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News Release

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New VA research is underway to help prevent falls for older Veterans with mild cognitive impairment and Alzheimer's.

VA researcher Joe Nocera, PhD, at the Atlanta VA Center of Excellence for Visual and Neurocognitive Rehabilitation (CVNR) and colleague Trisha Kesar, PhD, of Emory University have recently been awarded a grant from the VA CVNR and Emory's Alzheimer's Disease Research Center (ADRC) to investigate why older adults who have Alzheimer's disease and/or mild cognitive impairments fall more often than their healthy peers. Adults with mild cognitive impairments, or MCI, see a decline in their memory and thinking skills. Older adults with MCI fall 5 times more often than other adults of the same age. In all, 60% of older adults, including Veterans, diagnosed with MCI have at least one fall annually. These falls can lead to moderate or severe injuries such as lacerations, hip fractures, or head traumas. Falls can also lead to loss of independence and even early death.

Researchers have long questioned why impaired cognition leads to higher fall rates. "It may be that cognitive impairment leads to challenges in adapting or responding to uneven or changing walking surfaces and other obstacles in the environment" says one of the lead researchers, Dr. Joe Nocera. "It may also be that cognitive impairment makes it more difficult for older adults to perform multiple tasks at the same time because of limitations in their memory and reasoning skills." "Walking and talking," for example, causes the splitting of attention between two activities that can occasionally cause these older adults to miss a step or obstacle while walking.

Dr. Nocera thinks that "motor adaptation," or adapted walking and movements in response to changing environmental conditions, is key to providing insight to falls in older adults with cognitive impairment. He and his colleagues plan to use a method called "split belt adaptation" to investigate the ability of these patients to adapt to an unfamiliar walking task. This involves walking on a treadmill that has a separate walking surface for each foot. The speed of the right and left legs can be adjusted to make one leg walk faster than the other. During split-belt walking, where one leg must walk 2 times faster than the other, the person initially takes oversized steps with the leg that must walk faster. But after a few minutes the person "adapts" to the different speeds and begins walking more gracefully. The time it takes to adapt is the key component of this evaluation, and previous studies have shown that the adaption time is increased in high fall-risk patients like those with Parkinson's disease.

The long term goal of this project is to understand how cognitive impairment impacts motor adaptation and to ultimately better tailor training methods that can improve walking and balance and reduce the likelihood of a fall. "To date, most research focuses solely on cognitive function" says Dr. Nocera, "however physical function is a vital component of health and quality of life, so we want to better understand these outcomes in patients with cognitive impairment to make their everyday lives safer and more independent."