Akinwuntan's Driving simulation lab helps Parkinson's, Alzheimer's and stroke patients

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AUGUSTA, Ga. – In a first-of-its-kind study, Medical College of Georgia researchers are testing whether simulation driving can reduce Parkinson's patients' threefold increased risk of car accidents.

Drivers with Parkinson's disease are three times more likely to have a car accident than healthy drivers because of cognitive, motor and visuospatial impairments.

Previous studies show that mind-challenging activities improve retention of cognitive capabilities.

"The question is how long can a patient retain the benefit of the retrained skills before it's eroded by this progressive disease?" says Dr. Abiodun Akinwuntan, assistant professor of physical therapy and neurology in the Schools of Allied Health Sciences and Medicine and director of MCG's Driving Simulation Lab. He expects training will improve and slow the degeneration of driving skills, enabling patients to stay on the road longer than Parkinson's patients without the training.

Funded by a $10,000 grant from the Augusta Chapter of the National Parkinson Foundation, researchers will study 30 local patients with stage two or three Parkinson's disease.

Participants will take cognition tests, a simulator-based driving test and an on-road driving test before and after the five-week training period.

The simulation training consists of 10 one-hour sessions in a car with driving scenarios projected on three life-sized screens. Participants will "drive" as they would in real life to navigate the scenarios, which simulate local workday traffic.

The scenarios test skills including visuospatial, visual attention and memory, reaction time, hazard perception and executive function. The program documents the participants' number of lane edge crossings, speeding tickets, traffic light violations, accidents and reaction time.

The study will determine if simulation training improves driving and if the improvement translates to on-road testing.

"Parkinson's disease causes patients to lose automatic abilities, including those associated with driving," says Dr. John Morgan, associate professor of neurology in the School of Medicine and director of the MCG Movement Disorders Program's National Parkinson Foundation Center of Excellence. "The old adage, 'You can't walk and chew gum at the same time,' applies in Parkinson's, and driving involves multiple tasks, so that ability is impacted."

Nearly 70 percent of Parkinson's patients eventually stop driving because of symptoms including freezing of movement, lack of coordination, slow reaction time, cognitive decline and/or medication side-effects such as drowsiness. While most patients drive until the disease reaches stage three, which is characterized by symptoms on both sides of the body and some balance impairment, 18 percent give up driving long before safety becomes a factor, Dr. Akinwuntan says.

"Driving has become such a fundamental daily activity that we often underestimate the influence it has on decisions such as the location of our homes, clothes we wear, activities we engage in and social functions we attend," Dr. Akinwuntan says.

Driving not only enhances independence, it fosters other cognitive tasks, such as checking items off of a grocery list after

driving to the store.

"Perhaps patients engaged in such an intervention will continue driving two or three years longer than those without training," Dr. Akinwuntan says. Study findings also may apply to other cognition-impaired patients, such as those with traumatic brain injury or Alzheimer's disease.

The research team also includes Dr. Raymond Chong, associate professor of physical therapy, and Dr. Kapil Sethi, professor of neurology and director of the MCG Movement Disorders Program.

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