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ORIGINAL RESEARCH COMMUNICATION

n–3 Fatty acids are positively associated with peak bone mineral density and bone accrual in healthy men: the NO_2 Study[1,2,3]

Magnus Högström, Peter Nordström and Anna Nordström

[1] From Sports Medicine, Department of Surgical and Perioperative Science (MH, PN, and AN), the Department of Community Medicine and Rehabilitation, (AN), and the Department of Public Health and Clinical Medicine (PN), Umeå University, Umeå, Sweden

Background: Knowledge of the influence of nutritional intake on bone health is limited. Polyunsaturated fatty acids have been suggested to influence bone growth and modeling in humans, although data are sparse.

Objective: The objective was to investigate the role of fatty acids in bone accumulation and the attainment of peak bone mass in young men.

Design: The cohort studied consisted of 78 healthy young men with a mean age of 16.7 y at baseline. Bone mineral density (BMD; in g/cm^2) of total body, hip, and spine was measured at baseline and at 22 and 24 y of age. Fatty acid concentrations were measured in the phospholipid fraction in serum at 22 y of age.

Results: Concentrations of n–3 fatty acids were positively associated with total BMD (r = 0.27, P = 0.02) and spine BMD (r = 0.25, P = 0.02) at 22 y of age. A positive correlation between n–3 fatty acid concentrations and the changes in BMD at the spine (r = 0.26, P = 0.02) was found between 16 and 22 y of age. Concentrations of docosahexaenoic acid (DHA, 22:6n–3) were positively associated with total BMD (r = 0.32, P = 0.004) and BMD at the spine (r = 0.30, P = 0.008) at 22 y of age. A positive correlation was also found between DHA concentrations and the changes in BMD at the spine (r = 0.26, P = 0.02) between 16 and 22 y of age.

Conclusion: The results showed that n–3 fatty acids, especially DHA, are positively associated with bone mineral accrual and, thus, with peak BMD in young men.

Key Words: Peak bone mineral density • bone accrual • men • docosahexaenoic acid • n–3 fatty acids

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