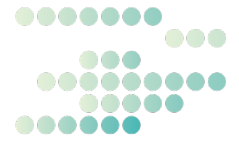


PRESSURE ULCER/INJURY RECURRENCE

Seating and posture management for PU prevention in individuals with SCI



General/Purpose

This guide provides key information for individuals with a spinal cord injury (SCI) on preventing skin breakdown and lesions when seated. This includes (but is not limited to) use of toilets and shower chairs, travel seats, and chairs used in school/work settings.

Posture

When seated in a wheelchair, check your posture by making sure your shoulders are aligned. With both arms resting on the armrests or on your thighs, observe if one shoulder is higher than the other. They should be level.

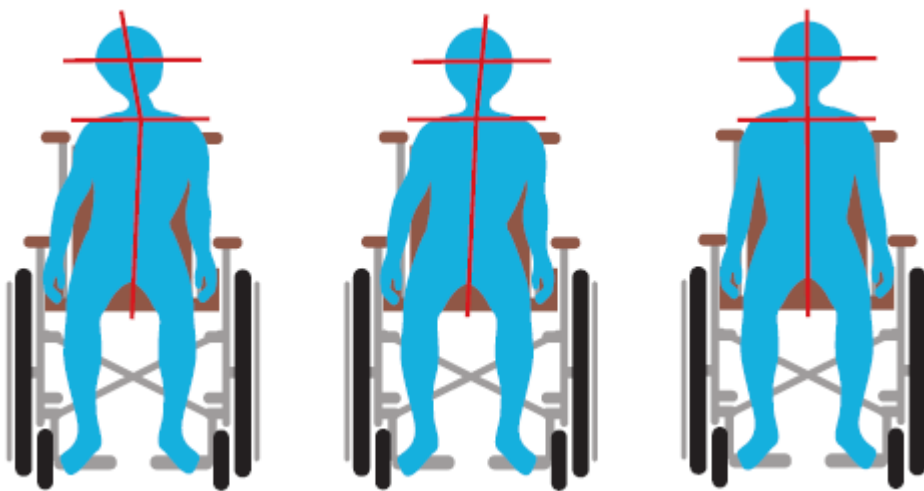


Figure 1. Wheelchair sitting postures.

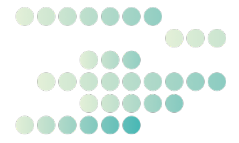
Check the positioning of the back of your knees by sliding your hand underneath them to ensure there is no pressure. Additionally, verify that your knees are bent at a 90-degree angle.

Make sure your feet are resting on the footplates, and that the sides of your feet are not touching the rigid parts of the wheelchair.

Move to the side and look at your reflection in a mirror to check the position of your back against the backrest. If the curve of your back appears too rounded, you should adjust your position in the wheelchair.

PRESSURE ULCER/INJURY RECURRENCE

Seating and posture management for PU prevention in individuals with SCI



Page 2 of 6

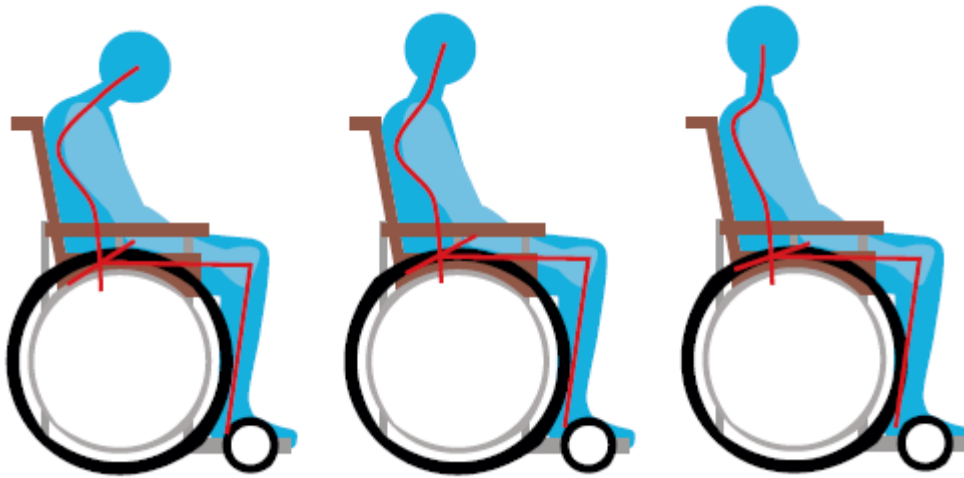


Figure 2. Wheelchair sitting postures.

Always check that your weight is distributed evenly in the wheelchair. Make sure no parts of your body are in contact with the rigid components of the chair.

