

Pain after Spinal Cord Injury

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<https://msktc.org/sci/factsheets>

SCI Factsheet

This factsheet describes the types of pain that people with spinal cord injury may have. It also includes tips for how to manage pain.

Pain After SCI

Pain is a serious problem for many people with spinal cord injuries (SCIs). People with SCI may have pain in parts of the body where they have normal sensation (feeling); they may also have pain in areas that have little or no feeling. The pain is real and can have a negative impact on quality of life. A person in severe pain may have a hard time doing daily activities or taking part in enjoyable pastimes.



Most people with SCI have pain that doesn't go away or chronic pain. Chronic pain can last for months or years. The cause of the pain may not be known. But in most cases, it stems from nerve damage from the SCI or problems with muscles or joints. The pain may come and go. It is hard to eliminate chronic pain. But people with SCI can manage or lessen their pain enough so that it does not overwhelm their lives.

Chronic pain can cause or worsen problems such as depression, anxiety, and stress. This does not mean the pain is "all in your head." It means that pain and distress can make each other worse.

Even though pain after SCI can be complex and hard to treat, there are many treatments that can help. Understanding your pain, working with your doctor, and being open to a variety of treatments will help you manage your pain. It will also improve your quality of life. Many people who have chronic pain after SCI have found relief from the techniques described here.

The Model Systems Knowledge Translation Center works with Spinal Cord Injury Model System (SCIMS) centers to provide free research-based rehabilitation resources for people living with spinal cord injury (See <https://msktc.org/sci> for more information). This factsheet has been approved by experts from the SCIMS centers.

Types of Pain

Understanding what type of pain you have is key to choosing the right treatment. A person with SCI can have many different types of pain in different parts of the body; this may include areas where there is no feeling. Your doctor will ask you to describe your pain. They will want to know where it's at, how severe it is, how long you have had it, and what makes it worse or better. Your doctor also may ask you to have tests such as an X-ray or MRI (magnetic resonance imaging).

Neuropathic Pain

Neuropathic pain (nerve pain) after an SCI may be due to injury to the nerves in the spinal cord. It may also be due to injury to the nerves that exit the spinal cord, which are known as nerve roots. After SCI, the spinal cord and nerve roots can become very excitable and send signals to the brain for various sensations, such as cold,



hot, or pressure, for no reason. This can cause you to feel pain in areas of your body where you have little or no feeling. The brain may also amplify the signals it receives from the injured spinal cord or nerve roots. As a result, you may feel pain in an area with little feeling when touched by something that usually does not cause pain.

People use words such as *burning*, *stabbing*, *electric*, *numb*, or *tingling* to describe nerve pain. But nerve pain varies from person to person. It is often resistant to treatment. Because of this, a combination of treatments is most effective for nerve pain.



- **Note:** It is rare for people to develop new nerve pain due to their SCI more than one year after their injury. If new nerve pain starts years after the SCI, it may be due to a new medical problem. This may include a syrinx, a fluid-filled cavity that forms in the spinal cord. It is rare but may require surgery. Contact your doctor if you develop new nerve pain. In particular, you should reach out to your doctor if you notice any new loss of sensation, especially in areas around the level of your injury; new muscle weakness that doesn't get better with rest; or new or worsening spasticity.
- If nerve pain gets worse at any time, it might mean that another health problem is making the pain worse. Some common triggers that may make pain worse include constipation, a urinary tract infection (UTI), or depression. If these other health problems are the triggers, treating these problems may let the pain return to baseline or usual levels.

