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Although individuals with disabilities can greatly benefit from various bodywork modalities, they generally do not avail themselves of these therapies for a variety of reasons. Relying largely on the advice of conventional health care providers who are often skittish about referring for bodywork, those with disabilities often don't know their "alternative" options. In addition, because many bodywork professionals are unfamiliar with the unique issues associated with disability, there is apprehension when dealing with this population. Herein is a discussion of the benefits of craniosacral therapy in treating one of the more devastating disabilities today, spinal cord injury.

**Overview of Spinal Cord Injury**
More than 200,000 individuals in the United States have spinal cord injuries with about 10,000 new injuries occurring each year. About 40 percent of these injuries are caused by motor vehicle accidents, 25 percent by violence, 20 percent by falls and 9 percent by sporting activities. Spinal cord injury disproportionately affects men, the young and minorities, and it is an economically devastating disorder. Unlike many neurological disorders affecting individuals later in life, spinal cord injury typically affects young individuals as they are starting careers and families. Because these people have a near normal life expectancy, their injury will affect them physically and economically for many years. The average lifetime costs associated for each spinal cord injury exceed $1 million, and it has been estimated that if all new cases of injury were prevented, society would save over $250 billion. Given such costs, any bodywork therapy that can enhance the lives of these individuals will not only have a huge personal, but also societal impact.

The spinal cord contains nerves that carry messages from your brain to all parts of the body. The level of the injury on the spinal cord determines the degree of paralysis. For example, an injury to the spine in the neck region may cause paralysis in both arms and legs, which is known as quadriplegia. In contrast, an injury further down the cord may result in paraplegia in which only the legs and lower parts of the body are affected. An injury is also defined as either complete or incomplete, depending upon the amount of remaining movement and sensation below the level of the injury.

Individuals with spinal cord injuries do not typically believe that the inability to walk is the most devastating consequence of spinal cord injury. They feel other consequences, such as the loss of bowel and bladder control and sexual function, cumulatively have a greater impact on the quality of life and independence. Other common problems include spasticity, pressure sores, chronic pain and muscle contractures or tightness that limits movement or range of motion. Clearly, these problems are aggravated by the individual's inability to feel the various sensory signals that most able-bodied individuals take for granted. For example, although most of us are constantly moving our bodies without thinking about it, such movement requires a conscious effort for an individual with paralysis.

**Craniosacral Therapy**
Craniosacral therapy is a gentle, hands-on procedure for evaluating and enhancing the functioning of the craniosacral system, a physiological system surrounding the brain and spinal cord. By affecting the brain and spinal cord, the craniosacral system influences the entire body. As such, craniosacral therapy has the ability to address a wide range of disorders, especially spinal cord injury.

Craniosacral therapy evolved from osteopathic medicine with its musculoskeletal emphasis. In the early 1900s, osteopathic physician William Sutherland concluded that skull bones are not firmly fixed, but can move relative to each other. With these observations, he developed a treatment called cranial osteopathy. In recent years, Dr. John Upledger further developed Sutherland's observations and incorporated them into a treatment now called craniosacral therapy.

Dr. Upledger's interest was whetted early in his career. While assisting a neurosurgeon in the removal of plaque from a patient's spinal cord membrane, he observed that the membrane kept pulsating, in spite of his best efforts to keep it still. This was his first observation of the craniosacral rhythm. After many years of research on the system, he established the Upledger Institute in 1985 in Palm Beach Gardens, Fla. to more effectively transfer his research findings to consumers. Since then, more than 38,000 practitioners have been trained in craniosacral therapy, including osteopaths, medical doctors, chiropractors, psychologists, dentists, physical therapists, acupuncturists and massage therapists.

**The Craniosacral System**
The spinal cord is surrounded by a protective, three-layered membrane system (the meninges) which lies within the vertebral column. The inside layer is tightly attached to the spinal cord, with cerebrospinal fluid flowing between the other layers. In addition to providing nutrients, the lubricating cerebrospinal fluid allows the membrane layers to glide in relationship to one another as the spine bends and twists. The outer membrane -- the dura mater -- protects everything inside of it, including the brain and spinal cord.

The craniosacral system is composed of this membrane system, the enclosed cerebrospinal fluid, the physiological structures that control fluid input and outflow for the system, and related bones. It is a semi-enclosed biological hydraulic system encompassing the brain and spinal cord (see Within the system, the cerebrospinal fluid rhythmically pulses -- independent of heart or respiratory rhythms -- at a rate of about 10 cycles per minute.

The craniosacral system's fluid barrier is the dura mater, which also composes the inside lining of the skull. Dr. Upledger's research indicates that the skull bones must be continuously moving slightly to accommodate the fluid pressure changes within this semi-closed hydraulic system. In addition to the skull, the membrane barrier is also attached to the upper neck vertebrae, the lower back sacrum, the tailbone, and the openings in the spinal column where nerves go out to the body.

