Epidural stimulation has the potential to be a quantum leap forward for the millions living with spinal cord injury. Four young men have already received epidural stimulation during experimental therapy. With the stimulator on, all four could voluntarily move their legs and have also seen dramatic improvements in autonomic functions.*

This groundbreaking work by Dr. Susan Harkema of the University of Louisville (USA) will now be expanded and tested in a clinical study. A special group of patients within this study will be funded using a significant part of the proceeds from the inaugural Wings for Life World Run.

Epidural stimulation is the application of a continuous electrical current to the lower part of the spinal cord. The stimulation is carried out via a little device which is implanted over the dura (a protective coating) of the spinal cord.

A remote about the size of a smartphone controls the frequency and intensity of the electrical current. When the stimulator is on, specific sensory stimulations, combined with intensive training allows paralyzed people to voluntarily move their legs.

A spinal cord injury interrupts the normal signal transmission from the brain to the lower part of the spinal cord. In cases of complete paralysis all functions (e.g. movement of legs) below the injury are lost.

The effect of epidural stimulation is based on the particular capability. The electrical current is supposed to be able to "reactivate the spinal circuits", allowing the residual connection between the brain and the spinal cord to voluntarily control certain leg movements.

WHO MIGHT BENEFIT?

Paraplegic: Complete Incomplete

Tetraplegic: Complete Incomplete

WHAT ARE THE BENEFITS?

- **WELL-BEING**
  - Improvement in sense of quality of life

- **TEMPERATURE**
  - Progress in temperature regulation

- **SEXUAL FUNCTION**
  - Enhancement in sexual function

- **BLADDER**
  - Increase in bladder control

- **MOVEMENT**
  - Progression in certain leg movements

WHAT ARE THE MECHANISMS?

The spinal cord contains complex circuits that are capable of processing information on their own without the need of control from the brain.

The most striking example is reflexes, which are, by definition, involuntary and promote nearly instantaneous movement in response to a particular stimulus. The effect of epidural stimulation is based on this particular capability.

Running for those who can’t: 100% of the entry fees goes to life-changing spinal cord research.

Find a Wings for Life World Run near you and join on May 3, 2015.

*Brain. 2014 May; 137(Pt 5): 1394-409.

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