

Study links altered blood flow in the brain with slow gait and falls

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Altered blood flow in the brain is associated with slow gait and falls in elderly people, according to a new study published by the Institute for Aging Research of Hebrew SeniorLife. Falls among the elderly can be deadly and costly. Nearly 1.8 million older Americans fall each year, resulting 16,000 deaths and \$20 billion in direct health-care costs.

Published in the May 18 issue of *Neurology*, the study examined 420 people over the age of 65 enrolled in the MOBILIZE Boston Study (Maintenance of Balance, Independent Living, Intellect and Zest in the Elderly), a long-term cohort study based at the Institute for Aging Research. The study is determining causes of falls in [older adults](#) in order to develop new ways to prevent falls from occurring. In this study, ultrasound was used to measure [blood flow](#) in the participant's brains in response to breathing exercises. Their walking speed was also assessed. Seniors and/or their caregivers reported falls on monthly postcard calendars over a 24-month period.

Seniors who had the smallest blood flow changes in the [brain](#) had the slowest walking speeds and were at greatest risk of falls. Those with the smallest blood flow changes fell an average of 1.5 times per year, while those with the highest rate averaged less than one fall a year.

"Our findings show that low vasoreactivity, a measure of blood flow in the brain, is associated with slow gait and the development of falls in elderly people," says neurologist Farzaneh Sorond, M.D., a scientist at the Institute for Aging Research and lead author of the study. "This

becomes especially important as people age. About 85 percent of 65 year olds have a normal gait. By the time they reach age 85, only 18 percent have a normal gait. These gait abnormalities are strongly associated with falls, which occur in nearly 30 percent of seniors living in the community."

Dr. Sorond, an assistant professor of neurology at Harvard Medical School, says that daily exercise and treatments for [high blood pressure](#) can help lower blood pressure, improve blood flow to the brain, and decrease the risk of falls.

"We now know that abnormalities in blood flow can slow gait and contribute to falls, giving clinicians and researchers another avenue to work on in preventing falls among elderly people," says senior author Lewis A. Lipsitz, M.D., director of the Institute for Aging Research and a leading expert on falls.

The study was funded by National Institute on Aging grants to Drs. Lipsitz and Sorond and a donation from Dr. Fatemeh Khosroshahi to Brigham and Women's Hospital.

Additional studies are needed to advance scientists' understanding of the relationship among blood flow in the brain, slow gait, and falls. "These studies will have significant therapeutic implications," Dr. Sorond says. "Identification of early markers of cerebrovascular dysfunction that are predictive of falls will be an important step toward prevention of these devastating events in elderly people."

According to the Centers for Disease Control and Prevention, more than one third of adults 65 and older fall each year in the United States. Thirty percent of these individuals suffer moderate to severe injuries, including hip fractures and traumatic brain injuries. Experts say that many [falls](#) are due to preventable factors such as muscle weakness,

improper footwear, and medications.

Provided by Hebrew SeniorLife Institute for Aging Research

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