

# Index could help identify women at risk for rapid bone loss

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Researchers have developed an index to better predict which women may experience faster bone loss across the menopause transition, according to a new study published in the Endocrine Society's *Journal of Clinical Endocrinology & Metabolism*.

Osteoporosis is often referred to as a "silent" disease because individuals who have it experience few noticeable symptoms. The progressive condition occurs when bones grow structurally weak and become more likely to fracture or break.

The condition is common, particularly among older individuals. More than 10 million U.S. adults have osteoporosis, according to the Society's Endocrine Facts and Figures Report. Another 34 million adults nationwide have low bone density.

"Researchers have previously shown that it is difficult to predict an individual's [bone loss](#) by testing the blood or urine for proteins that reflect either bone breakdown or bone formation alone," said one of the study's authors, Albert Shieh, MD, of the University of California, Los Angeles. "Since both bone breakdown and bone formation occur at the same time in the body, we created an index that accounts for both processes, and tested whether this new index can help predict bone loss."

The researchers call the index a Bone Balance Index. The index was most useful for predicting bone loss in the bones of the spine.

To create the index, the researchers used data from a cohort of women as they went through menopause. Women are prone to bone loss during the menopausal transition. The 685 women, who participated in the Study of Women's Health across the Nation, were between the ages of 42 and 52. The women were either premenopausal or in early perimenopause when they enrolled in the study, and all of the participants included in this analysis

had their final [menstrual period](#) during the follow-up portion of the study.

Urine and blood samples were taken from the women to measure for bone turnover markers—proteins that reflect bone breakdown and bone formation. The women also had their bone mineral density measured every year during the course of the study.

The researchers combined measurements of bone breakdown and [bone formation](#) in a Bone Balance Index to determine each individual's net bone balance before the final menstrual period. They found that this index was a stronger predictor of bone loss from two years before the final menstrual period to three to four years later - a time when bone density typically declines - than a measurement of bone breakdown alone.

"This novel approach to assessing an individual's bone health may help identify which [women](#) are at risk of losing vertebral bone mineral density across the [menopause transition](#)," Shieh said. "More studies are needed to test whether this index is useful for predicting bone loss after the menopause transition, and if it is useful for predicting fractures," Shieh said. "Since markers of bone breakdown alone have limited utility in predicting bone loss at an individual level, better approaches are needed to ensure individuals at highest risk of rapid bone loss are identified as quickly as possible."

**More information:** "Quantifying the Balance Between Total Bone Formation and Total Bone Resorption: An Index of Net Bone Formation," *Journal of Clinical Endocrinology & Metabolism*. DOI: [10.1210/jc.2015-4262](https://doi.org/10.1210/jc.2015-4262)

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