

## GLOSSARY

**Central nervous system** - All the nerve cells and nervous system tissues in an organism, including, in the vertebrates, the brain, spinal cord, ganglia, nerves, and nerve centers.

**Disk** - A layer of fibrous connective tissue with small masses of cartilage among the fibers, occurring between adjacent vertebrae

**Invertebrates** - Lacking a backbone or spinal column

**Ligaments** - A band of tough tissue connecting bones or holding organs in place

**Paralysis** - Partial or complete loss, or temporary interruption, of a function

**Paraplegia** - Motor and sensory paralysis of the entire lower half of the body

**Quadriplegia** - Total paralysis of the body from the neck down

**Spinal column** - The series of jointed vertebrae forming the axial support for the skeleton; spine; backbone

**Spinal cord** - The thick cord of nerve tissue of the central nervous system

**Vertebra** - Any of the single bones or segments of the spinal column

May be reproduced for use in the classroom.

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# Show Me Science

## The Wonders of Physiology

# The Spine & Spinal Cord: The Body's Control

**K4587DVD**

**Advanced Teachers Guide**

**SYNOPSIS:**

The spinal cord has fascinated scientists for centuries. The ability to walk is engineered by the spinal cord and the spinal column. This program looks at the design of the spinal cord and the medical advances in treating spinal cord injuries. Discover the research continually being done by scientists researching paralysis in an effort to one day find a cure.

**CURRICULUM UNITS:**

- Anatomy
- Biology
- Health
- Physics

**CAREER OPPORTUNITIES:**

- Biologist
- Chiropractor
- Engineer
- Neurologist
- Occupational therapist
- Orthopedic physician
- Physical therapist

**PROGRAM OVERVIEW:**

The spinal cord has fascinated scientists for centuries. The spine enables us to walk and move about. However, spinal cord injuries account for nearly 11,000 injuries each year, of which most result in paralysis. Day in and out, we exert our body while fulfilling physical demands. Each movement is possible with the flexibility of the spinal column. The spinal cord, along with the brain, makes up the central nervous system. Together, a highway of nerves transmits messages that guide our movements. Unfortunately, injuries do occur to the spinal cord causing paralysis. Healing paralysis is a challenge. The first thirty minutes after an accident occurs is critical when determining whether somebody will be paralyzed. With today's research and technology, scientists are drawing closer to a cure. Until that day, research will continue so that one day walking again will no longer be a dream, but a reality.

**ISSUES & CRITICAL THINKING:**

After viewing the program, ask your students the following:

1. Read a book about paralysis aloud. An example is *How Willy Got His Wheels*, by Deborahne Turner, about a paralyzed dog that gets a set of wheels for mobility. [www.Wheelywilly.com](http://www.Wheelywilly.com)
2. Draw a diagram and identify the parts of the central nervous system.
3. To learn about paralysis visit websites such as actor Christopher Reeve's [www.apacure.com](http://www.apacure.com)

4. Show students the parts of the skeletal system using a model or a diagram. Pass out strips of paper with skeletal vocabulary words. Have students come up and label parts of the skeleton.
5. Write an expository essay depicting this research and preventative measures that can be taken against such injuries.
6. Create a visual to accompany the essay that demonstrates possible prevention for paralysis. For example, a student can create a poster about when jumping into water, be sure to jump feet first; and wear a seatbelt while in a car.
7. Paired with a partner have students explain the difference between paraplegia and quadriplegia.
8. Have students speculate what it would be like to be disabled after having the ability to use one's body. Students can use a wheelchair for a given amount of time and document their experience. What impact did it have on simple tasks? Were they looked upon differently? Did people offer assistance? Was access to common entrances available?