

Abstract Groningen Lecture in Movement Sciences (GLMS)

Date & location: 20 January 2020, 3.00-4.00 PM, Faberzaal

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Human Locomotor Learning: From Adaptation to Rehabilitation

Motor skill acquisition is the basis of a broad class of rehabilitation interventions for people post-stroke, individuals with spinal cord injury, and people with Parkinson's disease. However, although there is a rich literature examining motor skill acquisition in tasks that involve the upper extremities, questions remain about the factors that influence skill acquisition in behaviors such as walking. Here, I will share recent work addressing two important aspects of skill learning during human walking. First, I will highlight a series of studies that seek to identify how energetic cost and dynamic balance interact to regulate how healthy individuals and people post-stroke choose to walk. This work has direct implications for gait rehabilitation and may also apply to other populations known to have gait asymmetries such as amputees or people with Parkinson's disease. Second, I will share our recent work developing novel approaches for locomotor training that use immersive virtual reality to enhance skill acquisition and promote the transfer of learning to the real world. These interventions leverage recent advances in game design, interactive technology, and motion capture to allow multiple patient populations to practice advanced walking skills such as turning and obstacle negotiation in a safe, interactive environment.