

Researchers examine the role of muscle strength in aging cognitive health

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Research is showing a strong link between handgrip strength, walking speed, and cognition, indicating how improved physical health could boost elderly minds.

Based at Barwon Health, in the heart of Geelong's clinical [health](#) precinct, researchers are working to identify the [risk factors](#)—such as changes in [muscle mass](#), muscle strength and physical performance—for developing sarcopenia (loss of muscle mass, strength and function with advancing age) across the lifespan.

This testing involves the Geelong Osteoporosis Study (GOS) which began in the early 1990s, gathering adult participants from the electoral roll in the Barwon Statistical Division. During recent follow-up testing, researchers also measured cognitive function through a computer-based program, in tandem with [physical health](#) evaluations.

The computer-based testing looked at cognitive health signifiers to examine psychomotor function, attention, visual learning and working memory, at the click of a mouse.

Ph.D. student Ms Sophia Sui, from the Epi-Center for Healthy Aging in the Institute for Physical and Mental Health and Clinical Translation (IMPACT) and Deakin's School of Medicine, said her result from a study of men over 60 showed a strong relationship between hand grip strength and cognition, in particular psychomotor function. Similarly, usual walking speed, which is indicative of physical function, was associated with psychomotor function, attention, and overall cognition. In contrast, no association was found between muscle mass and cognitive function.

"This research shows that we need to think more about how elderly people can boost their quality of life through something as simple as diet or maintaining physical health," said Ms Sui.

The parallel decline in cognitive function and loss of muscle strength places elderly people at increased risk of personal injury, poor mobility and loss of independence. Professor Julie Pasco from IMPACT Institute and Head of the Epi-Center for Healthy Aging, said this work is vital to understanding additional skeletal muscle health issues, like sarcopenia.

"This is still an evolving picture. It is known that as we age our muscle mass deteriorates—but it's now been found that muscle strength deteriorates more quickly. Emerging data suggests that loss of a person's muscle strength may be more important to their overall health than muscle mass. The work that Ms Sui has published shows that loss of muscle strength is not only important for overall physical function, but for cognitive health as well. All this research, including Ms Sui's work, can be used as an evidence-based way of refining the relatively new definition of sarcopenia."

Once her Ph.D. has been conferred, Ms Sui is interested in exploring biological markers and factors related to the relationship between skeletal muscle health and brain health. She also said

future surveys of the Geelong Osteoporosis Study participants could ultimately inform the public health message.

"If indeed we see that an improvement in [muscle strength](#) will help delay cognitive decline, we could use this work to inform public health action—such as asking [elderly people](#) to do targeted [muscle](#) strengthening exercises, maintain a healthy weight and have a diet containing adequate amounts of protein. More research is required to infer if this would make a difference."

More information: Sophia X. Sui et al. Muscle strength and gait speed rather than lean mass are better indicators for poor cognitive function in older men, *Scientific Reports* (2020). [DOI: 10.1038/s41598-020-67251-8](#)

Provided by Deakin University

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