

Vitamin D Status More Important than Calcium Intake for Maintaining Calcium Balance in Osteoporosis

Alan R. Gaby, MD

Edited by Dr. Donald C. DeFabio, DC

A new study has found that vitamin D status is more important than calcium intake for maintaining calcium balance. The results of this study suggest that assuring adequate serum vitamin D levels might provide greater protection against osteoporosis than consuming 1,200 to 1,500 mg/day of calcium.

Calcium supplements are heavily promoted and widely used for the prevention and treatment of osteoporosis. Although it is well known that vitamin D plays a role in the absorption and metabolism of calcium, many popular calcium products do not contain vitamin D. Population-based surveys have repeatedly shown that vitamin D insufficiency is common, with a prevalence of 40% or more in some studies. The main cause of low vitamin D status is a lack of sun exposure. Many people spend the bulk of their time indoors. Those who do go outside often cover themselves with clothing or wear sunscreen, because of fears that sun exposure will age their skin or cause skin cancer. While excessive sun exposure can be dangerous, a modest amount of sunlight appears to be safe, and is all that is needed by most people to achieve adequate vitamin D status.

A 2005 article in the *Journal of the American Medical Association* found that as long as vitamin D status is sufficient, a calcium intake of more than 800 mg/day may be unnecessary for maintaining calcium metabolism. In contrast, even high calcium intakes will not ensure optimal calcium homeostasis, if vitamin D levels are low.

The results of the current study do not suggest that adequate calcium intake is unimportant, but, rather that a high calcium intake may be unnecessary in the presence of optimal vitamin D status. Low calcium intake (less than 800 mg/day) may still increase the risk of bone loss, even when vitamin D status is good. Moreover, a high calcium intake may compensate in part (but not completely) for low vitamin D status.

In addition to calcium and vitamin D, a number of other nutrients have been shown to play a role in bone health. These include magnesium, manganese, zinc, copper, boron, strontium, silicon, vitamin K, folic acid, vitamin B₁₂, phosphorus, and vitamin C. Maintaining strong bones presumably requires adequate intake of all of these nutrients.

References:

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- 2 Hollis BW, Wagner CL. Normal serum vitamin D levels. *N Engl J Med* 2005;352:515.
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If you are concerned about your vitamin D level it can be checked with a routine blood test called serum 25-OHD. Since vitamin D can only be formed from exposure to the sun, it is recommended that 15 to 30 minutes per day of mid day exposure over uncovered arms and legs is needed. In lieu of the natural way to get vitamin D, D-3 supplements can be taken.
Dr. DeFabio

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Berkeley Heights, NJ
908-771-0220