which the subject leans (if any).</li> </ul>
19.	Transfers from wheelchair to bench and back	<ul style="list-style-type: none"> <li>• Forwards or sideways tip or fall when reaching or standing.</li> <li>• Rear tip when sitting back down in wheelchair after a standing-pivot transfer.</li> <li>• Fall between wheelchair and bench if wheelchair rolls or slides away.</li> <li>• In the course of a standing pivot transfer, tripping over footrests and staggering.</li> </ul>	<ul style="list-style-type: none"> <li>• In front of the wheelchair and slightly to one side, close enough to catch the subject if he/she falls and to prevent the wheelchair from rolling or sliding away or tipping.</li> </ul>
20.	Folds and unfolds wheelchair	<ul style="list-style-type: none"> <li>• Forward tip or fall when reaching forward.</li> <li>• Pinching fingers between seat rails when they snap down during opening (unfolding) the wheelchair.</li> </ul>	<ul style="list-style-type: none"> <li>• Near the subject and wheelchair.</li> </ul>
21.	Rolls 100m	<ul style="list-style-type: none"> <li>• Rear tip when accelerating.</li> </ul>	<ul style="list-style-type: none"> <li>• If the subject has already safely performed the “rolls forward 10m” skill (#5.8), the spotter need be merely nearby.</li> </ul>

22.	Avoids moving obstacles	<ul style="list-style-type: none"> <li>• Forwards or sideways tip or fall due to sudden stop or turn.</li> <li>• Note: it is the tester's job (not the spotter's) to prevent a collision, if the subject does not do so.</li> </ul>	<ul style="list-style-type: none"> <li>• As for #21, with which #22 is assessed in combination.</li> </ul>
23.	Ascends 5° incline	<ul style="list-style-type: none"> <li>• Forward tip or fall due to deceleration when striking the lower floor-incline transition.</li> <li>• Hyper-flexion injury of lower limb at the lower floor-incline transition.</li> <li>• Rear tip when accelerating.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap.</li> </ul>
24.	Descends 5° incline	<ul style="list-style-type: none"> <li>• Rear tip if performed in wheelie position.</li> <li>• Forward tip, fall due to deceleration when striking the lower floor-incline transition.</li> <li>• Runaway requiring intervention.</li> <li>• Hyper-flexion injury of lower limb at the lower floor-incline transition.</li> </ul>	<ul style="list-style-type: none"> <li>• Single spotter: Behind the wheelchair, holding onto the spotter strap with one hand and the other hand in front of the wheelchair user's shoulder.</li> <li>• If using two spotters, one spotter behind the wheelchair, holding onto the spotter strap and a second spotter in front of and beside the wheelchair to resist a forward tip or fall.</li> </ul>
25.	Ascends 10° incline	<ul style="list-style-type: none"> <li>• As for #23.</li> </ul>	<ul style="list-style-type: none"> <li>• As for #23.</li> </ul>
26.	Descends 10° incline	<ul style="list-style-type: none"> <li>• As for #24.</li> </ul>	<ul style="list-style-type: none"> <li>• As for #24.</li> </ul>
27.	Rolls 2m across 5° side-slope	<ul style="list-style-type: none"> <li>• Sideways tip or fall downhill.</li> </ul>	<ul style="list-style-type: none"> <li>• Slightly behind and downhill from the wheelchair.</li> </ul>
28.	Rolls 2m on soft surface	<ul style="list-style-type: none"> <li>• Rear tip when accelerating.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap with one hand.</li> </ul>
29.	Gets over 15cm pot-hole	<ul style="list-style-type: none"> <li>• Rear tip when accelerating to pop casters from surface.</li> <li>• Forward tip, fall if casters roll or drop into pothole.</li> </ul>	<ul style="list-style-type: none"> <li>• Single spotter: Behind the wheelchair, holding onto the spotter strap with one hand and the other hand in front of the wheelchair user's shoulder.</li> <li>• If using two spotters, one spotter behind the wheelchair, holding onto the spotter strap and a second spotter in front of and beside the wheelchair.</li> </ul>

