Zurich University
of Applied Sciences

School of
Health Professions

Physiotherapy Science Research Unit

ExerUP!: Design and Evaluation of a Digital Exergame-Based Solution for Effective and Attractive Sports Rehabilitation

Exergaming combines physical exercise with entertaining, motivating, and challenging games. The ExerCube offers optimal physical and cognitive challenges which could also benefit sports rehabilitation. In this study, we explore the potential of the ExerCube during rehabilitation after knee injury.

Background

Whether in prevention or rehabilitation – new technologies are revolutionizing the traditional offering of customized solutions for a beneficial and future-oriented range of digital training and therapy services. In this context, the design for and with the end-users and stakeholders, as well as questions about the optimal design of high-quality, attractive, and effective tools take on a central role.

Objectives

The goal of this project is the research-based and user-centered co-creation of immersive, digital exergame scenarios that are safe to perform during rehabilitation after knee injury. Further, the potential of digitized training and rehabilitation in home and therapeutic settings will be explored.

Methods

The project will be structure into five work-packages (WPs):

WP1: Motor performance during ExerCube training

The goal is to identify movement patterns that are known risk factors for knee injuries occurring during ExerCube training in healthy and injured athletes. The biomechanics of the athletes during training with the ExerCube will be analysed in the movement laboratory at ZHAW.

WP2: User requirements for rehabilitative ExerCube use

The expectations and demands of the future users of the ExerCube in a rehabilitative setting (athletes, physical therapists, sports physicians) will be assessed following user-centered design principles.

WP3: Rehabilitation specific motivating workout scenarios for the ExerCube

Incorporating both the results of WPs 1 and 2, rehabilitation specific workout scenarios will be explored and implemented in collaboration with developers at Sphery Ltd as well as game researchers at ZHdK.

WP4: Efficacy and attractiveness of the ExerCube training during rehabilitation

The exergame scenarios developed in WP3 will be examined for their efficacy and attractiveness to improve both physical and cognitive performance during rehabilitation after knee injury. Both the ExerCube as well as the @home version of the ExerCube will be utilized.

WP5: Public outreach and dissemination

After completion of the R&D work, all project partners will jointly disseminate the results to health professionals, therapists, educational institutions as well as the general public.

Project Management
Dr. Eveline Graf

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Project team

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