



PhD in Biomedical Sciences

Research Area: Health Sciences

Title: Fractal-based gait training in older adults: implications to motor control and neuroplasticity

Walking synchronized to external cues is a common practice in clinical settings and a promising tool in gait rehabilitation. Typically, an isochronous (ISO) metronome is used to improve gait-related deficiencies; however, this approach neglects important aspects of gait, particularly, the natural stride-to-stride fluctuations (i.e., complexity) present in healthy gait. Interestingly, recent approaches have shown that incorporating a variable fractal-like (FRC) metronome structure acutely restores gait complexity in older adults. While walking to a FRC metronome leads to the restoration of gait complexity and adaptability in human walking, the brain mechanisms that enable the reinstatement of gait complexity remain poorly understood. I aim to address such crucial gap to progress to clinical application of this rehabilitation method. Therefore, the main purpose of this project is to investigate how different temporally structure metronomes lead to changes in the corticospinal drive and brain activity at an acute and chronic level in older adults.

Keywords: Gait Rehabilitation; Ageing; Neuroscience; Falls Prevention; Dynamical Systems

Publications (doi)

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