



CuPiD Press Release

CuPiD is a new 3 year EU project to provide technology-based personalized rehabilitation exercises for people with Parkinson's disease (PD) at home. CuPiD is powered by an eight member consortium led by the University of Bologna. CuPiD will develop and test a combination of services for at home rehabilitation and training of major motor impairments caused by Parkinson's disease.

Parkinson's disease and rehabilitation

Parkinson's disease is a neurodegenerative disorder of unknown cause that particularly affects areas of the brain which are involved in movement control. Because PD is a neurological disorder with progressive disability over time, the merits of rehabilitation have been questioned. In the past two decades, there was a shift due to evidence that the brain affected by PD may be capable of plasticity, and brain activity patterns may be altered with appropriate intensive training. Research studies confirm the value of motor learning in PD, as well as showing improvements as a result of training. CuPiD will develop innovative rehabilitation based on new technology, the patient's needs, the principles of motor learning in PD. CuPiD will contribute to the challenge of engaging patients with a chronic neurodegenerative disease in intensive exercise for a considerable length of time.

Rehabilitation at home with biofeedback

CuPiD will provide a ground-breaking home-based personalized rehabilitation tool for patients with PD. The CuPiD service will employ wearable sensors, audio biofeedback, virtual reality and external cueing to provide intensive motivating training that will be suited to the patient and will be monitored remotely by experts to provide the best care while decreasing the burden of transport to a rehabilitation centre.

The CuPiD trials

The CuPiD project will include 2 long term trials each lasting approximately 10 weeks and consisting of 30 PD patients. CuPiD's Israeli and Belgian clinical partners will be responsible for this area of the project.

The CuPiD Services – training at home

CuPiD aims to promote patients' independence of training in their own homes. In order for the training to be effective, the system will monitor and record remotely the patient's activity and training with supervision by clinical specialists.

In particular, CuPiD proposes three possible services:

- 1) Virtual Reality system that delivers different simulations.
- 2) Provision of external cues to avert freezing of gait.
- 3) Portable biofeedback device for training of daily living activities.

Expected outcomes

This is the first time that such a diverse and comprehensive training has been proposed for patients with PD in the home setting. The outcomes of this project will establish the feasibility and efficacy of a closed-loop based rehabilitation protocol. The project will make a critical contribution to self-directed rehabilitation in PD and enhance the field of non-pharmaceutical intervention. The CuPiD consortium will design, develop and field test services for at home rehabilitation and training of major motor disabilities caused by PD; CuPiD will deliver the following components:

- 1) Clinical guidelines for developing tailored rehabilitation programs
- 2) A home-based rehabilitation system (wearable sensor and local processing)
- 3) Telemedicine infrastructure for remote supervision of rehabilitation.

For more information go to www.cupid-project.eu