CSIC, the Catholic University NSA de Paraguay and the National Paraplegic Hospital have developed a system of non-invasive electrical muscle stimulation techniques, preferably for rehabilitation and/or motor compensation applications of people with central nervous system disorders. Industrial partners from the health industry are being sought to collaborate through a patent licence agreement.

*An offer for Patent Licensing*

**Transcutaneous electrostimulation**

An object of the invention is to provide a personal electrostimulation system with high therapeutic efficiency, which delivers energy in a stable manner throughout the treatment, thus increasing the efficiency of electrostimulation therapy.

A further object of the invention is to provide a personal electrostimulation system, which is flexible and scalable to different configurations and applications, such as hybrid configurations, where electrostimulators act in cooperation with robotic devices.

The present invention provides a system based on a network of nodes or transcutaneous electrostimulation units, which allows automatic and dynamic control of the power delivered to an area to be treated, depending on the value of the impedance of the load of the transcutaneous electrostimulation area to be treated.

**Main innovations and advantages**

- Muscle stimulation electrodes and bioimpedance sensors are distributed in a network of wireless nodes controlled from a central controller.
- The system comprises a central controller, and two or more wireless electrostimulation nodes, controllable and configurable from the central controller, where each electrostimulation node comprises at least two connection channels, and where each channel has a pair of electrodes and a bioimpedance sensor.
- Thanks to the impedance of the entire electrode-skin-muscles-electrode assembly being measured, which depends not only on the bioimpedance but also on the electrical characteristics of the skin-electrode interface and the electrode itself, the system allows the repositioning of the electrodes, their reuse and continuous functional movements, without affecting the continuity of the delivered power, and avoiding saturating the energy source.

**Patent Status**

Priority patent application filed suitable for international extension

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