

Challenges of mobility aids and dementia explored

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Physical Therapy professor Susan Hunter's work represents a shift in thinking about fall prevention for individuals with dementia. She is challenging current rehabilitation practice by seeing the use of mobility aids, such as canes or walkers, as a far more complex cognitive task than previously believed. Credit: University of Western Ontario

It seems counterintuitive that the use of a mobility aid, such as a cane or a walker, can actually increase the risk of falls in older adults. Yet in individuals with dementia, that's exactly the case. In fact, people with dementia are three times more likely to suffer a fall when using a mobility aid versus not using one at all.

"One of the theories is that having to use a mobility aid is multi-tasking," Physical Therapy professor Susan Hunter explained. "Using a mobility aid means you need to have a lot more cognitive finesse and capacity to use the aid; you need to be able to maneuver around obstacles."

Hunter often makes a comparison with texting and driving. "How many things can you do at the same time and not cause an accident?"

Previous research completed by Hunter looked at how much extra cognitive work is required when using a mobility aid. In healthy older adults, using an aid increased one's cognitive burden only slightly. But for people with dementia, the increase was substantial – upwards of 35 to 40 per cent.

Now, Hunter is leading an U.S. Alzheimer's Association-funded study to dig deeper into why this is so.

Hunter and her team of researchers, which includes two Western colleagues, as well as partners at the University of Montreal and Curtin University in Perth, Australia, are conducting a series of walking tests with three distinct groups of people – individuals with mild-to-moderate dementia, a healthy older adult group (50 years and older), and a cognitively young adult group (individuals in their 20s). Of the 30 'novice' participants – those who are not currently using a mobility aid – half will use a cane during the walking tests, and half will use a four-wheeled walker.

The 30 experienced mobility aid users with Alzheimer's disease will similarly be broken into two groups – half with more than six months experience using a cane, half who have used a four-wheeled walker for more than six months. The individuals with Alzheimer's disease will be recruited from the McCormick Home in London, a long-term care facility which has the largest day program in southern Ontario for people with dementia.

Participants will complete straight-path walking tests of six metres in length, as well as complex-path walking tests, which include walking in figure-eight patterns and around obstacles. They'll also experience multi-task conditions – talking and walking at the same time while using a mobility aid, for instance. The complex-path walking conditions are of particular interest, Hunter said, because there is limited research on the relationship between complex walking conditions and cognitive load in people with Alzheimer's disease.

"If I have people walk in a straight line, there isn't much difference between the person who has dementia and cognitively healthy people," Hunter said. "But if I ask somebody to walk around obstacles, that's where the two groups spread wide apart. It's much harder for somebody who has dementia to walk in a complex pattern, as well as maneuver around obstacles."

Various measures will be used in quantifying the results, including the participants' gait velocity, cognition, vision, balance, strength and fear of falling.

"We're actually quantifying what their walking looks like and what changes happen," Hunter said. "We know it takes more cognitive burden to use an aid. But is that associated with markers of instability? Do people actually become more unsteady?"

The study represents a shift in thinking about fall prevention and challenges the current rehabilitation practice by seeing the use of a mobility aid as a complex cognitive task. In a pilot survey with physiotherapists, none indicated they included executive function or cognitive load in their assessments with a patient. The immediate benefits of Hunter's study, then, will be to show the importance of taking those factors into account when prescribing a mobility aid to an individual with dementia.

"The goal is to develop an assessment protocol that can be used in clinical practice and that is specifically designed for people who have dementia, accounting for factors unique to those individuals, like cognition and vision changes," Hunter said.

"There's a knowledge gap where, on the one hand, you're providing a person with [dementia](#) with a mobility aid that can provide physical support. But then you're giving somebody potentially new complex tasks. Do we follow people long enough to say that they're safe? Can we train people better in using the aids?"

Provided by University of Western Ontario

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