

## **The Facilitated Segment**

By John Upledger, DO, OMM

The concept of the facilitated segment is highly relevant to neuromusculoskeletal and psychoemotional problems. The word "facilitated" usually has a positive connotation, implying that some process is made easier or more efficient.

In the case of the facilitated segment, however, it means that the stimulus threshold in a particular spinal cord segment has been reduced. This means that the facilitated segment of the spinal cord is highly excitable, and that a smaller stimulus will trigger excessive impulse firing in the segment.

Depending on the tissues involved, this hypersensitivity may be detrimental to the body as a whole. For example, if the segment that innervates the stomach becomes facilitated, the stomach becomes hypersensitive. Mildly irritating foods may cause disproportionately large pains or stomach dysfunctions. A person who suffers from this problem may be said to have a nervous stomach, food allergies or intolerances. If the situation continues, gastritis or ulceration may follow.

The concept of the facilitated segment originated in the work of Dr. I.M. Korr and his associates, beginning in the 1940s at the Kirksville College of Osteopathy and Surgery. The word "segment" means "one of the parts into which something separates or divides." In the phrase "facilitated segment," the word can be somewhat misleading. It suggests that the spinal cord is naturally divided into pieces or segments. To some extent this is true, but bear in mind that the spinal cord is a longitudinal structure, both functionally and structurally. It connects the brain with the nerve roots, which branch out to form the peripheral nervous system.

The spinal cord can be compared to a freeway, and the spinal nerve roots to on- and off-ramps. The spinal cord is a continuous structure, but the nerve roots branch off at regular intervals, and can be viewed as delimiting "segments" of the spinal cord. In this sense, a spinal segment can be defined as a level of the

spinal cord at which two dorsal nerve roots (sensory) enter, and two ventral nerve roots (motor) exit. In a facilitated segment, these roots are overly sensitive, or hair-triggered. The hyperactive ventral motor root from the segment passes through the intervertebral foramen and joins the sympathetic nerve chain, which thereby comes under constant bombardment. This keeps the sympathetic nervous system in a state of chronic overactivity, ultimately resulting in damage to the target organs and the patient's health. If the trophic-nerve-function hypothesis is true, this process may also result in protein deprivation in the target organs.

A facilitated segment produces a palpable change in tissue texture. The local paravertebral muscles and connective tissues develop a "shoddy" feel, and joints in the area are less mobile. The tissues are tender to the touch and often painfully irritable. I believe that the term "fibrositis" can be applied to the connective tissues in this situation. Sympathetic system dysfunction at the level of the facilitated segment also produces changes in skin texture, sweat gland activity, and capillary blood supply to the skin.

Dr. Korr compares the facilitated segment to a neuronal lens, in that it seems to gather nerve impulses. It does not pass on its sensory input; rather, it accumulates and hoards not only those stimuli that come into it directly, but also those that attempt to pass through to other segments. Experimental electromyographic work done by Dr. Korr and his associates has demonstrated that stimulus of the nervous system almost anywhere will result in increased electrical activity of the muscles serviced by nerve roots derived from a facilitated segment.

Facilitated segments seem to occur at areas of focus for postural stress, sites of trauma, and segmental levels related to visceral problems. Once established, a facilitated segment can continue for years, even contributing to death. A facilitated segment at T4, for instance, may cause decreased vitality of the heart, leading to a blockage of coronary arteries and myocardial infarction. A facilitated segment also tends to perpetuate itself; that is, the hyperactivity of the motor root causes the related sympathetic ganglion to become hyperactive, leading to dysfunction and deterioration of the target organs. A variety of sensory stimuli related to the dysfunction are sent back to the spinal segment, further increasing its level of facilitation, and so on.

Different types of problems are associated with facilitated segments at specific levels, e.g., T9/10 (gall bladder), T12/L1 (kidney), L5 (urogenital), etc. Once a segment becomes facilitated, all of the associated target structures (connective tissue, muscle, bone, blood vessels, skin, sweat glands and internal organs) will

be adversely affected.

Therapeutically, any approach that interrupts the self-perpetuating activity of the facilitated segment is helpful. The sensory input to the segment must be reduced. Effective approaches, therefore, include those that: relax the muscles (massage, soft-tissue manipulation); mobilize the area, reducing stasis and edema (structural manipulative therapy); (3) reduce postural stress (Rolfing, Alexander Technique); and reduce the number of signals from higher centers of the central nervous system (relaxation techniques, biofeedback, hypnotherapy, psychotherapy, tranquilizers).

CranioSacral Therapy is particularly helpful with facilitated segments, in that it reduces autonomic tone (sympathetic activity); reduces general stress and anxiety; enhances endocrine function; assists in postural balancing; and improves fluid exchange. It's also extremely helpful when used to mobilize the dural tube within the spinal canal, because restrictions of the dural tube, or its sleeves, contribute to segmental facilitation.

To locate these areas of restricted mobility, the therapist tests the mobility of the dural tube and releases restrictions as they're found, using gentle traction techniques. These releases are mandatory - if a peripheral restriction is released, but the dural tube restriction and facilitated spinal cord segment are not, the peripheral problem usually reoccurs.

Once the peripheral body and the dural tube have been treated for restrictions, the therapist can focus on the cranium and sacrum. During this time the therapist also helps correct both primary and secondary dysfunctions of the skull bones, facial bones, hard palate and sacrococcygeal complex. All related sutures and joints are gently mobilized. The therapist then focuses on correcting abnormal dural membrane restrictions, irregularities in cerebrospinal fluid activities, and dysfunctional energy patterns and fluctuations related to the craniosacral system.

It is at this stage that the patient often moves from a phase of having obstacles removed to one of self-healing, with the therapist simply facilitating the process. In essence, the patient moves out of the realm of fighting disease and into one of enhancing health. That's why CranioSacral Therapy is also a preventive-medicine modality - it mobilizes natural defenses, rather than focusing on the etiologic agents of diseases.

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