LdV

RoboReha

Robotics in Rehabilitation

Lifelong Learning Programme

Leonardo da Vinci

Transfer of Innovations

Lifelong
Learning
Programme

Project RoboReha

RoboReha project is realized under the Lifelong Learning Programme Leonardo da Vinci - Transfer of Innovations and is funded with support from the European Commission.

The main goal of the project is to create educational materials in the field of robotics rehabilitation for further training of rehabilitation workers.

The main aims of the project are specified as follows:

- Create teaching-training materials in e-learning form in thefield of robotic rehabilitation.
- Implement RoboReha educational system into vocationaltraining system of medical staff.
- Support the training of medical staff.
- Increase educational level of rehabilitation staff based on the latest trends in the world.
- Allow building of career development - lifelong learning.
- Develop a platform with virtual models for virtual rehabilitation.
- Improve the healt care of the patients.

Project partners

Technical University of Kosice

Project coordinator

Technical University of Kosice has 9 faculties and caters for a wide range of educational needs not only in the East-Slovak region, but throughout Slovakia, in many specializations it is the only centre of education and research in this area.

www.tuke.sk

Renona Rehabilitation

Renona Rehabilitation Centre deals with treatment of adults and children, is focused on the treatment of musculoskeletal disorders and diseases related to the central nervous system.

www.renona-rehabilitation.com

Secondary Health School

Secondary Health School in Kosice is dedicated to the education and training of health workers with secondary education, full secondary education and higher education.

www.kukucinka.stranka.info

Friedrich-Wilhelm-Bessel-Institut

FWBI is a research company located in Bremen. FWBI closely cooperates with universities and industrial partners in the projects from various technical areas including robotic rehabilitation.

www.fwbi-bremen.de

Industrial Research Institute for Automation and Measurements - PIAP

PIAP is focused on scientific research and development in various technical areas such as robotic, automation and robotic rehabilitation. PIAP is cooperating with scientific organizations from European Union as well as from USA.

www.piap.pl

Institute of Medical Technology and Equipment ITAM

ITAM is a leading research and development institution operating in the field of medical technology in Poland. Institute developed a significant amount of original and innovative solutions used in health care institutions.

www.itam.zabrze.pl

Upper Silesian Rehabilitation CenterRepty

Center Repty is a unique specialized rehabilitation center in Poland, is focused on rehabilitation of patients with cardiac, neurological and trauma-orthopedic diseases.

www.repty.pl

RoboReha Education System

RoboReha education system consists of two parts:

- **E-learning course**
- **Virtual Models Platform**

RoboReha education system is accessible via the Internet at:

http://roboreha.sjf.tuke.sk/moodle/

RoboReha e-learningový course

RoboReha e-learning course is created in Moodle environment and consists of the following lessons:

1. **Introduction to the rehabilitation**
2. **Rehabilitation for lower limbs**
3. **Rehabilitation for upper limbs**
4. **Robotic rehabilitation devices**
5. **Overview of robotic rehabilitation devices for lower limbs**
6. **Overview of robotic rehabilitation devices for upper limbs**
7. **Programming and control strategies of a rehabilitation robot**
8. **Trends in robotic rehabilitation**
9. **Examples, specific applications and videos of existing robotic rehabilitation devices**
10. **Safety of robotic rehabilitation devices**
11. **Advantages / disadvantages of robotic rehabilitation devices**

Virtual Models Platform

Virtual Model Platform is a platform for the implementation of rehabilitation in a virtual environment.

It is virtual rehabilitation, which operates on the basis of virtual reality. It is form of games – what makes patients more motivated to participate in their rehabilitation process.

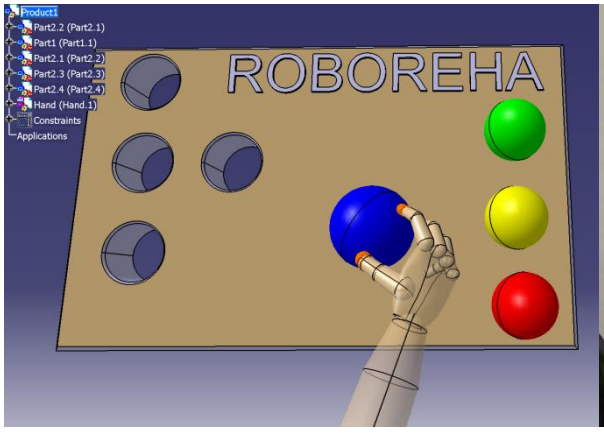
Rehabilitation in virtual reality creates a feedback loop between a patient performing rehabilitation exercises and a physical therapist. In real time the physical therapist can monitor the patient's performance and adjust parameters of current "gamified" exercise to match the patient's individual recovery needs.

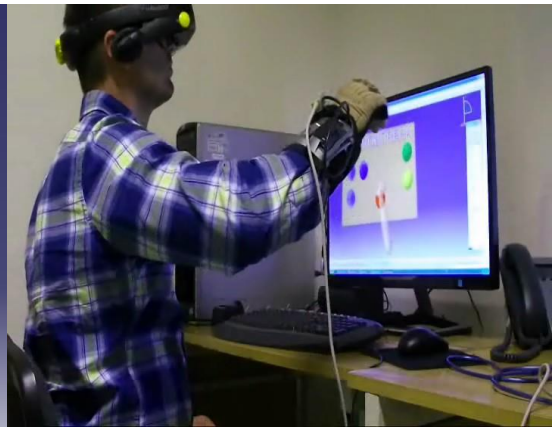
Each exercise can be personally customized tomeet the specific requirements of the patient. Allthe task customizations can be done in real time -while patient isplaying.

The purpose of virtual rehabilitation is to support functional therapy forpatients who have lost the function of or have restrictedfunction in their body or cognitive functions caused bycerebral, neurogenic, spinal, muscular or bone-relateddisorders.

Within the RoboReha project there was established virtual models platform, enabling rehabilitation in virtual reality. There are created are two unique solutions of virtual rehabilitation, namely:

- **Mobile platform for virtual rehabilitation**
- **Rehabilitation based on utilization of virtual data glove CyberGlove II**





For more information please contact:

Project Coordinator:
prof. Ing. Mikuláš Hajduk, PhD.
Technical University of Kosice
Department of Robotics
Park Komenského 8
042 00 Košice

www.sjf.tuke.sk/kvtar/roboreha
mikulas.hajduk@tuke.sk

This project is funded with support from the European Commission. This publication represents only author´s opinion and the European Commission or the National Agency is not responsible for any of the information contained in this publication.