Musculoskeletal Pain

Musculoskeletal pain may be due to injury or overuse of muscles or arthritis of joints. It is a common problem for all people as they get older, including those with SCI. This type of pain often gets worse with movement and better with rest. There are three types:

- **Shoulder, arm, or hand pain.** This type of pain may be in the shoulder, elbow, or hand. It may be due to overuse of the muscles from doing an activity over and over. Examples include pushing a wheelchair, doing transfers, and doing pressure reliefs. Such pain can occur months or years after the SCI. Some people with high-level injuries may use computers or joysticks for tasks such as reading, communicating, or controlling devices in their home. They may develop pain in the hand, arm, or shoulder from overuse. This type of pain can make it hard for them to transfer safely, push a wheelchair, and do other activities of daily living, such as dressing and bathing.
- **Back and neck pain.** These types of pain are common. In people with paraplegia who have had surgery to fuse their spine, an increase in motion just above or below the fusion can lead to back pain. People with paraplegia and tetraplegia (quadriplegia) may also have back pain, especially if they can walk but still have weakness. People who use joysticks that they operate with their mouths or with head control switches may develop neck pain.
- **Muscle spasm pain.** This type of pain happens when muscles are tense and can't relax. This often happens with muscle weakness, imbalance, or overuse. This type of pain may be related to spasticity that is due to an SCI. Muscle spasms often occur in specific muscles or regions of the body. Although spasms cause many symptoms, they often feel like stiffness in muscles.



Visceral Pain

Visceral pain occurs in the organs of the body such as the stomach. People may describe this type of pain as cramping or dull and aching. It may cause nausea and vomiting. Constipation, a kidney stone, an ulcer, a gall stone, or appendicitis may cause this type of pain. People with SCI may not have the typical symptoms that come with these health problems. That is why it is important to see a doctor who has experience caring for patients with SCI to get the correct diagnosis and treatment.



People may feel visceral pain in an area that is not near the source of the problem. This is known as *referred* pain. One common example is shoulder pain that results from gallbladder disease.

Managing Pain After SCI

Because pain may have many different causes, there is no single way to treat it. You and your doctor may need to try a combination of medicines, therapies, and other treatments. These may include:

Physical Treatments and Interventions for Pain

- **Activity modification for musculoskeletal pain.** You can make some changes to decrease this type of pain. For example, you can make changes to your wheelchair or start using a sliding board. You can also change how you push your wheelchair and how you do transfers. You can also change the way you do pressure relief maneuvers. Exercises that strengthen and balance your joints can also help reduce this type of pain. For more information, see the MSKTC factsheet **Pain after Spinal Cord Injury: Activity Modification for Musculoskeletal Pain.**
- **Physical therapy.** This type of therapy is for musculoskeletal pain. Stretching and range of motion exercises may help relieve pain due to muscle tension. Exercises that strengthen weak muscles can restore balance in painful joints and reduce pain. Hands-on techniques that mobilize the soft tissues and joints can help restore movement and reduce pain.
- **Therapeutic massage.** This type of massage treats musculoskeletal pain due to muscle tightness and imbalance.
- **Acupuncture.** This treatment is for musculoskeletal pain. A provider inserts tiny needles into the skin at specific points on the body. Some believe this method works by stimulating the body's pain control system or by blocking the flow of pain.
- **Transcutaneous electrical nerve stimulation (TENS).** TENS can treat musculoskeletal pain. With this treatment, electrodes on the surface of the skin send low levels of electrical current into your body. The current blocks signals from areas with nerve damage that causes pain.
- **Transcranial electrical stimulation.** This can treat nerve pain. With this treatment, electrodes on the scalp deliver electrical stimulation to the parts of the brain that may help to reduce pain.



Psychological Treatments for Pain

People can learn to use psychological techniques to help them manage their pain better so it doesn't take over their lives. Psychological treatments can be helpful for both musculoskeletal pain and nerve pain. Psychologists trained in pain management can help with techniques shown to be effective in reducing the intensity and impact of pain. Things you do yourself to manage your pain are known as self-management techniques. These treatments include the following:



