Researchers revise indicator of mobility limitation in older adults

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The new cutoff values for a metric widely used by geriatricians, physical therapists and nutritionists are more accurate, facilitate early diagnosis and contribute to preventive treatment (photo: Léo Ramos Chaves/ Pesquisa FAPESP magazine). Credit: FAPESP

Aging entails a loss of muscle mass and strength, which in some cases impairs mobility, hinders walking or performance of day-to-day tasks, and exposes the elderly to the risk of falls and hospitalizations.

In clinical practice, handgrip measurement is the most widely used method to identify loss of overall muscular strength in older people. Values below 26 kg for men and 16 kg for women have for some time been considered an indication of risk-associated weakness, but these parameters are being revised.

Researchers at the Federal University of São Carlos (UFSCar) in the state of São Paulo, Brazil, collaborating with colleagues at other institutions in the same state such as the University of São Paulo's Ribeirão Preto Medical School (FMRP-USP), Nursing School (EE-USP) and School of Public Health (FSP-USP), as well as University College London (UCL), have suggested higher handgrip cutoff values than those typically used by physicians, physical therapists and nutritionists. A higher cutoff permits early diagnosis and intervention to avert clinical progression.

"Our study argues against the prevailing view of mobility loss. Based on an analysis of demographic data and appropriate statistical methods, we tested the usual cutoffs and found higher values, such as 32 kg for men and 21 kg for women, to be more accurate markers of mobility impairment," Tiago da Silva Alexandre, a professor at UFSCar's Department of Gerontology, told Agência FAPESP. Alexandre coordinates the International Collaboration of Longitudinal Studies of Aging (InterCoLAging), a consortium of longitudinal studies that includes epidemiological data from Brazil and the UK.

In this latest study, which was supported by FAPESP, the researchers analyzed data for 5,783 people aged 60 and more, all of whom were participants in the English Longitudinal Study of Ageing (ELSA) and the SABE study in São Paulo City.

The principal investigator for ELSA is Andrew Steptoe, a professor at UCL, assisted by Cesar de Oliveira, a researcher at the same institution. SABE is led by Yeda Duarte and Jair Licio Ferreira Santos.

Early diagnosis

In an article on the study published in *Archives of Gerontology and Geriatrics*, the researchers report that mobility impairment is 88% more likely in older men with a handgrip of less than 32 kg and 89% more likely in women with less than 21 kg, regardless of socio-economic conditions, lifestyle, existing diseases and anthropometric measurements.

"The increase is considerable. The most widely used cutoffs include 26 kg for men and 16 kg for women, although values vary between studies and countries," Alexandre said.

The study also discusses previous research in which handgrip measured with a dynamometer is correlated with walking speed among the more than 5,000 older people involved in SABE and ELSA.

"We raised the cutoffs a lot so that subjects most likely to have impaired mobility could be identified and action taken sooner. The cause of the problem can be investigated and treatment designed in order to avoid all the consequences of muscle weakness and mobility impairment. This preserves the individual's functional capacity, facilitates social interaction and enhances quality of life while aging. For society as a whole, using higher cutoffs helps reduce the cost of healthcare," Alexandre said.

Preventing is better than curing

Muscle strength is extremely important to mobility. A classic example is lower-limb muscle weakness, which prevents people from walking. However, both loss of muscle mass and weakness are natural age-related processes and become a serious problem only when they cross a certain threshold.

According to the researchers, while loss of muscle mass and strength are known to contribute significantly to mobility impairment, the exact point at which low muscle mass entails loss of strength and mobility is not entirely understood. "Loss of strength depends on loss of mass, but other drivers of the process include neurological factors, hormones and vitamin deficiencies. On the other hand, muscle strength can be recouped, so it's very important to have a metric that tells us when it's best to start preventive treatment that avoids loss of mobility," said Maicon Delinocente, a researcher at UFSCar and first author of the article.

According to Delinocente, when the problem is diagnosed, its cause must be identified and treated by resistance training and an appropriate high protein/calorie diet, for example.

More information: Maicon Luís Bicigo

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