30.	Gets over 2cm threshold	<ul style="list-style-type: none"> <li>• Rear tip when accelerating to pop casters from surface.</li> <li>• Forward tip or fall if casters strike threshold.</li> </ul>	<ul style="list-style-type: none"> <li>• Single spotter: Behind the wheelchair, holding onto the spotter strap with one hand and the other hand in front of the wheelchair user's shoulder.</li> <li>• If using two spotters, one spotter behind the wheelchair, holding onto the spotter strap and a second spotter in front of and beside the wheelchair.</li> </ul>
31.	Ascends 5cm level change	<ul style="list-style-type: none"> <li>• Rear tip when accelerating to pop casters from surface.</li> <li>• Forward tip or fall if casters strike level change.</li> <li>• Sideways tip if one wheel gets up onto the upper level before the other.</li> </ul>	<ul style="list-style-type: none"> <li>• Single spotter: Behind the wheelchair, holding onto the spotter strap with one hand and the other hand in front of the wheelchair user's shoulder. The spotter should be alert to the possibility of a sideways tip if one rear wheel gets up onto the upper level before the other.</li> <li>• If using two spotters, one spotter behind the wheelchair, holding onto the spotter strap and a second spotter in front of and beside the wheelchair.</li> </ul>
32.	Descends 5cm level change	<ul style="list-style-type: none"> <li>• Rear tip if performed backwards or in forward wheelie position.</li> <li>• Forward tip, fall if performed by rolling forward off the level change.</li> <li>• Sideways tip if one wheel drops off the upper level before the other.</li> </ul>	<ul style="list-style-type: none"> <li>• Single spotter: Behind the wheelchair, holding onto the spotter strap with one hand and, if the subject is using a forward approach, the other hand in front of the wheelchair user's shoulder. The spotter should be alert to the possibility of a sideways tip if one rear wheel drops off the upper level before the other.</li> <li>• If using two spotters, one spotter behind the wheelchair, holding onto the spotter strap and a second spotter in front of and beside the wheelchair.</li> </ul>
33.	Ascends 15cm curb	<ul style="list-style-type: none"> <li>• As for #31.</li> </ul>	<ul style="list-style-type: none"> <li>• As for #31.</li> </ul>

34.	Descends 15cm curb	<ul style="list-style-type: none"> <li>• Rear tip if performed backwards or in forward wheelie position.</li> <li>• Forward tip, fall if performed by rolling forward off the level change.</li> <li>• Sideways tip if one wheel drops off the upper level before the other. The tester or trainer should intervene to prevent completion of such an attempt.</li> <li>• Serious jarring if a caregiver attempts to bring the wheelchair off the curb backwards in the wheelie position. The tester or trainer should intervene to prevent completion of such an attempt.</li> </ul>	<ul style="list-style-type: none"> <li>• For the backwards approach, behind the wheelchair, holding onto the spotter strap.</li> <li>• For the forward-wheelie approach, behind the wheelchair, holding onto the spotter strap with one hand and the other hand in front of the wheelchair user's shoulder.</li> <li>• If using two spotters, for the forward-wheelie approach, one spotter behind the wheelchair, holding onto the spotter strap and a second spotter in front of and beside the wheelchair.</li> </ul>
35.	Performs 30s stationary wheelie	<ul style="list-style-type: none"> <li>• Rear tip if overshoots on take-off or loses balance.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap.</li> </ul>
36.	Turns 180° in place in wheelie position	<ul style="list-style-type: none"> <li>• Rear tip if overshoots on take-off or loses balance.</li> </ul>	<ul style="list-style-type: none"> <li>• Behind the wheelchair, holding onto the spotter strap.</li> </ul>
37.	Gets from ground into wheelchair	<ul style="list-style-type: none"> <li>• Rear, forwards or sideways tip or fall if loses control while getting back up.</li> </ul>	<ul style="list-style-type: none"> <li>• Single spotter: Near the wheelchair, in a position to prevent the wheelchair from tipping over or to prevent the subject from falling to the ground.</li> <li>• If two spotters are used, one spotter should focus on the wheelchair user and the other spotter on preventing the wheelchair from sliding or rolling away. However, the second spotter should not touch the wheelchair until it is necessary to intervene.</li> </ul>
38.	Ascends stairs	<ul style="list-style-type: none"> <li>• Forward or rear tip or fall.</li> <li>• Runaway down the stairs.</li> </ul>	<ul style="list-style-type: none"> <li>• Single spotter: Below and beside the wheelchair with one hand near or holding a fixed part of the wheelchair and the other on a handrail. If holding the wheelchair part, it is important not to assist or interfere with the performance of the task unless deliberately intervening.</li> <li>• If using two spotters, one spotter may be uphill to the wheelchair.</li> </ul>
39.	Descends stairs	<ul style="list-style-type: none"> <li>• As for #38.</li> </ul>	<ul style="list-style-type: none"> <li>• As for #38.</li> </ul>

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