If you are going to sit on a settee/sofa or another chair, always check the seating area for rigid parts or textures that could increase pressure on your buttocks and cause a wound. Ideally, you should always use your special pressure relief cushion when you transfer to another seat.

A few moments in an inadequate seat can cause you a wound very difficult to treat!

A physical therapist, rehabilitation nurse, or occupational therapist can teach and advise you on manoeuvres for pressure relief. Always follow their guidance and contact them if you have any questions.

If your wheelchair has a recline feature, your physical therapist, rehabilitation nurse, or occupational therapist can show you how to use it to reduce pressure on your buttocks and protect your skin.

When using a car seat, always use your prescribed support surface, but never leave it exposed to direct sunlight.

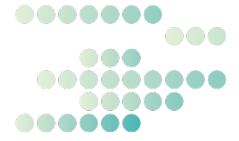
Some cushion materials can retain heat and cause skin lesions!

When using the toilet or a bathchair you must use a special support surface to avoid pressure ulcers or pressure injuries – See the bowel irrigations section.

Review your daily activities to identify any repetitive movements that could increase the risk of friction and/or stretching of tissues (called 'shear forces') especially on your buttocks and sacrum.

PRESSURE ULCER/INJURY RECURRENCE

Seating and posture management for PU prevention in individuals with SCI



Page 3 of 6

Adapting to a wheelchair can take time, sometimes even months. You should feel able to provide feedback to your healthcare provider about any difficulties or questions you have regarding the chair.

Gaining or losing weight can significantly affect your seated posture.

If you experience a notable change in weight - for example, gaining or losing more than 10% of your 'normal' body weight over three months (such as an 80 kg/176 lbs or 2822 oz person gaining or losing 8 kg/18 lbs/282 oz)—your seated posture should be reevaluated by a physical therapist, rehabilitation nurse, or occupational therapist.

If it is not possible for you to check your weight, be aware of other signs that might be an indication of losing weight, for example:

- Clothes fitting more loosely;
- Jewellery fitting more loosely, like rings and bracelets;
- New skin wrinkles.

Signs of gaining weight:

- clothes fitting tighter;
- protruding belly;
- increased joint pain and stiffness (especially on the shoulder);
- more frequent snoring;
- feeling tired more often.

Special support surfaces

Support surfaces, for example, cushions and mattresses, are absolutely crucial for preventing pressure ulcers in individuals with spinal cord injuries (SCI).

The support surface prescribed to you may be made from a variety of materials, such as specific foams (like viscoelastic foam), gels, silicone, and air. Some products combine different materials, such as foam and gel or foam and air.

When selecting an appropriate support surface, your healthcare provider will conduct a meticulous evaluation, taking numerous factors into account:

- Body weight and body shape;
- The posture adopted when seated;
- The ability to move and to transfer;
- The capacity of doing movements to alleviate the pressure;
- Daily activities;
- How many hours do you usually spend in your wheelchair each day?

You should ask your healthcare provider about the specifications of your support surface and check the manufacturer's guidelines.

PRESSURE ULCER/INJURY RECURRENCE

Seating and posture management for PU prevention in individuals with SCI



Correct posture, a properly adapted wheelchair, and the right support surface are all absolutely crucial for preventing pressure ulcers.

Pressure mapping/ redistributing the pressure

Pressure mapping shows a picture of how your body weight is spread out when you sit. It helps you see where too much pressure builds up, which can increase the risk of skin damage.

If you have reduced or no feeling, pressure mapping can make it easier to understand why changing position, sitting well and using the right cushion are important. It shows how small changes in posture can reduce pressure and help protect your skin.

The following image shows the results of pressure mapping. The image shows points where the pressure is high (yellow and red dots) and areas where the pressure is low or more tolerable for the skin and underlying tissue (green and blue).

This technique can give crucial information about anatomical areas in more risk of pressure damage, and using this data, the healthcare professional can be more assertive in terms of selection the proper support surface and to correct the posture of the SCI person in the wheelchair.

