



SPINAL CORD INJURY

MEDICAL FOCUS

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Spinal cord injury (SCI) may seem fairly straight forward to the average “Joe on the Street.” The spinal cord is severed and the person is paralyzed below that level, right? SCI is actually more complex. In this column, we will explore the most current definitions, treatments and research.

DEFINITION:

In the United States, 1.28 million people have a spinal cord injury. Spinal cord injuries usually begin with trauma to the spine that either fractures or dislocates vertebrae. Displaced bone fragments, disc material and/or ligaments may compress (bruise) or tear the spinal cord itself. Most injuries do not completely sever the cord, but the damaged vertebrae may crush and destroy axons that communicate between the body and brain. SCI can damage a few or almost all of these axons. In incomplete injuries, some motor and/or sensory function is maintained below the level of injury.

Spinal cord damage can also occur from hyperflexion or hyperextension and even from tumors or blood clots.

TREATMENTS:

Steroids are given as soon as possible following injury to reduce swelling which could worsen damage to the cord. Some clients see as much as a full level (measured by level of the vertebrae) of recovery after steroid treatment. Decompression surgery may be required. Electrical stimulation is sometimes provided to assist certain

functions such as bladder, breathing and cough. Therapies are critical to optimize recovery and to regain independence, often through seating and wheeled mobility technologies.

RESEARCH:

According to the U.S. National Institutes of Health (NIH), 696 studies relating to spinal cord injury are currently underway or have been completed. These range from medications to clear scar tissue to stem cells to therapeutic interventions. Many Spinal Cord Centers of Excellence participate in these studies. The Paralyzed Veterans of America (PVA) conducts numerous studies as well.

One recent project restored control of movement in four men with complete paralysis after intense locomotor training using epidural stimulation. (<http://www.christopherreeve.org/site/c.ddjFKRNoFiG/b.9071871/k.E3D5/FourParaplegicMenVoluntarilyMoveTheirLegs.htm>). An easy to read summary

of SCI research projects in 2014 can be found at <http://www.spinalcordinjury-paralysis.org/blogs/18/2349>.

THE CONTROVERSY:

At the International Seating Symposium in March, Michael Boninger, MD, of the University of Pittsburgh Medical Center shared his thoughts on the recent advances in providing walking through exoskeletons. Many people with a new SCI are anxious to return to walking, if at all possible. More and more rehab centers are using some form of exoskeleton to get those clients into a standing position and even “walking.” The challenge here is two-fold. First, some clients will shun seating and wheeled mobility and only focus on walking. This could result in decreased function. Second, research dollars may be mostly focused on this goal of walking, rather than other SCI related research. Our goal isn't a tool. Our goal is optimal functioning in as many environments as possible.

CONTACT THE AUTHOR

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RESOURCES:

UNITED SPINAL ASSOCIATION
[HTTP://WWW.SPINALCORD.ORG](http://www.spinalcord.org)

NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE (NINDS) SPINAL CORD INJURY INFORMATION PAGE
[HTTP://WWW.NINDS.NIH.GOV/DISORDERS/SCI/SCI.HTM](http://www.ninds.nih.gov/disorders/sci/sci.htm)

PARALYZED VETERANS OF AMERICA (PVA)
[HTTP://WWW.PVA.ORG](http://www.pva.org)

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