

How to Recover Walking After Spinal Cord Injury: Timeline and Treatments

Many factors play a role in regaining the ability to walk after a spinal cord injury. Fortunately, it is possible for many SCI survivors. There is potential to walk again after SCI because the spinal cord has the ability to reorganize itself and make adaptive changes called **neuroplasticity**. With an effective rehabilitation plan and consistency, individuals may be able to promote neuroplasticity to optimize their mobility.

Neuroplasticity is the central nervous system's ability to make adaptive changes and rewire itself based on an individual's behaviors. Consistently practicing a skill helps the spinal cord perceive a demand for that function and encourages it to adapt. The central nervous system never runs out of neuroplasticity, so as long as it is being stimulated through repetitive movement, there is potential to recover.

Chances of Walking Again After Paralysis

Level of injury refers to the lowest region of the spinal cord where motor control or sensation are not affected. Because signals from the brain cannot travel past spinal cord damage, all functions below the level of injury may be affected. As a result, higher levels of injury are associated with more widespread paralysis, which is why learning to walk again may take longer for some individuals. If you injure a lower area of the spinal cord, the upper body may not be affected. Therefore, rehabilitative therapy may focus on overall body strengthening and endurance as well as a return to walking, often with assistive devices.

Incomplete vs Complete SCI Affects Walking

Incomplete SCIs indicate that spared neural pathways exist. Spared neural pathways refer to connections between the brain and areas below the level of injury that are not damaged. Spared neural pathways play an essential role in predicting recovery outcomes because damaged neurons in the spinal cord cannot regenerate or utilize neuroplasticity. As a result, the more spared neural pathways an individual has within the spinal cord, the better their chances of recovery. In contrast, a **complete** injury results in no spared neural pathways. Because there is no way for signals from the brain to reach areas below the level of injury after a complete SCI, individuals with incomplete SCIs are more likely to walk again than those with complete injuries.

Treatments to Walk Again After a Spinal Cord Injury

Because every spinal cord injury and its recovery are unique, a personalized treatment plan focused on the ability to walk again will be most effective. Below, we'll discuss various treatment interventions that may be involved in recovering walking after a spinal cord injury.

1. Physical Therapy

Physical therapy is the foundation and starting point of regaining walking after a spinal cord injury. The more aggressively you pursue physical therapy, the greater your chances of recovery. In order to recover walking after SCI, you must retrain the brain, spinal cord, and muscles to work in sync again through highly repetitive and task-specific movement. The more you practice, the stronger the neural pathways get and the more familiar the movements become. Addressing leg strength and movement with a physical therapist early in the recovery process is important not only due to the heightened state of neuroplasticity in the spinal cord at that time,

How to Recover Walking After Spinal Cord Injury: Timeline and Treatments

but also to help limit muscle wasting, known as **atrophy**, in the legs from non-use. Participation in physical therapy can be optimized by continuing to exercise and utilize skills that you have learned even when you're not in therapy. Consistently practicing throughout the day, rather than just during therapy sessions, helps to further promote **neuroplasticity** and optimize recovery.

2. Locomotor Training

Locomotor training is a type of physical therapy that specifically focuses on learning to walk again after spinal cord injury. It may involve the use of assistive equipment such as weight-supporting treadmills, parallel bars, braces, walkers, and crutches to reduce pressure on the joints or to provide additional stability. It's effective because it's **task-specific** and **emphasizes repetition**, which are two major factors that promote neuroplasticity.

3. Electrical Stimulation

Another way individuals are regaining the ability to walk again after spinal cord injury is with the help of epidural electrical stimulation. The process involves implanting an electrode array onto your spinal column, which sends electrical currents below the level of injury.

After an SCI message from the brain may no longer be able to pass through the injury site, meaning that areas below the level of injury cannot receive messages. The electrical currents involved in electrical stimulation mimic brain signals and help stimulate muscle movement below the level of injury. Even patients with motor complete spinal cord injuries have been able to move again with the help of electrical stimulation. This is possible because epidural stimulation works around the damage.

4. Stem Cell Treatment

One of the most promising treatments to walk again after a spinal cord injury is stem cell treatments. This process involves implanting stem cells into the spinal cord to promote healing. Stem cells are exciting and innovative because of their ability to divide infinitely and differentiate into various types of cells. However, just like electrical stimulation, stem cell treatment for spinal cord injury recovery is still a work in progress that requires further research and development.

5. Exoskeletons

Thanks to innovations in technology, individuals with complete spinal cord injuries may be able to get on their feet and walk again. With the help of a wearable robotic exoskeleton, walking movements can be facilitated by simply shifting your weight. The sensors in the exoskeleton will perform the movement for you. Exoskeletons are ideal for individuals who otherwise cannot walk. It allows them to regularly bear weight, increases circulation to the legs, and improves overall self-confidence.

Can Someone with Spinal Cord Injury Walk Again? Recovering the ability to walk after an SCI is a long journey that requires consistency and patience. Many factors contribute to relearning how to walk again after a spinal cord injury including the level and severity of injury, the intensity of rehabilitation, and motivation. Consistently practicing **highly repetitive exercises** helps stimulate neuroplasticity in the spinal cord. This encourages the spinal cord to make adaptive changes and rewire functions affected by injury to healthy regions.