

# Pressure Mapping

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Pressure mapping is a clinical technique that is used to help prevent pressure sores after spinal cord injury (SCI). This page outlines how pressure mapping is used after SCI.

## Key points

- Pressure mapping is a technique that involves the use of a pressure-sensitive mat and computer system to measure the amount of pressure between a person's body and a supporting surface.
- Pressure mapping is used to help identify areas of excess pressure that may contribute to pressure sores. This can be used to help make decisions about surface options (like wheelchair cushions and bedding) and find out how effective a person's pressure relief techniques are.
- This technique involves the use of a flexible mat containing pressure sensors that is placed on the surface being tested and then the person is positioned on the mat. The mat is connected to a computer system that creates a color-coded diagram showing areas of pressure.
- Pressure mapping is considered to be a useful tool for making decisions about reducing pressure that is used as a decision-making and educational tool. There is a lack of research on whether pressure mapping directly helps to reduce pressure sores after SCI.

## What is pressure mapping?

*Pressure mapping* is a technique that is used to identify areas of pressure between a person's body and a supporting surface like a cushion or chair. A thin, pressure-sensitive mat and computer system are used



Pressure mapping can be used on supporting surfaces such as wheelchairs.<sup>1</sup>

to develop a map showing areas of pressure where the body contacts the surface. This technique is most often used to identify areas of high pressure associated with wheelchair seating that could contribute to the development of pressure sores.

Pressure mapping is also used on other surfaces such as mattresses, toilet seats, car seats, sports equipment, or any surface a person sits or lies on for periods of time that may influence their skin health.

Refer our article on [Pressure Injuries](#) for more information!



## Why is pressure mapping used?

People with spinal cord injuries have an increased risk of developing skin lesions called pressure sores. Pressure sores occur for many reasons, including increased pressure on vulnerable areas of the skin. Bony areas that meet support surfaces, like the sit bones and tailbone in sitting, are highly vulnerable to increased pressure.

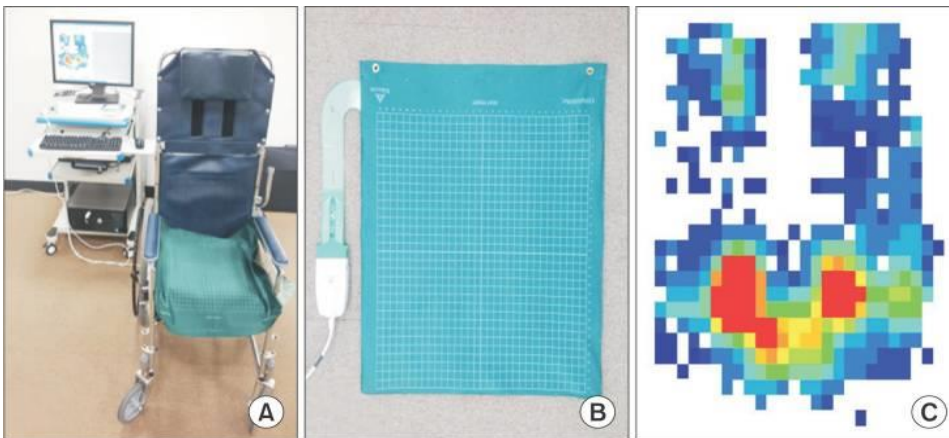
Pressure mapping is used to determine areas of increased pressure in certain postures on specific surfaces. It may be used to assess areas of pressure on various surfaces, such as chairs, beds, sofas, car seats, and toilet seats. This information can be used to develop strategies to reduce pressure and improve comfort in these situations.

Pressure mapping may be used as a tool to aid decision-making when selecting support surfaces and equipment, such as assessing which wheelchair cushions provide the best pressure relief for you. Pressure mapping is also used to assess the effectiveness of pressure relief techniques like weight-shifting by providing real-time feedback about the pressure during technique performance.



