

# HOOP

Change the rhythm of your Parkinson's disease. A mobile app and inertial sensors for patients with Parkinson's disease and a website for therapists, enabling remote rehabilitation, communication and monitoring between the two.



## Contact information

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## Technological Offers type

[Technological solutions](#)

## Research and innovation areas

- [Digital Technologies](#), [Artificial Intelligence](#), [Cybersecurity](#), [5G](#), [Robotics](#)
- [Health and Wellbeing](#)

## ODS



**Available from:** 2020

## Where?

[Life Support Technologies](#)

Keywords: | [Parkinson's](#)

## Brief description of the solution and the added value it delivers

Unlike other mobile apps and solutions, HOOP not only features physical, sensory-motor and cognitive exercises, but it also adapts the exercises to the needs of its users, who can choose their favourite songs for exercising, making rehabilitation more enjoyable. Our sensors (worn as a wrist or ankle bracelet) and the website are also hugely important, as they allow medical professionals to analyse users' progress and suggest the next exercises to be done.

## Description of the technological basis

HOOP is a comprehensive m-health solution. It consists of an app for Android mobile phones, a pair of six-axis inertial sensors with a BLE connection and a web portal for therapists and patients.

The app is the interface for the different rehabilitation activities proposed to the patient. Those activities are monitored by action recognition algorithms incorporated in the app, using data transmitted by the inertial sensors. The data are also transferred to the web application and processed there, for continuous monitoring and to allow the patient to manage their own progress. The inclusion of the algorithms with the exercises and the musical metrics, which help to stimulate the patient, represent a step forward in rehabilitation therapy.

## Business needs / application

- Patients have limited access to rehabilitation, due to its cost.
- Therapists are able to monitor patients who live far away from Parkinson's associations, day centres or rehabilitation facilities.

*'Mobile app with at-home rehabilitation exercises for patients with Parkinson's disease, with music and remote monitoring by the rehabilitation therapist'*

## Competitive advantages

- Rhythmic auditory stimulation (RAS) unblocks walking.
- Monitoring and supervision of the patient in an unobtrusive and objective manner.
- Improvement on current conventional therapy and means of early access to rehabilitation.
- We have learnt from users and developed the technology according to their needs. The necessary specialisation involves a steep learning curve compared to other competitors who wish to imitate our solution.

## References

Life Supporting Technologies (LifeSTech) is a UPM research, development and innovation group. Its work is focused on designing, developing, evaluating and enabling ICT-based services and applications for the creation and promotion of new ideas, methods and technological solutions across the value chain of organisations related to health and digital inclusion.

## **Stage of development**

- Concept
- Research
- Lab prototype
- **Industrial prototype**
- Production

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