



PRESS RELEASE

For immediate release

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Smart diagnosis: Better balance in your pocket

(Urbana-Champaign, November 27, 2018): Suppose you could use your smartphone to accurately measure your chances of falling. Feel like a far stretch? Well, researchers in the Motor Control Research Lab (MCRL) at the University of Illinois at Urbana-Champaign have been working to make this happen.

Falls are the leading cause of injury and death in older adults and the medical cost of these falls is in the billions. Regular fall risk screenings are recommended by the Centers for Disease Control and Prevention; however, current screening methods rely on potentially unreliable self-report measures while fall risk screenings are rarely performed in a doctor's office. Knowing this, Professor Jacob Sosnoff and Katherine Hsieh, a PhD student in the department of Kinesiology and Community Health at UIUC, worked to determine whether the accelerometer capabilities of the phone can measure postural stability, a major indicator of fall risk.

Here's how it works:

Using the accelerometer capabilities already embedded in your phone (think about when you use a compass on your phone or when your screen adjusts from portrait to landscape mode when you move it), an individual holds the phone up to their chest and, while standing still, the accelerometer is able to measure the small movements and movement corrections that happen as you stand, essentially measuring your balance. This information is fed into an algorithm that determines postural stability, whether someone has a low or high risk of falling.

With the number of annual falls among older adults rising, a mobile health app could provide fall risk screening that is affordable and portable, allowing testing to be done in the comfort of one's home. The hope is utilizing smartphones is an accessible solution for providing quick and convenient self-checkups that can be used to guide prevention efforts and support individual health, and ultimately prevent falls. Sosnoff and Hsieh state that "leveraging smartphone technology to improve balance and fall screening stands to have an important public health impact."

Thirty older adults underwent a series of movement tasks while their movement was measured with gold-standard laboratory equipment and the smartphone. Over all it was found that smartphone measurements were strongly associated with the gold-standard measures and were able to distinguish

older adults at risk for falls. This investigation provides evidence that a smartphone is a valid measure of fall risk in older adults. There is potential for smartphones to offer objective, fall risk assessments for older adults. Results from this testing will be published in the Journal of Gait & Posture in January 2019 (an online version is currently available).

Notes to Editor:

- For further information, please contact Jacob Sosnoff at 217-244-7006 or jsosnoff@illinois.edu.
- The Motor Control Research Lab is part of the University of Illinois at Urbana-Champaign's Kinesiology and Community Health Department.
- The MCRL operates the Illini Fall Prevention Clinic where research is applied in real time to give clients an immediate fall risk assessment. From this assessment, the staff builds an individualized fall prevention strategy plan and exercises to meet the individual's specific needs. More information can be found at www.illinifallclinic.com.
- Images are available upon request.
- An online version of the journal article "Smartphone technology can measure postural stability and discriminate fall risk in older adults" is out and available at <https://www.sciencedirect.com/science/article/pii/S0966636218304521?fbclid=IwAR3cw92E3iLiCSiB3K1cXeKNiKhrhIfEiJ0mTaaQkx3BZOBqSPnJryxaGxo>.