

of Neurological Surgeons. Recently, evidence-based guidelines for the management of SCI in children were published ([Rozelle, Aarabi, Dhall, et al, 2013](#)).

IV methylprednisone may be started within the first 12 hours after the injury to decrease inflammation and minimize further injury; however, its use in small children is controversial.

A number of progressive rehabilitation modalities have been developed in recent years that have the potential for increasing the quality of life for children with SCI. One treatment is functional electrical stimulation (FES), also referred to as *functional neuromuscular stimulation*, or *neuromuscular electrical stimulation* (NMES). With this treatment, an electrical stimulator is surgically implanted under the skin in the abdomen, and electrode leads are tunneled to paralyzed leg muscles, enabling the child to sit, stand, and walk with the aid of crutches, a walker, or other orthoses. The stimulator can also be used to elicit a voluntary grasp and release with the hand. Before the latter can be accomplished, a number of surgical tendon transfers may be required for elbow extension, wrist extension, and finger and thumb flexion. In addition, FES has therapeutic benefits, which include increased muscle strength, improved gait function, and increased cardiovascular fitness ([Thrasher and Popovic, 2008](#)). Tendon transfers have been shown to be successful in enhancing hand and arm function, increasing pinch force, and facilitating independence in ADLs ([Hosalkar, Pandya, Hsu, et al, 2009](#)). Restoration of hand and arm function enables children with SCI to perform self-catheterization and achieve greater independence in personal hygiene.

Exercise is considered an integral part of SCI rehabilitation; exercise may enhance neuroplasticity and decrease further muscle atrophy. Examples of exercise modalities in SCI patients include upper body strength training and hand cycling ([Hosalkar, Pandya, Hsu, et al, 2009](#)).

Administration of pharmacologic agents such as clonidine hydrochloride may improve ambulation in patients with partial SCIs, and exercise therapy through interactive locomotor training has helped some individuals with SCI regain ambulatory function.

A number of orthoses or ambulation aids such as crutches may still be necessary to achieve upright mobility, yet as robotic technology advances, so do the chances for improved mobilization