True or False: Vitamin D Builds Healthy Bones?

By Lise Alschuler, ND
Assistant Director, Fellowship in Integrative Medicine

The world of vitamin D prescribing just became a bit more confusing. A clinical trial was recently published in JAMA about the effect of vitamin D supplementation on bone density in older adults.¹ The results of this article have been widely reported leading many to believe that vitamin D is not the supplement we hoped it to be for bone health. The reason lies in the conclusions of the investigators, “These findings do not support a benefit of high-dose vitamin D supplementation for bone health.” Is this wide-reaching conclusion justified?

The study randomized 311 healthy Canadian adults aged 55 to 70 years of age who had healthy bone density and who were not deficient in vitamin D to start. Participants took liquid vitamin D oral drops, 400iu, 4000iu or 10,000iu daily for three years.

The results of this study were interesting. Participants’ vitamin D levels increased in accordance with the dose of vitamin D that they took. However, despite the dose-dependent increases in serum vitamin D, there were greater losses in bone density in the higher dose groups!

So, what is going on here? The investigators surmised that high-dose vitamin D without additional calcium supplementation results in the release of calcium from bone. This has been observed in other studies. The investigators note that their results are consistent with those of a 2018 meta-analysis of 81 randomized clinical trials that concluded that oral vitamin D supplementation did not lead to reduced fractures, falls or increases in bone density.²

But, don’t throw out your vitamin D just yet. Older individuals who are deficient in vitamin D are at increased risk for fractures and falls.³,⁴ Importantly, there is ample clinical evidence that supports the use of supplemental vitamin D when taken together with calcium to lower fracture risk in these individuals.⁵,⁶ For instance, a 2007 meta-analysis of 6 randomized controlled trials representing 45,509 patients, found that vitamin D supplementation (700-800iu) with calcium supplementation (1000 – 1200mg daily) resulted in an 18% lower risk of hip fracture.⁷ And, keep in mind that vitamin D supplementation has other benefits. Notably, a recent systematic review and meta-analysis which included 52 trials representing 75,454 participants found that vitamin D supplementation (at varying levels) was associated with a 16% reduced risk of death from cancer.⁸

The bottom line? Vitamin D supplementation, by itself, is unlikely to improve bone density and to reduce the risk of osteoporotic fractures in older individuals who have sufficient vitamin D levels. The body of evidence supports the use of vitamin D with calcium supplementation in older individuals who have insufficient vitamin D serum levels. More is not necessarily better with 800iu being a sufficient dose in many trials.

This article is in response to this New York Times article.