



The following excerpt has been taken from the Christopher & Dana Reeve Foundation Paralysis Resource Center website.

<http://www.paralysis.org/site/c.erJMJUOxFmH/b.1314471/k.360A/Spasticity.htm>

## **Spasticity**

Spasticity is a side effect of paralysis that varies from mild muscle stiffness to severe, uncontrollable leg movements. Symptoms may include increased muscle tone, rapid muscle contractions, exaggerated deep tendon reflexes, muscle spasms, scissoring (involuntary crossing of the legs), and fixed joints.

Spasticity is usually caused by damage to the portion of the brain or spinal cord that controls voluntary movement. It may occur in association with spinal cord injury, multiple sclerosis, cerebral palsy, anoxic brain damage, brain trauma, severe head injury, or certain metabolic diseases. Spasticity can interfere with rehabilitation or daily living activities.

When individuals are first injured, their muscles are weak and flexible because of what's called spinal shock: the body's reflexes are absent below the level of injury; this usually lasts for a few weeks or several months. Once the spinal shock is over, reflex activity returns.

Since the normal flow of nerve messages below the level of injury is interrupted, those messages may not reach the reflex center of the brain. The spinal cord then attempts to moderate the body's response. Because the spinal cord is not as efficient as the brain, the signals that are sent back to the site of the sensation are often over exaggerated. This is an overactive muscle response referred to by doctors as spastic hypertonia (SH): uncontrollable "jerking" movement, stiffening or straightening out of muscles, shock-like contractions of a muscle or group of muscles, and abnormal tone in the muscles.

Most individuals with SCI experience spastic hypertonia in some form. Persons with cervical injuries and those with incomplete injuries are more likely than those with paraplegia and/or complete injuries to experience SH. The most common muscles that spasm are those that bend the elbow (flexor) or extend the leg (extensor). These usually occur as a result of an automatic response to painful sensations.

Spasticity also defines a condition in which certain muscles are continuously contracted. This stiffness or tightness may interfere with gait, movement, and speech.

Spasticity is not necessarily a bad thing. Some people use their spasms for function, to empty their bladders, to transfer, to dress. Others use it to keep their muscles toned and improve circulation. It may help maintain bone strength.

### **Changing Spasticity**

According to researchers at Craig Hospital in Denver, a change in a person's spasticity can be a symptom itself. For example, a cyst or cavity in the spinal cord (sometimes called post-traumatic syringomyelia) could lead to more spasticity. Also, decreasing or disappearing spasticity can also be a sign of a cyst.

Other diseases that may develop in the spinal cord -- tumors, Guillain-Barre syndrome, transverse myelitis, a spinal cord stroke, etc. -- may also cause spasticity to change. And problems outside your nervous system, such as bladder infections or skin sores can make spasticity increase.

Treatment for spasticity may include such medications such as baclofen, diazepam, or zanaflex. Some people with severe spasms utilize baclofen pumps, which are small, surgically implanted reservoirs that apply the drug directly to the area of spinal cord dysfunction. This allows for a higher concentration of drug without the mind-dulling side effects of high oral dosage.

In recent years some doctors have treated spasticity in children with botox, the muscle-relaxing agent used cosmetically for wrinkles.

Physical therapy, including muscle stretching, range of motion exercises, and other physical therapy regimens, can help to prevent joint contractures (shrinkage or shortening of a muscle) and reduce the severity of symptoms.

Sometimes, surgery is recommended for tendon release or to sever the nerve-muscle pathway in children with cerebral palsy. Selective dorsal rhizotomy may be considered if spasms interfere with sitting, bathing or general caretaking.

Spasticity comes with the territory for many people who are paralyzed. Treatment strategy should be based on your function: is the spasticity keeping you from doing certain things? Are there safety risks -- losing control while driving your power wheel chair or automobile? Are anti-spasm drugs worse than the symptom, affecting concentration and/or energy level? Are spasms becoming more than your caregivers can deal with? If the answer to any of the above is yes, check with your physician to discuss your options.

Sources: National Multiple Sclerosis Society, United Cerebral Palsy Associations, The National Spinal Cord Injury Statistical Center, Craig Hospital, The University of Alabama at Birmingham/Spain Rehabilitation Center

## **Web Sites**

<http://www.disaboom.com/spinal-cord-injury-sci-information/secondary-condition-spasticity>

### **Disaboom: Spinal Cord Injury--Spasticity**

[www.nationalmssociety.org](http://www.nationalmssociety.org)

### **National Multiple Sclerosis Society (NMSS)**

The National Multiple Sclerosis Society offers information and resources on all medical issues related to MS.

[www.ucp.org](http://www.ucp.org)

### **United Cerebral Palsy (UCP)**

United Cerebral Palsy has numerous information resources on spasticity and its treatment options.