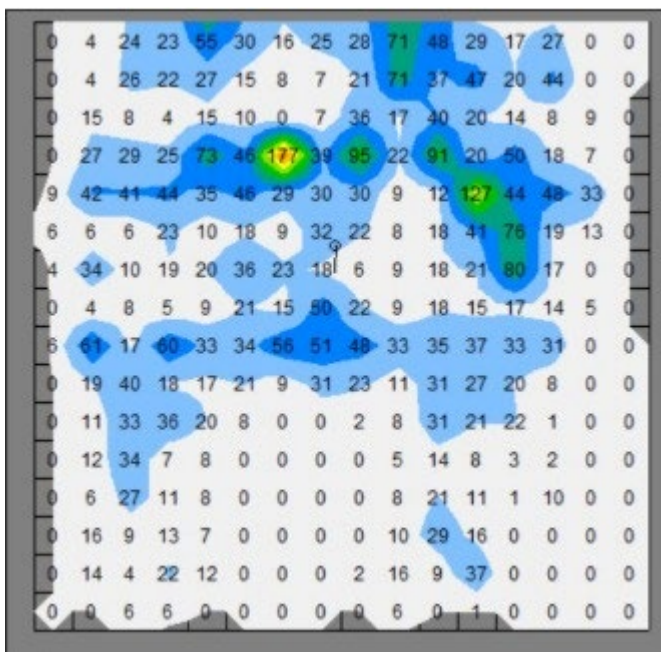


Figure 3. Pressure mapping.

Management of the support surface

You must check daily to ensure that your support surface is in good condition.

If you use a viscoelastic foam support surface, press down on the material and check if it returns to its original shape. If it does not, the foam has lost its "memory" and should be replaced.



PRESSURE ULCER/INJURY RECURRENCE

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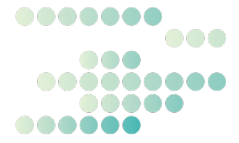


Figure 4. Memory property of a viscoelastic foam. The hand is involved by the foam, and after removing the hand, the foam returns to its original shape. Photos: Paulo Ramos.

Avoid exposing foam or gel support surfaces to extremely hot or cold environments. Excessive heat can cause the support surface to retain warmth and moisture, potentially leading to skin lesions. Conversely, if it gets too cold, the material can become rigid and will not redistribute pressure properly.

These support surfaces have a relatively short lifespan and must be replaced more frequently to prevent skin complications. However, they are less expensive and more affordable than other options.

If you use a gel or silicone support surface, always check for any leakage. These types of cushions are typically heavy and can be difficult to handle. They also tend to retain a lot of heat, so avoid leaving them exposed to heat sources or in a car. If it gets too cold, the silicone can become more rigid.



Figure 5. Example of support surfaces. Photos: Paulo Ramos.

This is an example of a gel and foam support surface that can no longer redistribute pressure. It needs to be changed urgently.

If you use an air support surface, always check for any holes. To do this, inflate the cushion, then press on it and listen for any sound of air escaping.

After you've sat on the support surface, adjust the amount of air to ensure you have proper immersion and envelopment. Slide your hand between your buttocks and the cushion (under the sheet or using a glide sheet if that's easier). You should be able to feel air between your buttocks and the base of the wheelchair, which means you

PRESSURE ULCER/INJURY RECURRENCE

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aren't "bottoming out" against the hard surface. "Immersion" means how deeply your body sinks into the cushion or mattress. The deeper you sink (without bottoming out), the more your weight is spread out, which helps reduce pressure on any one spot - especially over bony areas like your tailbone or hips.

"Envelopment" means how well the cushion or mattress wraps around your body's shape. It's like a glove fitting your hand—it melds to your curves, which helps reduce pressure points and keeps your skin safer.



Page 6 of 6

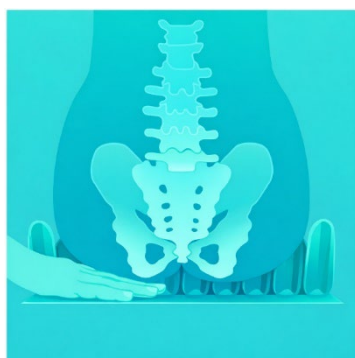


Figure 6. How to check the immersion and envelopment in an air support surface.

Always check the covers of your support surfaces daily. If you notice any wrinkles, holes or fluid (which could be urine, sweat or leakage from a wound if you have one), you should immediately check your skin for any damage or ask someone else to help you with that.

Do not use ring or donut-shaped seating cushions.

The cover should be clean and free of any objects that could harm your skin. It should also be breathable and water-resistant.

Continued care and prevention

Keep in mind that while using the correct support surface is essential for preventing new pressure ulcers, you must also continue to make movements, at least every hour, to relieve pressure and check your position to avoid shear forces.

If possible, have a second support surface available for emergencies, in case the one you are using malfunctions. Going without a proper support surface, even for a short period, can be enough to cause a pressure ulcer or injury.

Further reading

- https://www.spinal.co.uk/wp-content/uploads/2024/10/SIA_Pressure_Ulcers_Factsheet.pdf
- https://pva.org/wp-content/uploads/2021/09/consumer-guide_pressure-ulcers.pdf