

'Skinny fat' in older adults may predict dementia, Alzheimer's risk

July 5 2018



James E. Galvin, M.D., M.P.H., tests a patient's muscle strength in FAU's Comprehensive Center for Brain Health. Credit: Florida Atlantic University

A new study has found that "skinny fat—the combination of low muscle mass and strength in the context of high fat mass—may be an important

predictor of cognitive performance in older adults. While sarcopenia, the loss of muscle tissue that is part of the natural aging process, as well as obesity both negatively impact overall health and cognitive function, their coexistence poses an even higher threat, surpassing their individual effects.

The study, published in the journal *Clinical Interventions in Aging*, was led by researchers at Florida Atlantic University's Comprehensive Center for Brain Health in the Charles E. Schmidt College of Medicine.

Using data from a series of community-based aging and memory studies of 353 participants, the researchers assessed the relationship of sarcopenic obesity or skinny fat with performance on various cognition tests. The average age of the participants was 69. Data included a clinic visit, valid cognitive testing such as the Montreal Cognitive Assessment and animal naming; functional testing such as grip strength and chair stands; and body composition ([muscle mass](#), [body mass index](#), percent of body fat) measurements.

Results from the study show that sarcopenic obesity or "skinny fat" was associated with the lowest performance on global cognition, followed by sarcopenia alone and then obesity alone. Obesity and sarcopenia were associated with lower executive function such as working memory, mental flexibility, self-control and orientation when assessed independently and even more so when they occurred together.

Using a cross-sectional design, the researchers found consistent evidence to link sarcopenic obesity to poor global [cognitive performance](#) in the study subjects. This effect is best captured by its sarcopenic component with obesity likely having an additive effect. This effect extends to specific cognitive skills, in particular executive function.

"Sarcopenia has been linked to global cognitive impairment and

dysfunction in specific cognitive skills including memory, speed, and executive functions," said senior author James E. Galvin, M.D., M.P.H., one of the most prominent neuroscientists in the country, associate dean for clinical research and a professor of integrated medical science in FAU's Schmidt College of Medicine, and a professor in FAU's Christine E. Lynn College of Nursing. "Understanding the mechanisms through which this syndrome may affect cognition is important as it may inform efforts to prevent cognitive decline in later life by targeting at-risk groups with an imbalance between lean and fat mass. They may benefit from programs addressing loss of cognitive function by maintaining and improving strength and preventing obesity."

Obesity may contribute to the risk of impaired executive function through vascular, behavioral, metabolic, and inflammatory mechanisms or can result from reduced impulse control, self-monitoring, and goal-directed behavior in individuals with impaired executive function with a negative effect on the ability to maintain energy balance. The exact mechanisms linking obesity to cognitive dysfunction are yet to be determined, although several pathways including sedentary behavior, inflammation, and vascular damage have been proposed. Sarcopenia, in turn, has been linked to impairments in abilities that relate to conflict resolution and selective attention. Executive function is reduced in obese older adults, and improvement in muscular function has been linked to enhancement of [executive function](#) in senior adults.

Galvin and his study collaborators, Magdalena I. Tolea, Ph.D., a research assistant professor of integrated medical science, and Stephanie Chrisphonte, M.D., a research assistant professor of integrated medical science, both in FAU's Schmidt College of Medicine, caution that changes in body composition including a shift toward higher fat mass and decreased lean muscle mass represent a significant public health concern among [older adults](#) as they may lead to various negative health outcomes including cardiovascular and neurodegenerative diseases.

"Sarcopenia either alone or in the presence of [obesity](#), can be used in clinical practice to estimate potential risk of cognitive impairment," said Tolea. "Testing grip strength by dynamometry can be easily administered within the time constraints of a clinic visit, and body mass index is usually collected as part of annual wellness visits."

Provided by Florida Atlantic University

Citation: 'Skinny fat' in older adults may predict dementia, Alzheimer's risk (2018, July 5)
retrieved 18 April 2024 from

<https://medicalxpress.com/news/2018-07-skinny-fat-older-adults-dementia.html>

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