# Vitamin D supplements associated with reduced fracture risk in older adults

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Oral vitamin D supplements at a dose of at least 400 international units per day are associated with a reduced risk of bone fractures in older adults, according to results of a meta-analysis published in the March 23 issue of *Archives of Internal Medicine*.

"The anti-fracture benefits of vitamin D have been questioned by several recent trials, leading to uncertainty among patients and physicians regarding recommendations for vitamin D supplementation," the authors write as background information in the article. "Factors that may obscure a benefit of vitamin D are low adherence to treatment, low dose of vitamin D or the use of less potent ergocalciferol (vitamin D2)."

Heike A. Bischoff-Ferrari, Dr.P.H., of the University of Zurich, University Hospital, Zurich, Switzerland, and colleagues performed a meta-analysis on 12 previously published clinical trials of oral vitamin D supplements among adults age 65 or older. These double-blind randomized controlled trials involved 42,279 participants (average age 78) and looked at non-vertebral (non-spinal) fractures, including eight trials of 40,886 participants specifically studying hip fractures.

When the results of the trials were pooled, vitamin D supplements decreased the risk of non-vertebral fractures by 14 percent and of hip fractures by 9 percent. The authors then pooled the results of only the nine trials in which participants received doses of more than 400 international units per day. At this dosage, vitamin D supplements reduced non-vertebral fractures by 20 percent and hip fractures by 18 percent. Doses of 400 international units per day or lower did not reduce the risk of either fracture type. A greater reduction in risk was also seen among trial participants whose blood levels of 25-hydroxyvitamin D (a commonly used measure of blood vitamin D levels) achieved a greater increase.

Among individuals taking high doses of vitamin D, additional calcium did not appear to have any further protective effect against fractures. "Physiologically, the calcium-sparing effect of vitamin D may explain why we did not see an additional benefit of calcium supplementation at a higher dose of vitamin D," the authors write.

"The greater fracture reduction with a higher received dose or higher achieved 25-hydroxyvitamin D levels for both any non-vertebral fractures and hip fractures suggests that higher doses of vitamin D should be explored in future research to optimize anti-fracture efficacy," they conclude. "Also, it is possible that greater benefits may be achieved with earlier initiation of vitamin D supplementation and longer duration of use. Our results do not support use of low-dose vitamin D with or without calcium in the prevention of fractures among older individuals."

More information: Arch Intern Med. 2009;169[6]:551-561.

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