Objectives

At the end of this activity you will be able to:

1. describe the sub-tasks of ascending and descending slopes
2. list two ways of enhancing safety when negotiating slopes
3. describe the common errors encountered when learning to negotiate slopes
4. outline strategies to teach people with spinal cord injuries (SCI) to negotiate slopes
Slopes are everywhere in the community.

They are located at pedestrian street crossings, the entrance to buildings and in hilly environments.

The surfaces, gradient and direction of slopes vary and require different wheelchair skills.
First, consider descending a slope.

Bob is a man with paraplegia.

Watch the video to see him descend a ramp.

Listen to the instructions from the therapist and consider the key sub-tasks involved.
Activity

Descending a slope is comprised of key sub-tasks. List 2 sub-tasks involved in descending a slope.
Answer

The key sub-tasks of descending a slope are:

1. positioning the hands on the push rims
2. allowing the push rims to slide through the hands
3. gradually tightening the grip on the push rims to slow down or loosening the grip on the push rims to speed up
4. leaning backwards and stopping the wheelchair gently to prevent a forwards fall
It is often necessary to descend a slope in a wheelstand. A wheelstand is useful:

1. when the slope is steep causing the person to fall forward
2. at the bottom of the slope when the footplates or casters hit the level ground
3. if the surface is soft and the front casters are digging into the ground
Tony is learning to descend a slope in a wheelstand.

He needs a therapist spotting him from behind.

The therapist is enhancing safety by placing a hand on the patient's shoulder to prevent a fall forwards.

Watch Tony descend the slope and consider the sub-tasks involved.
Activity

Descending a slope in a wheelstand is comprised of key sub-tasks. List 2 sub-tasks involved in descending a slope in a wheelstand.
Answer

The key sub-tasks of descending a slope in a wheelstand are:

1. moving into a wheelstand at the top of the slope
2. maintaining balance in a wheelstand while moving onto the slope. When on a slope more tilt is needed to maintain a wheelstand
3. moving down the slope in a wheelstand by allowing the push rims to slide through the hands
4. controlling speed by tightening the grip on push rims to slow down or loosening the grip on the push rims to speed up
This is Tony when he was first learning to descend a slope.

Watch the video and consider why Tony may be having difficulties descending the slope.

Why is Tony falling forward?
Tony is falling forward and is unable to maintain a wheelstand. Which 2 statements best explain the difficulties Tony is having?

- he isn't tilting the wheelchair far enough backward
- his weight is too far forward
- he is descending the ramp too slowly
Tony can't maintain the wheelstand and is in danger of falling forward because:

1. he isn't tilting the wheelchair far enough backward
2. his weight is too far forward
Descending a slope is potentially dangerous because wheelchair users can fall out forwards or backwards.

The common problems are tipping the wheelchair too far backwards, stopping the wheelchair suddenly and losing control of the wheelchair.

Watch the video and consider how the therapist is ensuring that Tony is safe while training.
Activity

Descending a slope in a wheelstand is potentially dangerous. List 2 strategies that the therapist is using to ensure safety.
Answer

To ensure safety while descending a slope in a wheelstand the therapist is:

- staying close to the wheelchair
- placing a hand on the patient's shoulder to prevent forward fall
- holding the spotter strap to prevent the wheelchair tipping backwards
Activity

Drag and drop to order the training ideas from easiest to hardest.

Wheelstand on a ramp with a gentle slope.
Descend a long, gentle ramp in a wheelstand.
Descend a short, steeper ramp in a wheelstand.
Answer

Tony will benefit from practicing descending a slope. Training ideas for descending a slope are (from easiest to hardest):

1. Wheelstand on a ramp with a gentle slope.
2. Descend a long, gentle ramp in a wheelstand.
3. Descend a short, steeper ramp in a wheelstand.
Now, consider *ascending* a slope.

Watch the video to see Bob ascending a slope.

Listen to the instructions from the therapist and consider the key sub-tasks involved.
Activity

Ascending a slope in a wheelchair is comprised of key sub-tasks. List 2 sub-tasks involved in ascending a slope.
The key sub-tasks of ascending a slope are:

1. positioning the hands as far back as is comfortable on the push rims
2. pushing forwards while leaning forward

For steep inclines, short pushes may be more effective so that the wheelchair does not roll backwards between pushes.

If fatigue occurs turn the wheelchair to the side so that the wheels are perpendicular with the ramp.
Bob is limited from leaning forward by his thoraco-lumbar-sacral orthosis.

Watch the video and consider what happens to the wheelchair when Bob does not lean sufficiently forward.

While watching the video have a look at the rear of the wheelchair to view the anti-tip bars.
Activity

Bob is not leaning sufficiently forwards while ascending the slope. One consequence of this is:

- he is tipping backward while ascending the ramp
- he is falling forwards while ascending the ramp
- he is falling to the side while ascending the ramp
Answer

One consequence of Bob not leaning sufficiently forward while ascending the slope is that Bob's wheelchair is tipping backwards.

To maintain safety while learning to ascend a slope therapists should ensure that anti-tip bars are on the wheelchair and that they position themselves closely behind the wheelchair to prevent the wheelchair from tipping backwards.
Physiotherapists
Wheelchair mobility: understanding movement - Activity: Negotiating Slopes

Summary

This is the end of the activity. In this activity you have learnt:

1. the sub-tasks of ascending and descending slopes
2. ways of enhancing safety when negotiating slopes
3. the common errors encountered when learning to negotiate slopes
4. strategies to teach people with SCI to negotiate slopes

PROCEED TO SELF ASSESSMENT