

Topic:

[Increased Dietary Intake of Omega-3 PUFAs from Plant Sources May Improve Bone Health](#)

Keywords:

**BONE LOSS** - *Omega-3 Polyunsaturated Fatty Acids, PUFA, Alpha-Linolenic Acid, Linoleic Acid, Walnuts, Flaxseed Oil*

Reference:

*"An increase in dietary n-3 fatty acids decreases a marker of bone resorption in humans," Griel AE, Kris-Etherton PM, et al, Nutr J, 2007; 6(1): 2. [Epub ahead of print]. (Address: Department of Nutritional Sciences and Department of Integrative Biosciences, Pennsylvania State University, University Park, PA, USA. E-Mail: pmk3@psu.edu ).*

Summary:

In a randomized, controlled, crossover study involving 23 subjects (mean age: 49.9 years), results indicate that increased dietary intake of plant-derived omega-3 polyunsaturated fatty acids (n-3 PUFA) may improve bone health. The subjects received three diets in a crossover design, with each diet period lasting 6 weeks: (1) Average American Diet: 34% total fat, 13% saturated fatty acids, 13% monounsaturated fatty acids, and 9% PUFA (7.7% linoleic acid and 0.8% alpha-linolenic acid); (2) Linoleic Acid Diet: 37% total fat, 9% saturated fatty acids, 12% monounsaturated fatty acids, and 16% PUFA (12.6% linoleic acid and 3.6% alpha-linolenic acid); (3) Alpha-Linolenic Acid Diet: 38% total fat, 8% saturated fatty acids, 12% monounsaturated fatty acids, and 17% PUFA (10.5% linoleic acid and 6.5% alpha-linolenic acid). The predominant sources of alpha-linolenic acid were walnuts and flaxseed oil. Serum levels of N-telopeptides (NTx), a marker of bone resorption, were found to be significantly lower after the Alpha-Linolenic Acid diet (13.20 nM BCE), than after the Average American Diet (15.59 nM BCE). The mean NTx level following the Linoleic Acid Diet was 13.80 nM BCE. Additionally, for all three diets, positive

correlations were found between NTx concentrations with the pro-inflammatory cytokine TNF-alpha. Thus, the authors of this study conclude, "The results indicate that plant sources of dietary n-3 PUFA may have a protective effect on bone metabolism via a decrease in bone resorption in the presence of consistent levels of bone formation."