

Research Centre IMES Institute of Mechanical Systems, IPT Institute of Physiotherapy

T-CHAIR: new rehab device to stabilise the trunk while sitting

The T-CHAIR is a robotic rehab device for stroke patients to regenerate the trunk musculature and improve balance while sitting. The indispensable kinetic analysis of the 3D movement of the trunk was performed in cooperation with the Institute of Physiotherapy in their movement analysis laboratory. The chair (T-CHAIR) is being developed by IMES Institute of Mechanical Systems and tested in a user-study with the rehabilitation clinic in Valens.

A European follow-up project with partners from Belgium started in December 2017, financed under the EU “Eurostars” programme. Through this, the technology will be further developed and brought to market maturity.

Starting Position

Until now, robotic rehabilitation after stroke has been used primarily for the upper and lower extremities. There are only a few aids for the regeneration of the trunk and back musculature.

Objective

To develop a therapy device to activate and regenerate the trunk musculature while in a sitting position.

Methods and Procedures

A natural 3D kinetics of the sitting position, allowing a physiological movement to mobilise the pelvis and spinal cord, was developed in a movement laboratory analysis. These kinematics are now integrated into

the therapy chair.

Results

Together with the rehabilitation clinic in Valens, a user-study using the first prototype will be carried out.

Publications and Reports

Kuster, Roman; Gossweiler, Lukas; Bauer, Christoph; Baumgartner, Daniel; Geert, Verheyden(2015). Novel Trunk Training Device for Patients early post Stroke, International Conference on Recent Advances in Neurorehabilitation, Valencia, Spain: ICRAN

Project partners

Clinics Valens & Walenstadtberg
rotavis AG

Project Leadership

Prof. Dr. Daniel Baumgartner
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Project duration

2015 - 2018

Project Team

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Funding

Commission for Technology and Innovation (CTI)

Project Status

Completed

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