

Symposium Title:

From neural mechanisms to clinical strategies: A multidisciplinary perspective on neural rehabilitation

Organizers:

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Symposium Description:

Discover the latest advancements in integrative neural rehabilitation during this focused symposium, where experts will discuss how insights on the interplay between cognition, perception, and movement can foster comprehensive rehabilitation across disciplines. The first talk by Dr. Ruitenbergh will address the critical links between cognition and movement in the context of Parkinson's disease. She will discuss the effects of dopaminergic medication on these functions based on pharmacological work. In addition, insights from neuroimaging work that implies the involvement of both cognitive and motor process in impulse control problems in PD are presented. In the second talk, Dr. Moudjian will discuss insights gained from the application of auditory-motor coupling paradigms in people with multiple sclerosis (MS) and cerebellar impairment, and how these insights can inform rehabilitation strategies. She will present behavioral and neurophysiological data to elucidate how the intricate link between perception and action occurs within these paradigms, and how it can be leveraged towards personalized therapeutic approaches for people with neurological conditions. In the third talk, Aarts, MSc will introduce an innovative preventative intervention for cognitive functioning in MS, comprising both exercise and cognitive training. He will discuss the design of this personalized intervention program, and present the outcome measures which include quality of life, cognition, psychological functioning, as well as structural and functional brain changes. In addition, he will present an update on the status of this study that is currently ongoing. The session concludes with a talk by Dr. Donkers, who will present insights from a series of recent interventional studies on functional rehabilitation in MS. She will present a compelling case for adopting a multidisciplinary approach to transform rehabilitation practices to advance care and improve quality of life for people with neurological disorders.

Rationale and relevance of Symposium:

This symposium on multidisciplinary approaches to neural rehabilitation is inspired by the complex nature of neurological disorders, which affect multiple functional domains and require diverse expertise for effective treatment. Current research underscores the importance of combining insights from neuroscience, psychology, movement sciences and physical rehabilitation to develop integrative rehabilitation strategies. The timing of this symposium aligns with a growing recognition of the need for personalized care and the increasing prevalence of neurological conditions globally. By promoting dialogue and sharing insights, the symposium can foster the translation of research findings into clinical practice, ultimately leading to more effective care for patients.

Learning Objectives:

1. Understand how the domains of cognition, perception, and movement are strongly linked.
2. Explore recent advances to integrate multiple domains into interventional studies.
3. Identify how a multidisciplinary approach can advance comprehensive care and improve quality of life in people with chronic neurological conditions.

Proposed Speakers & Presentations:

1. Marit Ruitenbergh, PhD (Leiden University)
Presentation Title: Cognition and movement in Parkinson's disease: A dynamic duo
2. Lousin Moumdjian, PhD (University of Hasselt and Ghent University)
Presentation Title: Auditory-motor coupling in neurological rehabilitation: Perception-action loops, neural correlates, and methodological paradigms
3. Jip Aarts, MSc (Leiden University)
Presentation Title: Combining exercise and cognitive training to postpone cognitive decline in people with Multiple Sclerosis: Study protocol and preliminary results of the Don't be late! project
4. Sarah Donkers, PhD (University of Saskatchewan)
Presentation Title: Integrating shared multidisciplinary knowledge to advance participation in meaningful life tasks in real-world environments for people with chronic neurological conditions of the central nervous system