

External Functional Neuromuscular Stimulation\*

# Spinal NeuroProsthesis™

Spinal Stabilization • Spinal Alignment and Posture Improvement • Pain Management

## Description of the Spinal NeuroProsthesis™

The Spinal NeuroProsthesis is a custom fitted, wearable neuromuscular Vest or Belt that stimulates multiple muscle groups for enhanced rehabilitation of the spine in patients with central nervous system disorders. Neurological conditions can result in weakness or total loss of muscle control, diminished ability to function, muscle spasticity, and chronic pain.

Wearable Therapy Systems enable patients to use NMES (neuromuscular stimulation) and TENS (transcutaneous electrical nerve stimulation) for longer periods of time to maximize the results. These systems are customized in terms of both fit and electrode placement. When donned, electrodes automatically align over muscle groups and stay properly affixed during the day. The BioVest or BioBelt are made with lead wires that are incorporated so the body is free to move.

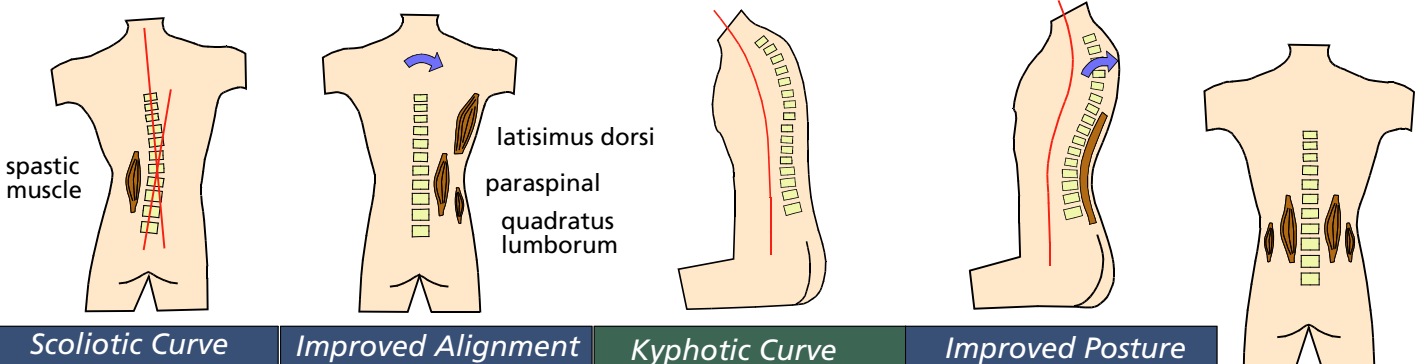
Patients with spinal muscle paralysis can develop both scoliotic and kyphotic curves, postural and stability problems, as well as chronic pain. Neuromuscular Stimulation is a well-known modality for treating these problems.

We evaluate SCI patients individually to ascertain their needs and to develop a plan that appropriately targets muscles that will lead to improved function and symptom relief.

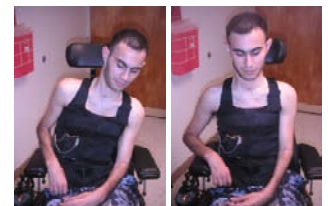


**Indicated in CNS Patients such as:**

- Spinal Cord Injury
- Traumatic Brain Injury
- Cerebral Palsy
- Multiple Sclerosis



Scoliotic Curve One-Sided Spastic Spinal Muscles	Improved Alignment Contralateral Muscles are Stimulated	Kyphotic Curve Paralysis to Erector Spinae	Improved Posture Paraspinal Muscles are Stimulated
Spasticity of the paraspinals can lead to scoliosis when one side is more spastic than the other. Curvatures cause sitting discomfort and imbalance. Paralysis of the abdominals and back muscles removes necessary support to the spine that can lead to spinal degeneration.	Electrical stimulation of the paraspinals, lats or quadratus lumborum is effective at reducing spinal curvature. Contraction of these muscles applies forces that pull the spine into proper alignment and helps relax the spastic muscles.	Paralysis of erector spinae muscle removes the anti-gravity support they normally provide. Without these muscles, kyphosis develops. Depending on severity, kyphosis can compromise heart and lung function.	Electrical stimulation to the paraspinals causes the back to extend. These muscles support the back so that the spine is held erect and forward stability improves. Stim to quadratus lumborum will improve side-to-side stability.



C5-6 SCI wearing BioVest™ to correct his laterally-leaning spine induced by spastic paraspinals on the left.

\* External Functional Neuro-muscular stimulation is an FDA allowed medical device. Sold by or on the order of a physician.