

Supplement: Gait Disorders in Alzheimer's Disease and Other Dementias

Journal of Alzheimer's Disease

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Gait impairments are ubiquitous in Alzheimer's disease (AD) and in related dementia syndromes. Although the main clinical hallmark of dementia is cognitive decline¹, motor disorders have been commonly described in later stages of dementia and include bradykinesia, extrapyramidal rigidity, and gait disorders such as cautious gait or gait slowing¹⁻³. However, during the last two decades, large epidemiological studies have shown that motor disorders, and specifically gait disorders, may be present at an early stage of dementia^{4,5}.

Specifically, in older adults with mild cognitive impairment (MCI), there is an early coexistence of specific cognitive deficiencies and gait abnormalities providing support to the theory that there is a transition period whereby cognitive loss occurred concurrently with gait slowing⁶⁻⁸. Similarly, emerging evidence shows that people with MCI are also at higher risk of falling compared with age-matched controls^{9,10}.

Recently, it has been shown that gait can be used as a motor marker to help to detect individuals progressing to AD and non-AD dementias^{11,12}. From a mechanistic perspective on cognitive-mobility interactions in dementia syndromes, brain functional and structural abnormalities including insufficient brain activation, atrophy of cortical and subcortical structures, reduced cerebral circulation and accentuated depletion of neurotransmitters are considered key provokers of cognitive and motor impairments^{13,14}. Treatments aiming to repair underlying neural mechanisms of high order cognitive functioning are limited, but they have demonstrated some potential to improve both cognition and mobility in seniors, particularly with AD and other neurodegenerative processes. Due to the complexity of cognitive-motor interactions, multiple interventions may be necessary to restore or decelerate the decline of cognition and mobility seen in MCI, AD and related dementia syndromes. Finally, pharmacological and non-pharmacological strategies to improve cognition and gait mobility in seniors with MCI and AD are becoming increasingly available for various therapeutic approaches, including cholinergic enhancement, cognitive remediation, electrical brain stimulation, dual-task training, and physical exercises.

The aim of this supplementary issue of the *Journal of Alzheimer's Disease* is to present the current state of the art research in addressing the role of gait disturbances and quantitative gait analyses as means to be used as a motor biomarker to define subtypes of cognitive profiles, prediction of cognitive decline and dementias; and to improve our knowledge in the mechanisms underlying these associations, and to explore potential emerging treatments for cognitive and motor decline in aging and dementias.

Potential fields of research covered in the special issue include (but are not limited to):

- a) Clinical description of gait disturbances in the spectrum of cognitive decline and dementias.
- b) Imaging studies showing the relationship between gait performance, cognitive performance or progression to dementia syndromes.
- c) Interventions studies improving gait and cognition using pharmacological and non-pharmacological interventions (cognitive training, exercise, brain stimulation) to improve gait and reduce risk of falls in dementia syndromes.

With your agreement to take part, we would request you to submit an abstract to the guest editors' email (mmontero@uwo.ca), in advance of any manuscript submission. After that, all contributors should format their articles as per the "instructions for authors" (<http://www.j-alz.com/prep/>) and submit the manuscripts to our online submission site.

Authors should specify in their cover letter that their manuscript is for the special issue and mention the lead editor's name.

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