

Workshop Title:

Measuring wheelchair performance and propulsion technique - the added value in clinical practice

Organizer:

Lode BV, RuG, VU (Vrije Universiteit Amsterdam) and Reade

Speakers:

Sonja de Groot, Associate Professor bij Vrije Universiteit Amsterdam & Senior Researcher at Reade

Rowie Janssen, PhD Student at University Medical Center Groningen (UMCG)

Jelmer Braaksma, PhD in Human Movement Sciences, UMC Groningen

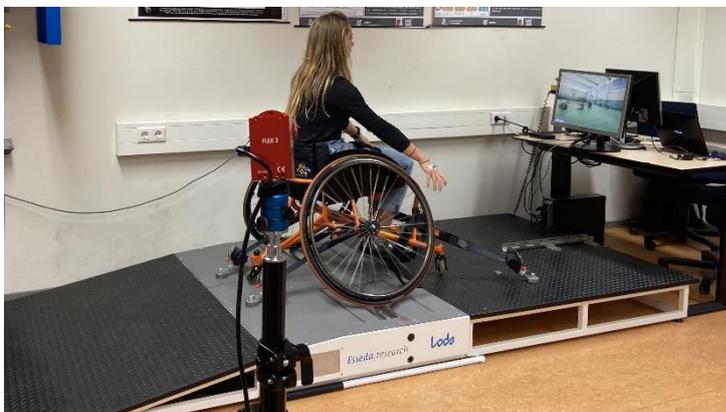
Riemer Vegter, Assistant Professor Human Movement Sciences (UMCG) / Young Academy Groningen

Attendees Engagement:

The participants will be challenged to participate actively in a discussion about the interpretation of measurement data and the implementation of this data in the clinical rehabilitation.

Abstract:

Wheeled mobility is of crucial importance to a growing population of lower-limb impaired and often ageing individuals worldwide. The vast majority of this population in the Western world will use hand-rim wheelchairs. Upper-body exercise, especially hand-rim propulsion, is far more straining and less mechanically efficient than leg work. This low efficiency, together with the often low physical capacity of the user, leads to high physical strain in daily life and, subsequently, a limited radius of action. Furthermore, hand-rim wheelchair propulsion often leads to upper-body overuse complaints. To prevent overuse injuries and to obtain and maintain mobility and develop an active lifestyle, both wheelchair and user must be in the best condition. Moreover, the wheelchair-user interface needs to be ergonomically tuned to the best wheeling performance for the specific individual.



With the Lode Esseda wheelchair ergometer we can evaluate the wheelchair performance and propulsion technique of the wheelchair users in their own wheelchair. The most commonly used indicators of the wheelchair performance are the anaerobic and aerobic capacity. Both components can be measured on the wheelchair ergometer in a standardized, but individualized way. By doing so,

results of participants can be compared within as well between them. Furthermore, the propulsion technique (i.e., timing and force application) can be measured as well on the wheelchair ergometer. The effect of changes in the wheelchair-user interface (e.g., different seat height or rim) can be evaluated by the propulsion technique. Additionally, to reduce the risk of shoulder pain, potential propulsion technique parameters can be identified that should be changed. After a brief introduction about the history of Dutch wheelchair research and the development of the Lode Esseda wheelchair ergometer, the tests to determine (an)aerobic capacity and propulsion technique will be performed live and analyzed together with the audience.

