

SmartWearable

Pioneering Robotic Rehabilitation

Consortium



Sector

HEALTH

Duration

14
MONTHS

Challenge

Robotics applied to human restoration is knocking on our doors, and Europe as a global industrial power is bound to assert the economic effort made to date in R&D activities. Furthermore, as an ageing region of the world, the development of robotic solutions for human rehabilitation is critical to enhance the life of millions of Europeans.

DIATOMIC Support

DIATOMIC has greatly helped the development of the SmartWearable device, in addition to the economic support, with valuable and up to date advice at a technological as well as market level. Moreover, the monitoring work carried out by the DIATOMIC coaches has been very useful and they have supported us with advice during every different stage of the project.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 761809.

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Timeline

In the Design stage, we started from a previous Project knowledge/prototype of AFO orthosis, and we have redesigned it, mechanically and electronically, into a new design for a new purpose, an Ankle Joint rehabilitation robotic platform.

During the Development stage, our consortium has produced the new hardware and software and has developed a set of new protocols and exercises to restore Ankle Joint mobility. In the final Market stage, we have been researching the market possibilities of the device, and we are currently generating the best strategy to successfully reach the market.

Stakeholders

We have been in contact with doctors, engineers and institutions that are currently using robotic technology on human rehabilitation.

End Users

The targeted end-users of the SmartWearable are patients affected by Acquired brain injury (ABI) that limits ankle joint mobility.

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Key Results

The overall objective of the experiment is to obtain robotics behavioural flexibility that could facilitate seamless integration of exoskeletons and users and enhancement of user's skill acquisition during rehabilitation. SMARTWEARABLE project as well aims to develop and experiment a new smart robot system for lower-limb rehabilitation. The solution is based on a new structure of exoskeleton based on the Exo-H2 rigid actuator (manufacture by Technaid S.L.) adapted to the joint (ankle), an control and monitoring system, and a user interface in the form of a video game, directly communicated with the movements of the user to include rehabilitation exercises and to regulate automatically exoskeleton behaviour to obtain personalized therapies.

Currently, the device is pending for testing in patients.

Impact

Right now, hundreds of studies on robotic rehabilitation therapies are being carried out. We already have experience in supporting some of these researchers and laboratories. With SmartWearable, we are developing a new rehabilitation tool based on all the previously gathered expertise.

The developed device is a pioneer in the rehabilitation industry as it brings robotics to medium sized clinics, and in the medium term, it will allow patients to carry out their therapy at home.

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