

Physical activity shown to help young and elderly alike with lower-leg coordination

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An Indiana University study that examined the effect of age and physical activity on lower leg muscle reflexes and coordination concluded that participation in physical activity was beneficial for lower leg muscle coordination across both sides of the body in both young and older study participants. Lower limb muscle communication is essential for everyday tasks, such as walking, balancing, and climbing stairs.

"The results of this study suggest that participation in physical activity contributes to greater crossed-spinal reflex stability in both young and [elderly subjects](#)," said exercise scientist Rachel Ryder, a visiting research associate in the IU School of Public Health-Bloomington. "In other words, the two lower legs maintain stable muscular communication patterns, which could contribute to better coordination of muscles across the right and left side of the body. The lack of this coordination or stability could exacerbate fall risk in older, sedentary subjects."

Ryder's study, discussed at the Neuroscience 2012 scientific meeting in New Orleans on Wednesday, involved 28 healthy men and women who were sorted by age into two groups: 14 subjects in a group of people 20- to 25-years old; the rest were over 65. Based on the International Physical Activity Questionnaire, the two groups were divided further into physically active or sedentary.

The researchers tested reflexes by alternately stimulating nerves in each leg with an electrical current while [study participants](#) rested in a prone position.

"Participation in physical activity could play an important role in maintaining the muscle reflex system in the lower limbs and assist in coordination throughout life," Ryder said. "This is particularly important in [older adults](#). While [voluntary movement](#) has a large role to play in fall-prevention, the motor system's 'first line of defense' against a slip or trip is the reflex system. The muscle reflexes are capable of generating a [motor response](#) in under 50 milliseconds, allowing the reflex system to quickly correct for a sudden change in body position, or at the least, reduce the impact of the fall."

Ryder will discuss her research during a poster presentation from 4 to 5 p.m. on Wednesday in Hall F-J. Her co-authors are Koichi Kitano and David Kocaja from the Department of Kinesiology in the School of Public Health-Bloomington.

Provided by Indiana University

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