# Do women with restless legs syndrome have less bone loss?

Linda A. Hershey, MD, PhD

**WHAT DID THE AUTHORS STUDY?** It has been shown that older women have a greater chance of developing bone loss.[1] In the article "Reduced bone resorption and increased bone mineral density in women with restless legs syndrome," the authors asked whether women with restless legs syndrome had changes in bone heath compared to women of similar ages and weights.[2]

**WHY IS THIS STUDY IMPORTANT?** We know that women with restless legs syndrome have increased stress hormones in their blood stream.[3] This led the authors to think that there might be more bone loss in women with restless leg syndrome symptoms. Other studies have shown that stress hormones send messages to bone-creating cells, signaling them to reduce bone production.[4]

**HOW WAS THIS STUDY PERFORMED?** The authors tried to answer the question by measuring bone mineral density in the lower part of the spine in 78 women with restless legs syndrome. They also studied 78 women who were similar in age and weight but did not have restless legs syndrome as a control group. The researchers included only women with primary restless legs syndrome (not the secondary form that is caused by medications or chronic medical conditions). Primary restless legs syndrome often occurs within families. Those with restless legs syndrome have both the urge to move the legs as well as an uncomfortable feeling in the legs (prickling or crawling feelings). These feelings usually occur when the patient sits down or lies down, and they can be relieved by walking or pacing. The women enrolled in this study had not yet been treated for their restless legs syndrome symptoms. As soon as they were enrolled, the strength of the bones in the lower spine was measured (bone mineral density test). Because bone health depends on different issues, the authors looked at several factors. Blood was drawn to measure vitamin $D_3$ and a protein that is a marker for bone resorption, c-telopeptide of type 1 collagen (CTX). Resorption is when the bone tissue breaks down and decreases. Having adequate vitamin $D_3$ levels is important for bone health. Bone density is also affected by activity level.

**WHAT WERE THE RESULTS OF THE STUDY?** The authors found an increase in the bone mineral density of women with restless legs syndrome compared to healthy controls. CTX levels were lower in women with restless legs syndrome, which may mean that there was less bone resorption in these patients. Levels of vitamin $D_3$ were lower in patients with restless legs syndrome than in controls.

**WHAT DID THE AUTHORS CONCLUDE?** Despite the lower levels of vitamin $D_3$, there was less bone resorption and increased bone density in women with restless legs syndrome. The authors decided that the involuntary leg movements in these women may explain their stronger bone profiles.

**WHAT ARE SOME OF THE STRENGTHS AND LIMITATIONS OF THIS STUDY?** This was a prospective cross-sectional case-control study that was performed over the course of 1 year. "Prospective" means that patients from both groups were enrolled into the study as they were initially seen in the clinic. "Cross-sectional" means that each patient was evaluated only once (no subsequent measurements were made over time). A "case-control" study is one in which patients are matched with healthy controls who are similar in certain aspects, such as age and weight.

The cross-sectional study design might be considered a weakness. A longitudinal study—one that follows people with multiple measurements over time—might be better, because it could help establish a true cause and effect relationship between the presence of restless legs syndrome and the protection from bone loss. A strength of this study is the prospective design, which allowed patients with restless legs syndrome to be examined before they were started on any medications. Treated patients with restless legs syndrome might not have shown the same changes in bone metabolism when compared to controls. Another strength is the case-control study design that matched patients and controls with respect to age, weight, and smoking status, because bone loss is known to be greater in those who are older, those who are thinner, and those who smoke.

**WHAT IS NOT KNOWN YET?** Researchers might perform overnight sleep studies to see whether the

severity of leg movements in patients with restless legs syndrome relates to bone density changes or CTX differences compared to controls. A longitudinal study of these patients might also be interesting, because it is possible that the protective effect of the involuntary movements on the bones might disappear as the patients are treated for the symptoms of restless legs syndrome.

## REFERENCES


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# About restless legs syndrome

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**WHAT IS RESTLESS LEGS SYNDROME?** Restless legs syndrome (RLS) is a disease that consists of unpleasant sensations that usually occur in the legs (feelings of restlessness, tingling, aching, or crawling). These feelings become worse when sitting or lying down and are accompanied by an urge to move (standing up and moving around is useful in making these sensations less severe).

**WHAT CAUSES RLS?** RLS can be primary or it can be secondary to other medical or neurologic conditions. Primary RLS occurs within families in more than 50% of all cases. Secondary RLS can be due to a neurologic problem, such as neuropathy (disease of the nerves). Secondary RLS can be caused by several medical conditions, such as iron deficiency anemia, chronic kidney disease, or chronic lung disease. Many drugs can make RLS symptoms worse, including antidepressants, antihistamines (used for colds and allergies), and caffeine.

**WHO DEVELOPS RLS?** RLS is common. It occurs in 3%–10% of the general population. It is more common between the ages of 30 and 79 (10% of people in this age group) than between 18 and 29 (3%). When a young person (under the age of 30) develops RLS symptoms, a family history is usually present. Women are more likely than men to develop RLS, and the risk increases according to the number of children that they have had. Older patients with RLS may not have a positive family history, but they may have other risk factors, such as obesity, anemia, or high blood pressure. One common theory about RLS is that there are low iron stores in the brain because of abnormal iron transport systems.

**HOW IS RLS DIAGNOSED?** Patients with RLS need physical and neurologic examinations to exclude medical diseases or neurologic disorders and laboratory studies to exclude iron deficiency anemia and chronic kidney disease. An EMG and nerve conduction study (test of nerve function) may be performed to address the possibility of neuropathy. An all-night sleep study may be done to measure the severity of the involuntary leg movements.

**HOW IS RLS TREATED?** Iron supplements may be needed if iron or ferritin levels in the blood are low. Ferritin is a measure of iron stores in the body. Iron supplements usually improve the motor and sensory symptoms of RLS as well as make sleep quality better. Vitamin $D_3$ replacement is also indicated if vitamin $D_3$ levels are low. Drugs in several classes, including benzodiazepines, opiates, dopaminergic drugs, and some antiepileptic drugs, may be prescribed to treat the symptoms of RLS.

**WHAT ARE THE PREVENTIVE MEASURES?** Avoidance of too much coffee, tea, and certain drugs is a key preventive measure for all patients with RLS. Certain antidepressant drugs, antihistamines, and sedative agents are known to make the symptoms of RLS worse. Smoking cessation is also recommended. Regular exercise is another way to reduce the symptoms of RLS.

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