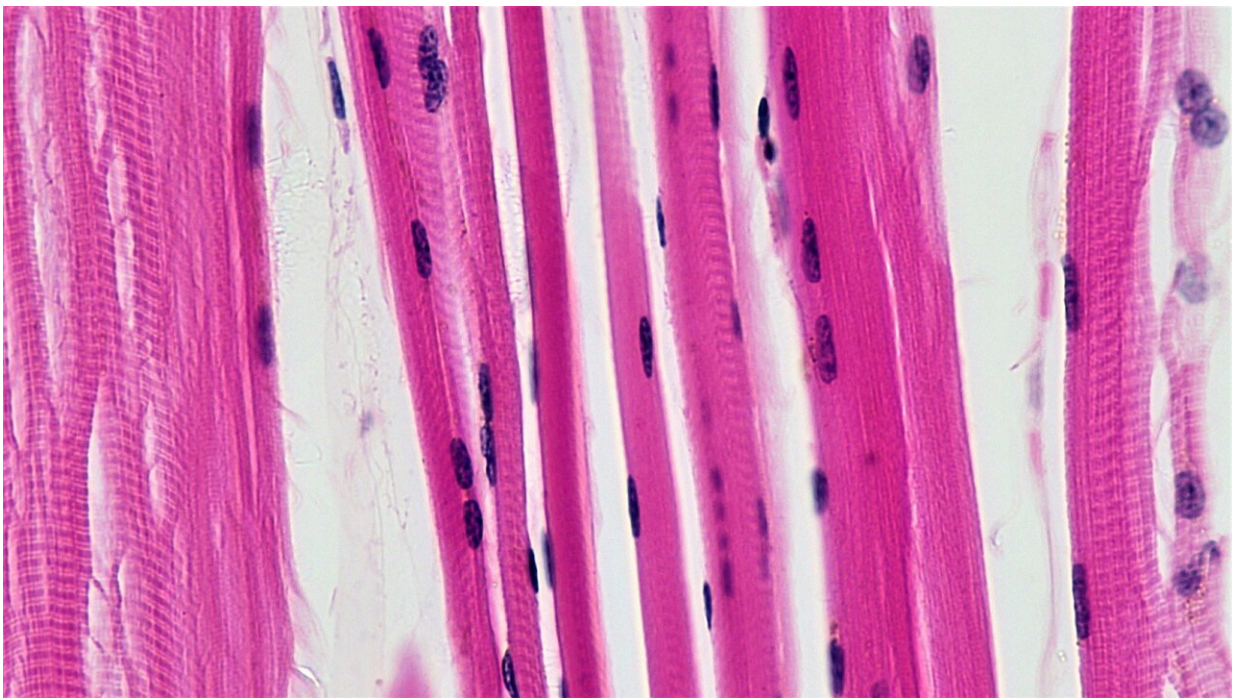


Study shows vitamin D deficiency could increase older people's risk of losing muscle strength by as much as 78%

December 13 2022, by Maria Fernanda Ziegler



Skeletal muscle fibers. Credit: Berkshire Community College Bioscience Image Library / Public domain

Vitamin D plays an important role in the regulation of calcium and phosphorus absorption by an organism. It also helps keep the brain and immune system working. Researchers at the Federal University of São

Carlos (UFSCar) in Brazil and University College London (UCL) in the United Kingdom have now shown that vitamin D supplementation reduces the risk of dynapenia in older people by 78%.

Dynapenia is an age-associated loss of muscle strength. It can be partially explained by muscle atrophy and is a major risk factor for physical incapacity later in life. People with dynapenia are more likely to fall, need to go to hospital, be prematurely institutionalized, and die.

An article on the study is published in the journal *Calcified Tissue International*.

The researchers analyzed data for 3,205 non-dynapenic individuals aged 50 and over who were followed for four years by the English Longitudinal Study of Ageing (ELSA), a long-term multi-cohort study that began in 2002 and has had more than 15 years of follow-up.

"Vitamin D is known to participate in various functions of the organism. Actually, it's a hormone and its many roles include helping to repair muscles and releasing calcium for muscle contraction kinetics. It was therefore expected to cause muscle alterations of some kind. That's exactly what our study proved," said Tiago da Silva Alexandre, last author of the article. Alexandre is a professor of gerontology at UFSCar.

Bone and muscle tissue are interconnected not just mechanically and physically, but also biochemically. "Endocrine disorders such as vitamin D deficiency or insufficiency can lead to loss of bone mineral density as well as a reduction in muscle mass, strength and function," he said.

The study sample included individuals aged 50 and over without dynapenia. Grip strength (considered a good proxy for overall muscle strength) was 26 kg or more for men and 16 kg or more for women.

The main conclusion was that individuals with vitamin D deficiency, defined as less than 30 nanomoles per liter in the blood, had a 70% higher risk of developing dynapenia by the end of the four-year study period than those with normal levels of vitamin D, defined as more than 50 nmol/L.

"This is itself an important finding as it shows that vitamin D deficiency heightens the risk of muscle weakness by 70%. However, because we knew there are many worldwide cases of people with osteoporosis who take [vitamin supplements](#), we needed to try to measure the effectiveness of vitamin D supplementation," said Maicon Luís Bicigo Delinocente, first author of the article.

When individuals with osteoporosis and those taking vitamin D were excluded from the analysis, he explained, "we found that the risk of developing muscle weakness by the end of the four-year period was 78% higher for subjects with vitamin D deficiency at the start of the study than for subjects with normal vitamin D levels, and 77% higher for those with vitamin D insufficiency [30-50 nmol/L]."

The results proved that the risk of muscle weakness is heightened by both vitamin D deficiency and insufficiency, Alexandre said. "Another conclusion to be derived from the results of the study is that it's important to take vitamin D if you have a deficiency or insufficiency," he added.

"The study analyzed data for people who live in the UK. There are many more days of sunlight per year in Brazil, and yet we're known to have a high incidence of vitamin D deficiency and insufficiency, especially among [older people](#). Indeed, this is the case worldwide."

Our body only synthesizes vitamin D when large areas of skin are exposed to sunlight, Alexandre recalled. "It's necessary to explain to

people that they risk losing muscle strength if they don't get enough vitamin D. They need to expose themselves to the sun, eat food rich in [vitamin D](#) or take a supplement, and do resistance training exercises to maintain [muscle](#) strength," he said.

More information: Maicon Luís Bicigo Delinocente et al, Are Serum 25-Hydroxyvitamin D Deficiency and Insufficiency Risk Factors for the Incidence of Dynapenia?, *Calcified Tissue International* (2022). [DOI: 10.1007/s00223-022-01021-8](#)

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