

Understanding gait deviations and improving walking function through neuromechanical experiments and simulations.

Groningen Lectures in Movement Sciences

Dr. Tom J.W. Buurke

Department of Human Movement Sciences, UMCG

Department of Movement Sciences, KU Leuven

Abstract

Locomotion is essential in human life to perform activities of daily living and to maintain independence in modern society. Therefore, the loss of walking function, due to ageing, disease or injury, may lead to a decreased quality of life or social isolation. To improve walking function, we need a fundamental understanding of human locomotor control and the origin of gait deviations. In this talk, neuromechanical approaches to understand gait deviations and to improve walking functions will be discussed. Results of experimental studies on the control of walking and balance are combined with state-of-the-art in-silico predictive simulations of human walking, which allows us to elicit causal relationships between underlying deficits and gait impairments. Finally, it will be discussed how these results can be used to improve walking function in clinical populations, for instance by developing novel intervention approaches and optimizing assistive technology.

About the speaker

Tom Buurke is an assistant professor at the Department of Human Movement Sciences in the UMCG and a research fellow for Research Foundation Flanders (FWO) at KU Leuven. He is specialized in combining principles from biomechanics, neural control and muscle physiology to human locomotion. In his research, he aims to understand gait deviations and to improve walking function in clinical populations.