Any occurrence interfering with the membrane's ability to accommodate the rhythmically fluctuating fluid pressures and volumes is a potential problem. Craniosacral therapy's objective is to find areas of restricted movement which compromise function and re-establish normal movement. Because the craniosacral system encloses the brain and spinal cord, it influences the entire nervous system and affects many body functions, including the brain's important pituitary and pineal glands. These glands, in turn, have the potential to affect the body's entire hormonal balance.

**The Controversy**
Mainstream medicine has criticized craniosacral therapy, sometimes vociferously, primarily because the underlying theory challenges many classical anatomical assumptions. For example, Dr. Stephen Barrett, an outspoken critic of alternative treatments, states "the theory behind craniosacral therapy is erroneous because the bones of the skull fuse during infancy and cerebrospinal fluid does not have a palpable rhythm."1 However, this dogma is not universally accepted. For example, in parts of Europe, it is taught that the skull bones do, indeed, have movement potential. Dr. Upledger feels that the axiom about fused skull bones may have arisen from the routine practice of using highly preserved cadavers for anatomical examinations. He postulates that fresh, unpreserved sutures (the skull bone edges) are full of dynamic tissue, nerves and blood vessels, consistent with a flexible system allowing some movement. In contrast, the sutures from old preserved skulls appear calcified. Dr. Upledger also believes that most neurosurgeons have not observed the craniosacral rhythm because most surgery penetrates the membrane barrier required to maintain the rhythm.

**A Hands-on Process**
During craniosacral therapy, therapists use a light touch equivalent to a nickel's weight, and feel the rhythmic motion of the cerebrospinal fluid within the craniosacral system. Therapists check the rate, amplitude, symmetry and quality of this wave-like motion. This assessment is usually undertaken at locations where the craniosacral membrane barrier attaches to bones such as the skull, sacrum and tailbone. Any restrictions or blockages are treated with light-touch adjustments.

A restriction in one part of the craniosacral system can affect the entire system, so treatment may involve working at a point distant from the overt symptom. Basically, by assisting the hydraulic forces in the craniosacral system and, in turn, improving central nervous system functioning, treatment facilitates the body's innate, self-healing mechanisms.

**Craniosacral Therapy and Spinal Cord Injury**
The Upledger Institute has used craniosacral therapy on many individuals with spinal cord dysfunction. The institute has claimed that most have had some improvement, ranging from the modest to the fairly dramatic. Improvements have been noted with motor function, bowel and bladder control, spasticity management, and overall well-being and ease. The institute customizes an intensive, two-week program to each person. It may include a variety of additional hands-on therapies, such as massage, acupuncture and a craniosacral-related therapy called somatoemotional release. In part, these therapies are designed to help muscles that are spastic, injured, hypertonic or unused. In addition, they help energy flow and balance. Individuals are usually treated once a year, often with some follow-up therapy at home.

As in the case with many bodywork therapists, experienced craniosacral therapists feel as if they can "read" the body. For example, they can localize the level of injury without other information. Furthermore, they often note the presence of secondary and tertiary injury sites resulting from the mechanics and vector forces of impact. In other words, a cervical C-4 quadriplegic may also have experienced secondary trauma at the thoracic T-5 level.

Dr. Upledger feels that initial trauma results in edema. A burst of cerebrospinal fluid results in tissue separation that heals with fibrous scarring. "It is like a copper wire after being hit with a hammer; it won't conduct as well," Dr. Upledger said. Because this secondary damage occurs relatively soon after injury, Dr. Upledger believes strongly that to get fluids moving it would be beneficial to treat patients within the first month. Unfortunately, under the current standards of medical care, access to craniosacral therapy would be unlikely.

One individual, who has received therapy in the Upledger program, is "Jackie." He became an incomplete quadriplegic after a 1990 car accident. Jackie has been treated several times at the facility and emphatically states that, "they have helped me more than anyone ever has before; I now have much more feeling and muscle control." Jackie now walks without the full leg brace previously needed. He is a man who likes to "work hard and play hard," and his improved trunk muscles, critical for balance, allow him to use a three-wheel motorcycle once again. He remembers very distinctly the moment on the therapy table that he first regained some feeling in his left hip: "The tingle felt like the sensation when you try to move a leg that has gone to sleep."

**Conclusion**
In summary, individuals with disabilities can benefit greatly from many bodywork therapies such as craniosacral therapy. Both at an individual and societal level, the impact of further integrating these therapies within disability health care is potentially immense. As such, additional efforts by bodywork professionals to reach out to these individuals will clearly facilitate this integration.

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 **References**
*1. Dr. Stephen Barrett, from his website: www.quackwatch.com.*