

# Is bone health linked to brain health?

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People who have low bone density may have an increased risk of developing dementia compared to people who have higher bone density, according to a study published in *Neurology*. The study does not prove that low bone density causes dementia. It only shows an association.

"Low bone density and dementia are two conditions that commonly affect [older people](#) simultaneously, especially as bone loss often

increases due to [physical inactivity](#) and poor nutrition during dementia," said study author Mohammad Arfan Ikram, MD, Ph.D., of the Erasmus University Medical Center in Rotterdam, Netherlands. "However, little is known about bone loss that occurs in the period leading up to dementia. Our study found that bone loss indeed already occurs before dementia and thus is linked to a higher risk of dementia."

The study involved 3,651 people in the Netherlands with an average age of 72 who did not have dementia at the start of the study. Over an average of 11 years, 688 people (19%) developed dementia.

Researchers looked at X-rays to identify bone density. Participants were interviewed every four to five years and completed physical tests such as bone scans and tests for dementia.

Of the 1,211 people with the lowest total body bone density, 90 people developed dementia within 10 years, compared to 57 of the 1,211 people with the highest bone density.

After adjusting for factors such as age, sex, education, other illnesses and medication use, and a family history of dementia, researchers found that within 10 years, people with the lowest total body bone density were 42% more likely to develop dementia than people in the highest group.

"Previous research has found factors like diet and exercise may impact bones differently as well as the risk of dementia," Ikram added. "Our research has found a link between bone loss and dementia, but further studies are needed to better understand this connection between bone density and [memory loss](#). It's possible that bone loss may occur already in the earliest phases of dementia, years before any clinical symptoms manifest themselves. If that were the case, bone loss could be an indicator of risk for [dementia](#) and people with [bone loss](#) could be targeted for screening and improved care."

A limitation of the study is that participants were primarily of European origin and age 70 or older at the start of the study, so these findings may vary in different races, ethnicities, and younger age groups.

**More information:** Tian Xiao et al, Association of Bone Mineral Density and Dementia: The Rotterdam Study, *Neurology* (2023). DOI: 10.1212/WNL.0000000000207220 , [dx.doi.org/10.1212/WNL.0000000000207220](https://doi.org/10.1212/WNL.0000000000207220)

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