

Hospital del Mar leads a pioneering clinical trial on spinal cord electrical stimulation in people with multiple sclerosis

- *The goal is to determine whether combining spinal cord electrical stimulation with occupational therapy can increase patients' ability to use their hands in daily life.*
- *Eighty patients from Hospital del Mar, Hospital Clínic Barcelona, Hospital de Sant Pau, and Erasmus University Medical Center in Rotterdam (Netherlands) will take part.*
- *If the results are positive, this combination of therapies could be implemented immediately.*

Barcelona, 14th November, 2025. – Hospital del Mar is leading an **international multicenter clinical trial** aiming to test whether spinal cord **electrical stimulation** therapy can help people with **multiple sclerosis** regain some control of their arms and hands. The study began this October with the first participants to ensure all procedures function properly, and results could be available in just over a year.

This randomized, double-blind, placebo-controlled (sham) trial will include 80 **people with advanced progressive multiple sclerosis** — 20 from each of the Barcelona centers, Hospital del Mar, Hospital Clínic Barcelona, and Hospital de Sant Pau, and 20 from Erasmus University Medical Center in Rotterdam, the Netherlands. The study is funded by the Dutch Start2Cure Foundation and supported by Fundació GAEM (Group of People Affected by Multiple Sclerosis).

Stimulating the spinal cord

The study will use the SCONE™ (Spinal Cord Neuromodulator) device developed by the U.S. company SpineX, which has already proven effective in treating urinary incontinence in people with bladder dysfunction caused by neurological damage, multiple sclerosis, or stroke. The system consists of two electrodes that deliver electrical impulses to the spinal cord through the skin. The treatment is non-invasive, well-tolerated by patients, and can be performed on an outpatient basis.

In this trial, the stimulation **will be combined with occupational therapy** provided by the Physical Medicine and Rehabilitation teams at Hospital del Mar and Erasmus University Medical Center. For three months, participants will follow this therapeutic program and will either receive or not receive spinal stimulation. The aim is to determine whether this improves control of the arms and hands. **"Stimulation increases movement capacity"**, explains Dr. Pablo Villoslada, Head of the Neurology Department at Hospital del Mar and principal investigator of the study. **"It activates the part of the spinal cord that controls muscles and generates movement, even when the signal from the brain cannot reach due to nerve connection damage"**, he adds.

According to Dr. Anna Guillén-Solà, Head of Section of the Physical Medicine and Rehabilitation Department at Hospital del Mar, **"we know that combining rehabilitation interventions, such as occupational therapy, with neuromodulation can enhance functional recovery in patients with neurological disorders, producing greater improvements in motor function"**

compared to applying each technique separately.” She emphasizes that this association can be especially relevant for upper limb recovery, noting that ***“current evidence supports integrating neuromodulation with occupational therapy to maximize functional recovery.”***

The researchers aim to determine whether this treatment improves quality of life and independence in people with advanced multiple sclerosis — for example, helping them use a mobile phone, wheelchair, or computer, or eat independently — and to assess how long the effects last. Results are expected in just over a year. If confirmed to be effective, this combination of therapies could be implemented immediately, as several approved devices for spinal cord electrical stimulation are already available on the market.

This project is part of the new Brain Diseases and Neuromodulation Center at Hospital del Mar, which collaborates with the Neurology and Psychiatry Departments to treat various brain disorders using neuromodulation tools such as focused ultrasound, magnetic stimulation, gamma stimulation, and deep brain stimulation of the basal ganglia.

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