

Symposium Title:

Rehabilitation approaches to improve real-life use of the upper limb across all phases after stroke

Organizer:

Dr. Janne Veerbeek, Clinic for Neurology and Neurorehabilitation, Lucerne Cantonal Hospital, University teaching and research hospital, and University of Lucerne, janne.veerbeek@luks.ch

Symposium Description:

Upper limb rehabilitation after stroke has traditionally been grounded in the assumption that improving the physical capacity and functional skills of the affected limb will automatically lead to improvements in daily life functioning (performance). However, emerging research has demonstrated that this assumption does not always hold true. While restoring the ability to execute basic motor tasks is important, the true measure of rehabilitation success lies in the real-world application of these abilities—specifically, how individuals use their upper limb in everyday life. This distinction is critical, as patients may experience improvements in motor function or strength, but these may not necessarily translate to everyday tasks in their own environment.

The three presentations will provide valuable insights into the application of rehabilitation approaches to enhance real-life use of the upper limb across the entire stroke recovery spectrum—from the acute to chronic phases. Each presentation will bring a unique perspective on improving upper limb performance. It highlights the integration of innovative evaluation techniques and rehabilitation strategies that can better guide clinicians in developing individualized treatment plans to maximize real-world upper limb use and improve patient outcomes.

In the first presentation, results of a proof-of-principle study in (hyper)acute stroke patients will be shared. The main aim of this work was to determine the impact

of visuospatial neglect on the strength of the association between upper limb motor function and upper limb performance.

In the second part, examples and results of research that includes wearables to stimulate upper limb use and movement in sub-acute stroke patients will be presented.

The third presentation will present findings from providing a tailored and adapted version of the Home-Graded Repetitive Arm Supplementary Program (H-GRASP) for people in the chronic phase after stroke.

Rationale and relevance of Symposium:

The relevance of this symposium lies in its shift from a purely capacity-focused model of rehabilitation to one that prioritizes real-life performance outcomes. By focusing on the actual use of the upper limb in everyday life, rehabilitation can be more closely aligned with patients' goals and real-world needs. The symposium will showcase approaches aimed at improving upper limb performance, addressing the gap between clinical improvements and practical, everyday function. The session will also underscore the need for a multi-dimensional evaluation of recovery, moving beyond traditional outcome

measures to include performance assessment by capturing patient-perceived experiences, daily life observations, and sensor-based technologies.

Learning Objectives:

- 1.** To recognize the importance of treating both upper limb motor functioning and visuospatial functioning when aiming for improving upper limb performance in the (hyper)acute phase after stroke.
- 2.** To understand the possibilities and potential added value of wearables in triggering use and movements of the affected arm in daily life activities.
- 3.** To learn about the H-GRASP program and possible adaptations for targeting perceived and actual daily-life upper limb performance in the chronic phase after stroke.

Proposed Speakers & Presentations:

- 1. Speaker 1:** Dr. Janne Veerbeek, Clinic for Neurology and Neurorehabilitation, Luzerner Kantonsspital, University teaching and research hospital, and University of Lucerne, Lucerne, Switzerland

Presentation Title: Impact of neglect on the relationship between upper limb motor function and upper limb performance in the (hyper)acute poststroke phase

- 2. Speaker 2:** Dr. Hans Bussmann, Rehabilitation Medicine, Erasmus MC, Rotterdam, the Netherlands

Presentation Title: Wearable-based stimulation of upper-limb use in the subacute stage after stroke

- 3. Speaker 3:** Prof. Geert Verheyden, Department of Rehabilitation Sciences, KU Leuven, Leuven, Belgium

Presentation Title: The adapted H-GRASP program for perceived and actual daily-life upper limb activity in the chronic phase post-stroke