- **Breathing exercises.** Slow and control your breathing by breathing in for 3 seconds and breathing out for 7 seconds. This can help you manage those times when your pain is worse.
- **Relaxation techniques and biofeedback.** These techniques teach you how to reduce pain from muscle tension. They also help with “mental tension” due to pain.
- **Visual imagery.** With these techniques, you will view a series of images to help change your perceptions and behaviors related to pain. You may listen to recordings that teach you how to think about different images; or you may use a virtual reality headset.
- **Mindfulness.** Mindfulness involves focusing on the present moment or the present experience. This technique teaches you how to separate an event (like pain) from the emotions associated with it (like sadness or stress) and be less distracted by it. It may help you to cope better with pain. You can practice mindfulness in many ways. Examples include meditating, focusing on sensations as you move, and doing breathing exercises.
- **Self-hypnosis training.** With self-hypnosis, people achieve a state of deep physical and mental relaxation which allows them to detach from their pain. This technique can help reduce chronic pain in some people.
- **Cognitive restructuring.** Learning how to think differently about your pain and its effects can lead to changes in brain activity. This, in turn, can change the experience of pain. For example, some people focus on their pain and feel helpless about the experience. Pain may interfere less in their lives if they stop focusing on their pain and learn techniques to help them feel less helpless.
- **Psychotherapy.** Therapy can help you identify goals and increase the joy and meaning in your life. This, in turn, can help reduce pain. Therapy can also help if you have a lot of anxiety associated with pain.



Medicines

There are many different medicines to treat pain. Most of the medicines listed below have shown some success in reducing pain, but none completely eliminate pain consistently. All may have side effects, some of which can be serious. Talk to your doctor about all side effects. Sometimes a combination of medicines works better than a single medicine.

- **NSAIDs.** NSAIDs, or nonsteroidal anti-inflammatory drugs, include aspirin; ibuprofen, such as Motrin® and Advil®; and naproxen. People take them for musculoskeletal pain. Side effects may include an upset stomach or bleeding problems. Some NSAIDs are topical treatments. An example is ketorolac (Voltaren Gel®). You can apply them directly to the skin in areas where you have pain. Topical NSAIDs have fewer side effects than those taken by mouth.
- **Injectable Steroids.** Doctors inject these medicines into joints and in the area near tendons. They treat musculoskeletal pain caused by inflammation. An example is triamcinolone (Kenalog®).
- **Antiseizure medicines.** These medicines treat nerve pain. Side effects may include dizziness, sleepiness, and swelling in the leg. Examples include gabapentin (Neurontin®), pregabalin (Lyrica®), and oxcarbazepine (Trileptal®).
- **Antidepressants.** These medicines treat nerve pain and depression. One type is selective serotonin norepinephrine reuptake inhibitors (SSNRIs). These include duloxetine (Cymbalta®) and venlafaxine (Effexor®). A second type is tricyclic antidepressants. These include amitriptyline (Elavil®) and nortriptyline (Pamelor®). SSNRIs may cause nausea. Side effects for tricyclic antidepressants are dry mouth, sleepiness, and constipation.



- **Opioids.** These medicines are for severe musculoskeletal pain right after an injury. Examples include morphine and oxycodone. These medicines are habit forming. Because of this, doctors do not often recommend using them long term. They have many side effects and risks. These include constipation, confusion, slowed breathing, and death due to overdose. Sometimes other treatments, such as seizure medicines and antidepressants, can't control nerve pain. In that case, your doctor may consider trying low-dose opioids with close medical follow-up.
- **Muscle relaxers and medicines for spasticity.** These medicines treat musculoskeletal pain and pain due to spasms. They include diazepam (Valium®), baclofen (Lioresal®) and tizanidine (Zanaflex®), all of which can be taken by mouth. In addition, baclofen can be delivered directly to the spinal cord through an implanted pump (see "Intrathecal or baclofen pumps" below). All of these drugs can cause sleepiness, confusion, and other side effects.
- **Neurotoxin injections.** Doctors use these medicines to treat localized pain from the spasms caused by spasticity. Examples include botulinum toxins (Botox® and Dysport®) and alcohols such as phenol.
- **Topical local anesthetics.** These medicines treat pain that occurs when skin is lightly touched. This is known as allodynia. An example is lidocaine or Lidoderm®.
- **Cannabis.** Research looking at cannabis use after SCI is in the early stages. Studies to date have not shown that cannabis products are effective for treating pain. We need more research to find out if cannabis is a safe and effective treatment after SCI. Smoking cannabis is not recommended due to the risks that come with inhaling smoke.



