

# Brain activity may predict risk of falls in older people

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Credit: Peter Griffin/public domain

Measuring the brain activity of healthy, older adults while they walk and talk at the same time may help predict their risk of falls later, according to a study published in the December 7, 2016, online issue of *Neurology*.

"In older people who had no signs of disease that would make them prone to [falls](#), [higher levels](#) of activity in the front of the brain, called the

[prefrontal cortex](#), were associated with a higher risk of falls later in life," said study author Joe Verghese, MBBS, MS of the Albert Einstein College of Medicine in the Bronx, NY, and Fellow of the American Academy of Neurology. "This suggests that these people were increasing their activation of [brain cells](#) or using different parts of the brain to compensate for subtle changes in brain functioning."

The prefrontal cortex is the area of the brain where goal setting and decision-making takes place.

For the study, researchers looked at 166 people with an average age of 75 who had no disabilities, dementia or problems with walking. They then used brain imaging to measure changes in oxygen in the blood in the front of the brain as each person walked, recited alternate letters of the alphabet and then did both tasks at the same time. Researchers then interviewed participants every two to three months over the next four years to see if they had fallen.

Over that time, 71 people in the study reported 116 falls; 34 people fell more than once. Most falls were mild with only 5 percent resulting in fractures.

The study found higher levels of [brain activity](#) while both walking and talking were associated with falls, with each incremental increase of brain activity associated with a 32 percent increased risk of falls. Such an association was not found when looking at brain activity levels during just walking or talking. The speed of the walking and naming letters did not help predict who was more likely to fall.

The relationship between brain activity and falls risk was the same after researchers accounted for other factors that could affect a person's risk of falling, such as slow walking speed, frailty and previous falls.

"These findings suggest that there may be changes in brain activity before physical symptoms like unusual gait appear in people who are more prone to falls later," said Verghese. "More research needs to be done to look at how brain and nerve diseases associated with falls impact brain activity in their earliest phases. We also know there are other areas of the brain which may play a role in increasing fall risk, so those too should be studied."

Provided by American Academy of Neurology

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