[www.rarediseases.org](http://www.rarediseases.org)

### **National Organization for Rare Disorders (NORD)**

The National Organization for Rare Disorders (NORD) lists numerous diseases that are accompanied by spasticity.

[www.medtronic.com](http://www.medtronic.com)

### **Medtronic**

Medtronic manufactures implantable pumps for delivery of drugs to control spasticity.

Medtronic ITB Therapy<sup>SM</sup> is sponsoring a nationwide patient education program focused on spasticity management with an emphasis on ITB Therapy as a treatment option for severe spasticity. This program, called Movement for Living, is a series of teleconferences targeted to people with spasticity resulting from stroke, cerebral palsy, multiple sclerosis, spinal cord injury, or brain injury. The discussion is led by a physician and a person receiving ITB Therapy. For additional information, please call 1-888-743-8348.

[www.wemove.org/spa](http://www.wemove.org/spa)

### **We Move**

We Move facilitates communication of clinical advances and therapeutic approaches to the management and treatment of 14 major movement disorders (excessive movement, as in spasticity and restless legs syndrome; also lack of movement, as in bradykinesia).

[www.ninds.nih.gov/health\\_and\\_medical/disorders/spasticity\\_doc.htm](http://www.ninds.nih.gov/health_and_medical/disorders/spasticity_doc.htm)

### **National Institute of Neurological Disorders and Stroke**

The National Institute of Neurological Disorders and Stroke (NINDS) offers fact sheets on all medical issues related to paralysis, including spasticity.

[www.craighospital.org/SCI/METS/spasticity.asp](http://www.craighospital.org/SCI/METS/spasticity.asp)

### **Craig Hospital**

Craig Hospital has developed educational materials to help people with spinal cord injuries live in the community maintain their health. Topics include skin care, exercise, heart disease, weight control, alcohol abuse and conditions related to the aging body.

<http://www.emedicine.com/pmr/topic177.htm>

<http://www.emedicine.com/neuro/topic706.htm>

### **eMedicine: Spasticity**

Articles presenting information on spasticity, including causes and frequency of occurrence, and treatment outcome measurements.

<http://calder.med.miami.edu/pointis/spasticity.html>

### **University of Miami's PointIS website: Spasticity**

Describes spasticity and some of the problems associated with spinal cord injury.

<http://sci.washington.edu/info/forums/reports/spasticity.asp>

### **University of Washington's SCI Forum Report 2003: Spasticity and Spinal Cord Injury**

Spasticity is a common problem after SCI and results from increased reflex activity that develops following damage to the spinal cord. In order to understand how this happens, this report describes some of the basic workings of the spinal cord.

<http://www.exploringspasticity.com/>

### **Exploring Spasticity**

An educational program designed to raise awareness of spasticity, bring those who are affected together to share their personal stories and coping strategies, and empower individuals to seek treatment; site is open to anyone whose life is affected by spasticity - including family caregivers.

The following books and videos are available for free loan from the PRC library. For more information, please see [www.paralysis.org](http://www.paralysis.org) and click the Lending Library tab.

## **Video**

**ITB Therapy for the Management of Severe Spasticity.** Minneapolis, MN:

Medtronic. DVD 10 minutes

From the makers of Baclofen.

**They Didn't Know Until They Tried: ITB Therapy Adult Screening Video.**  
Minneapolis, MN: Medtronic, 2003. VHS

**They Didn't Know Until They Tried: ITB Therapy Pediatric Screening Video.**  
Minneapolis, MN: Medtronic, 2003. VHS

Explains the use of ITB (Intrathecal Baclofen Therapy) to control severe spasticity in children.

<http://www.spinalcord.uab.edu/show.asp?durki=97417>

**University of Alabama at Birmingham's streaming video on Spastic Hypertonia (27 minutes).**

### **Books**

- Bakheit, A. Magid O. **Botulinum Toxin Treatment of Muscle Spasticity.** AuthorHouse UK, 2007. 2<sup>nd</sup> ed.
- Preston, Linda & Jeffrey, Hecht. **Spasticity Management: Rehabilitation Strategies.** Bethesda, MD: American Occupational Therapy Association, 1999.
- Parker, James and Philip Parker. **The Official Patient's Sourcebook on Spasticity: A Revised and Updated Directory for the Internet Age.** San Diego, CA: Icon Health, 2004.

**The information contained in this message is presented for the purpose of educating and informing you about paralysis and its effects. Nothing contained in this message should be construed nor is intended to be used for medical diagnosis or treatment. It should not be used in place of the advice of your physician or other qualified health care provider. Should you have any health care related questions, please call or see your physician or other qualified health care provider promptly. Always consult with your physician or other qualified health care provider before embarking on a new treatment, diet or fitness program. You should never disregard medical advice or delay in seeking it because of something you have read in this message.**