Surgical Treatments

Intrathecal or baclofen pumps can treat pain due to muscle spasms with baclofen. A pump that contains baclofen is surgically placed under the skin in the abdomen. The pump delivers the medicine directly to the surface of the spinal cord.

Prevention and Self-Care

There are some steps you can take to help prevent pain after SCI. They include:

- **Get treatment for health problems.** Your overall health can have a big impact on pain. Infections, bowel problems, skin problems, sleep problems, and spasticity can make pain worse or harder to treat. Keeping yourself as healthy as possible can help reduce pain.
- **Try to exercise as much as you can.** Regular exercise can reduce pain and improve mood and health. It can also be fun and distract you from your pain. Your health care provider can help you choose physical activities that are safe and appropriate for you. See the "Pain after Spinal Cord Injury: Activity Modification for Musculoskeletal Pain" factsheet.
- **Maintain a healthy weight.** Being overweight is hard on your shoulders, wrists, hips and knees and can lead to musculoskeletal joint pain. Achieving a healthy weight can help reduce musculoskeletal joint pain.
- **Get treatment for depression.** Depression can make pain worse. Getting treatment for depression can help you cope with chronic pain and improve your quality of life. The best treatment is counseling and medicine. Activity and exercise can also improve mood and reduce depression.



- **Reduce stress.** Stress can make pain worse or make it harder to cope with. You can learn to manage stress through counseling. You can also learn techniques to help you reduce stress and tension. These include relaxation training, biofeedback, and hypnosis. Exercise also helps to reduce stress.
- **Distract yourself.** Distraction is one of the best methods for coping with chronic pain. Taking part in fun and meaningful activities can help reduce pain; it can also help you feel more in control of your life, especially when pain is at its worst. When you are bored and inactive, you tend to focus more on your pain; this can make your pain feel worse.
- **Keep a record.** Everyone's pain is different. Keep a record of what makes you feel better and what makes your pain worse. Understanding what affects your pain will help you and your doctor to find effective ways to reduce your pain.
- **Get a wheelchair seating evaluation.** Poor posture and improper seating can cause serious pain. Ask a physical therapist (PT) or occupational therapist (OT) who specializes in wheelchair seating to assess your seating. If you use a manual wheelchair, you should get a high-strength chair. The chair should be made of the lightest material available. This is usually aluminum or titanium. You should be able to customize the chair fully. Talk to a PT or OT about the proper technique for propelling a wheelchair. (For more information, see the **"Pain after Spinal Cord Injury: Activity Modification for Musculoskeletal Pain"** factsheet.)
- **Do not use alcohol to ease your pain.** Using alcohol as a pain medicine can lead to alcohol abuse and other serious problems. There are some medicines you should not mix with alcohol. Ask your doctor about drinking alcohol, and always read the labels on your prescriptions.



Finding Help

If you have pain, it is important to get treatment for it. The best source of help would be a doctor and a psychologist who are familiar with SCI and pain management, working together.

If you do not have access to such experts, the next best option is to seek help from a multidisciplinary pain clinic. These clinics have both doctors and psychologists available. Work closely with a health care provider with whom you are comfortable and who understands your condition.

Chronic pain is not hopeless. Try not to become discouraged if one treatment doesn't work. Be open to trying a variety of different techniques. Complete relief from pain may not be possible but living better in spite of pain is a realistic goal.



Resources

- Spinal Cord Injury Research Evidence (SCIRE) Community: <https://community.scireproject.com/topics/browse-by-area/pain/>
- Pain Management Network: <https://aci.health.nsw.gov.au/chronic-pain/spinal-cord-injury-pain>
- CareCure Community moderated SCI forums, including a pain forum: <http://sci.rutgers.edu/forum/>



Authorship

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