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RESEARCH REPORT By Ann Lukits April 28, 2014 6:55 p.m. ET

Biting strength: Chewing may help to reduce bone loss caused by stress and aging, says a study to be published in the July issue of Experimental Gerontology.

Osteoporosis is associated with increasing age, physical inactivity and other risk factors, but recent studies suggest chronic stress can also affect bone density.

This study suggests biting strength and bone health are closely related, especially in frail, older people at risk of tooth and bone loss. Chewing may help to maintain strong bones by suppressing the sympathetic nervous system, which regulates the body's response to stress, researchers said. Bone is infiltrated with nerves and blood vessels that are linked to the nervous system.

Chewing gum may also alleviate stress-induced osteoporosis in people, the researchers said.

The study, conducted in Japan, involved experiments on three groups of mice bred to mimic age-related osteoporosis in humans. Two groups of mice were placed in stressful conditions for an hour twice a day. One group was allowed to chew on wooden sticks. The third, control group of mice wasn't subjected to stress.

After four weeks, the adrenal glands, which secrete hormones in response to stress, were significantly heavier in the stressed mice that weren't given wooden sticks, compared with the control group. But chewing under chronic stress prevented increases in stress hormones and adrenal gland weight in the group of mice given sticks.

Stressed mice not allowed to chew had significantly decreased levels of osteocalcin, a marker of bone formation, and increased levels of N-telopeptide of type I collagen, a marker of bone breakdown, compared with the chewing group.

The volume of trabecular bone, which provides a mesh-like support structure inside bones, was higher in the chewing group than the stressed group. Non-chewing stressed mice had greater trabecular bone loss than the control group.

Caveat: The study was conducted in mice. It isn't known if chewing can prevent bone loss in people.

Title: [Chewing ameliorates chronic mild stress-induced bone loss in senescence-accelerated mouse \(SAMP8\), a murine model of senile osteoporosis](#)

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