

## Transcranial Magnetic Stimulation, Electrotherapy, and Neurophysiology For Managing iSCI

### Objective

The study compared the effectiveness of three different treatment options for incomplete Spinal Cord Injury (iSCI), focusing on combinations of repetitive transcranial magnetic stimulation (rTMS), **peripheral electrotherapy**, and kinesiotherapy, evaluated with clinical neurophysiology measurements in patients with iSCI.

### Results

The researchers' results indicate that **peripheral electrotherapy** provides a higher percentage of neurophysiological improvement than rTMS; however, the use of any of these additional stimulation methods (rTMS or peripheral electrotherapy) provided better results than the use of kinesiotherapy alone. None of the patients reported side effects from stimulation, whether rTMS or peripheral electrotherapy.

### Participants and Researchers

The study on the effects of **peripheral electrostimulation** only (Electro group) included 53 patients, while peripheral electrostimulation conjoined with kinesiotherapy (Electro + K group) included 65 patients with confirmed C4 to Th12 spinal cord injury. The study on the application of rTMS only (rTMS group) included 34 patients, and rTMS conjoined with kinesiotherapy (rTMS + K group) included 35 patients with confirmed C4-Th12 spinal cord injury.

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### Methods

The researchers performed an individually adjusted, home-based **electrostimulation (ES)** dedicated to the peroneal and tibialis nerves. The device is a personal, mobile, four-channel stimulator. Patients were given a portable device to take home, the **NeuroTrac Sports XL** (Verity Medical), on which the stimulation algorithm was programmed. They were also given precise instructions on how to use the device. The ES applied to the nerves is more commonly used in the rehabilitation of patients. It is more readily available, less expensive, and more common in clinical use to aid neuroplasticity processes.

The full abstract can be found at <https://pubmed.ncbi.nlm.nih.gov/37189653/>.