Symposium Title:
From lab to life: Can we use rehabilitation technology to increase time-on-task and is there an added value of using rehabilitation technology to real life performance?

Organizer:
Prof. Anke Van Bladel; Department of Rehabilitation Sciences, Ghent University, Belgium; Anke.vanbladel@ugent.be

Symposium Description:
This symposium includes four speakers. MSc. Marjan Coremans will start by discussing the importance of task-specific training and dose of training. She will reflect on how dose is often poorly reported as "therapy time," including rest periods. Next, she will explain how she calculated Time-On-Task in an intensive rehabilitation program integrating advanced technology in adults with neurological disorders and she will share findings from this study. Prof. Noël Keijsers and Prof. Anke Van Bladel will seek to address the critical need for translational research and will explore effects of using rehabilitation technology on real life performance. During their talks they will debate the ecological validity of advanced training labs and the relevance to independence and participation in different populations including people with an incomplete spinal cord injury and persons with stroke. Finally, MSc. Lotte Hagedoorn will discuss the design and preliminary results of a multicenter proof-of-principle study involving a single session of perturbation-based training followed by a novel home-based exergame training program.
The session will conclude with a discussion on three topics: 1) Do we need rehabilitation technology to increase Time-On-Task? 2) How can we bridge the gap between controlled lab-based training and real-world ambulation to ensure scalable solutions that promote greater independence and participation in daily life for individuals with neurological impairments? and 3) Which criteria should be prioritized when selecting outcome measures in research performed in advanced labs to ensure they accurately reflect functional performance and ecological validity?

Rationale and relevance of Symposium:
Successful ambulation requires stepping, dynamic stability, and walking adaptability. Functions that are often impaired as a direct consequence of neurological disorders. These impairments compromise safety in home and community settings, hampering independence in daily situations and participation in social activities. Rehabilitation technology is increasingly used in persons with neurologic disorders to enhance motor control and cognitive processes while fostering motivation through engaging environments. Integrating rehabilitation technology with an instrumented treadmill offers the possibility of providing goal-oriented, repetitive and task-specific training targeting all three aspects of gait. This symposium will discuss challenging topics of using rehabilitation technology in daily clinical practice.

Learning Objectives:
1. How to determine actual therapy dose considering the multidimensional character of therapy time.

2. What are the effects of gait adaptability interventions on functional performance of persons with neurological disorders.
3. How to use exergames at home to prevent falls and fall-related injuries.

Proposed Speakers & Presentations:
1. Marjan Coremans (MSc., KU Leuven, Department of Rehabilitation Sciences, Leuven, Belgium; Vrije Universiteit Brussel (VUB), Interuniversity Centre for Health Economics Research and Research Centre for Digital Medicine, Department of Public Health, Brussels, Belgium.

Doctoral researcher at KU Leuven and VUB, specialising in intensive rehabilitation integrating advanced technology for patients in the chronic phase of neurological disease. Expertise in clinical trial design, health economics, and process evaluation.

Determining dose in motor rehabilitation integrating advanced technology for adults with chronic central neurological disease: observational measurement of Time On Task

2. Noël Keijsers (Dr., Department of Rehabilitation, Radboud University Medical Center, Donders Institute for Brain, Cognition and Behaviour, Nijmegen, The Netherlands; Department of Research, Sint Maartenskliniek, Nijmegen, The Netherlands; Department of Sensorimotor Neuroscience, Radboud University, Donders Institute for Brain, Cognition and Behaviour, Nijmegen, The Netherlands.)

Professor Clinical Motor Control at the Radboud University Nijmegen with expertise in research addressing the control and biomechanics of gait in patients with complex gait problems.

Efficacy of Walking Adaptability Training and conventional training on Walking Capacity in Ambulatory People with Motor Incomplete Spinal Cord Injury: A Multicenter Pragmatic Randomized Controlled Trial
3. Anke Van Bladel (Dr., Department of Rehabilitation Sciences, Ghent University, Ghent, Belgium; Department of Physical and Rehabilitation Medicine, Ghent University Hospital, Ghent, Belgium; Department of Rehabilitation Sciences and Physiotherapy/Movant, University of Antwerp, Antwerp, Belgium)
Prof. Neurorehabilitation at the Ghent University and University of Antwerp, Clinical researcher at the Smart Space group of the Ghent University Hospital aiming to examine effects of rehabilitation interventions and underlying mechanisms of movement behaviour.

The added value of training gait stability on an instrumented treadmill in persons with a brain lesion.

4. Lotte Hagedoorn (MSc., Radboud University Medical Center, Nijmegen, The Netherlands)
PhD candidate at the Department of Rehabilitation, Radboud University Medical Center, specialising in home-based reactive balance training for patients with stroke.
Home-based exergaming for enhancing resistance to falls after stroke (HEROES): proof-of-principle evaluation.