LOW-COST SENSORIZED DEVICE FOR TELE-REHABILITATION

PATENTED TECHNOLOGY

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ABSTRACT

The "Human Robotics" research group at the University of Alicante has developed a sensorised device for the rehabilitation of a body limb (preferably the upper limb).

This device consists of an elastic textile covering and inertial and electromyographic sensors attached to it, with which the patient's improvement will be monitored and evaluated, also allowing to adjust the exercises of simulated games, based on virtual reality and/or augmented reality applications. The system constitutes an integrated rehabilitation tool for people with mobility problems in the upper limb, easy to use and based on user motivation.

The technology, which is protected under patent application, has been developed at laboratory scale and a prototype is available for demonstration. Companies interested in the commercial exploitation of the device are sought.

ADVANTAGES AND INNOVATIVE ASPECTS

TECHNOLOGY ADVANTAGES

The developed device has the following advantages:

- Reduced cost, providing greater accessibility to both individuals and rehabilitation centres;
- Competitive and reliable system;
- Easy portability;
- Ease of use;
- Based on the user's own motivation.

INNOVATIVE TECHNOLOGY ASPECTS

The main innovative aspects of this sensorised device are as follows:

- The use of a low-cost sensorised sleeve, which will make it a more accessible device.
- The application will not require the use of additional sensors and will be able to work with a laptop with webcam.
- Technology that allows individual home rehabilitation from home by the patient.
- Integral tool based on patient motivation (serious-games) and allowing the interface to adapt/adjust based on quantitative metrics of their motor function (fatigue, kinematics of the affected arm, force amplitude, etc.).

MARKET APPLICATIONS

The present invention falls within the field of wearable systems for the rehabilitation of a body member of a user, specifically an arm, although it can also cover the shoulder, chest and back, although it could alternatively be used for the leg.

This rehabilitation system would improve the recovery of the patient's upper limb motor function through adaptive therapy based on quantitative metrics, such as muscle activity, arm kinematics, force amplitude, ranges of motion, etc.

This rehabilitation device could be used by both individuals and rehabilitation centres.

Therefore, this technology would be useful in the fields of smart textiles, wearable systems, rehabilitation systems, tele-rehabilitation and home rehabilitation.

COLLABORATION SOUGHT

Companies interested in acquiring this technology for **commercial exploitation** are sought:

- Patent licensing agreements.
- R&D projects for the application of this technology in other body parts or in the field of sports.
- Proof of concept projects.
- Other related R&D projects.

Company profile sought:

- Companies manufacturing smart textiles or wearable systems for the medical sector.
- Companies manufacturing rehabilitation, tele-rehabilitation and home rehabilitation systems.
- Companies specialising in the development and marketing of medical devices.