Pressure sore on the side of the ankle.<sup>2</sup>

## How is pressure mapping done?



Pressure map placed on a wheelchair (left), flexible pressure map (center), and diagram of pressure of a person's buttocks in sitting (right). Areas of pressure are indicated from high pressures in red (around the sit bones) to lower pressures in blue.<sup>3</sup>

A flexible mat containing pressure sensors is placed on the surface to be tested. The person being assessed then sits on the mat. Information about pressure between their body and the seat is picked up by sensors in the mat and sent to a computer, where it is translated into a color coded diagram.

The diagram displays the pressure recorded at each sensor in the mat by number

and displays areas of high and low pressure with different colors. A clinician then determines the corresponding areas on the body through a hands-on physical examination. This technique is used together with other assessments of pressure sore risk to make recommendations for reducing areas of high pressure. The procedures used for pressure mapping may vary in different settings.

## What are the limitations to the use of pressure mapping?

Pressure mapping can be influenced by many aspects of how the procedure is done. For example, how the person positions themselves at the time of the reading and how long the person sits on the mat before the readings are taken can change the findings. There are also different types of systems that collect information about pressure differently. These factors and other concerns have led to disagreement among experts about how to best understand and interpret the results of pressure mapping for clinical use.



In addition, pressure is just one factor that contributes to pressure sores. Friction, moisture, age, body composition, time spent sitting, and many other factors also contribute to pressure sores. These factors cannot be detected by pressure mapping, which limits the use of pressure mapping as a stand-alone tool.

Pressure mapping also requires special equipment and trained health providers which may not be available in settings outside of major rehabilitation centers.

## How effective is pressure mapping?

Pressure mapping is considered by experts to be a useful tool for understanding pressure and making decisions about pressure relief. At this time, most of the research that has been done on whether pressure mapping is effective for preventing pressure sores has been done in populations outside of SCI. We do not know if pressure mapping is effective for preventing of pressure sores in people with SCI.

## The bottom line

Pressure mapping is clinical tool that may be used in rehabilitation centers to help assess the risk of pressure sores. It is considered to be a valuable tool for making decisions about reducing pressure as well as a useful educational tool for understanding pressure in different positions. There is a lack of research on whether pressure mapping directly helps to reduce pressure sores after SCI.

## Related resources

SCIRE Community. "Pressure Injuries". Available from: [community.scireproject.com/topic/pressure-injuries/](http://community.scireproject.com/topic/pressure-injuries/)

## Abbreviated reference list

This page has been adapted from the SCIRE Professional "Pressure Ulcers" Module:

Hsieh J, McIntyre A, Wolfe D, Lala D, Titus L, Campbell K, Teasell R. (2014). Pressure Ulcers Following Spinal Cord Injury. In Eng JJ, Teasell RW, Miller WC, Wolfe DL, Townson AF, Hsieh JTC, Connolly SJ, Noonan VK, Loh E, McIntyre A, editors. Spinal Cord Injury Rehabilitation Evidence. Version 5.0. 1-90.  
Available from: [scireproject.com/evidence/skin-integrity-and-pressure-injuries](http://scireproject.com/evidence/skin-integrity-and-pressure-injuries)

Full reference list available from: [community.scireproject.com/topic/pressure-mapping/#reference-list](http://community.scireproject.com/topic/pressure-mapping/#reference-list)

Glossary terms available from: [community.scireproject.com/topics/glossary/](http://community.scireproject.com/topics/glossary/)

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2. Reprinted with permission of the copyright holder, Gordian Medical, Inc. dba American Medical Technologies (courtesy of National Pressure Ulcer Advisory Panel)
3. Image from: Cho KH, Beom J, Yuk JH, Ahn SC. The Effects of Body Mass Composition and Cushion Type on Seat-Interface Pressure in Spinal Cord Injured Patients. *Ann Rehabil Med*. 2015 Dec;39(6):971-9. doi: 10.5535/arm.2015.39.6.971. Epub 2015 Dec 29. Published online 2015 Dec 29. ([CC BY-NC 4.0](#))
4. [Sit](#) ©Rudez Studio, [CC BY 3.0 US](#)



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