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RESEARCH IN REHABILITATION TECHNOLOGY: ARE WE DOING THE RIGHT THINGS?

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Until recently, medical technology and also Rehabilitation Technology were developed with the primary aim of improving the quality of diagnostics and therapy. This development was and is strongly supply oriented, but it has certainly led to an improvement in the quality of healthcare.

In the coming decades, there will be a growing need for care for people with chronic diseases. At the same time, people coping with disabilities strive for autonomy and social participation. This strive is one of the core fundaments of Rehabilitation Medicine as it aims to improve functions and skills of patients with disabilities caused by congenital or acquired disorders, to optimize their self-management and to maximize their autonomy and ability to participate in social activities. In this context, the proposed definition of health by M. Huber: The ability to adapt and self-manage in the face of social, physical and emotional challenges of live, fits very well into this vision.

New technical innovations within rehabilitation such as active training devices (robotics, gaming, virtual reality), active assistive devices (prostheses, exoskeletons, orthoses), monitoring and tele rehabilitation can actually improve the person's abilities to remain independent. Technical improvements in sensors, actuators and artificial intelligence in these devices make them more and more functional when augmenting the human body. The interaction between the adaptive capabilities of a person and the adaptive capacities of the device will define the level of functional capability.

However; is research and development in Rehabilitation Technology really patient/user driven? Aren't we still mainly doing research from a technical driven focus. Why are we trying to improve the original while at the mean time we know that this is only be the future for a few. Why is our research population often not representative for the rehabilitation population? Why are our assessments often not representative for actual use of devices. And what about for example orphan devices?

In this presentation some developments in Rehabilitation Technology will be discussed with these questions in mind. **Are we doing the right things?**

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INTEREST OF TELEREHABILITATION FOR SUBJECTS AFTER STROKE

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Most people with stroke require high-intensity multidisciplinary therapies for optimal recovery in the acute and subacute phases. Rehabilitation is also needed in the chronic phase to maintain cognitive and motor skills and physical activity levels. Unfortunately, even in developed countries, this rehabilitation is not intensive or prolonged enough.

Telerehabilitation, defined as the delivery of rehabilitation services using information and communication technologies, offers a promising approach to extend and intensify stroke rehabilitation at a distance. A recent Cochrane review (Laver et al., 2020), which included 22 trials with a total of 1937 participants, found no difference between telerehabilitation and face-to-face rehabilitation for activities of daily living, with low certainty of evidence. According to current guidelines, telerehabilitation programmes should include: supervised self-rehabilitation, therapeutic education, remote assessment and a communication system between the individual and their therapist.

Our team recently conducted a clinical feasibility study to evaluate the usability, adherence and satisfaction of a telerehabilitation programme in inpatients and outpatients after stroke. This programme was delivered through an mhealth application called TeleRe-app, using the REApad platform.
TeleRe-app showed excellent usability and high satisfaction. Adherence was lower than expected, but participants increased their physical activity by an average of 60 minutes per week.
The UEMS Physical and Rehabilitation Medicine Section expects telerehabilitation to play a key role in rehabilitation in the future. They recommend that PRM doctors gradually incorporate this technology into their clinical practice. Following a Delphi process, they provide guidelines to help clinicians implement telerehabilitation (Zampolini et al, 2024).