A new clinical trial (reported in the February 2008 issue of the American Journal of Clinical Nutrition*) found that supplementing adolescent girls with calcium led to significantly increased bone mineral content in the short term. However, long-term benefits were only maintained with continual use.*

Calcium supplementation increases bone mineral content in adolescent girls

A recent meta-analysis raised doubt as to whether calcium supplementation in children benefits spine and hip bone mineral density (BMD). A recent study had a different conclusion. The trial was an 18 month trial of calcium supplementation (792 mg/d) with follow-up two years after supplement withdrawal. Subjects included 96 adolescent girls with low calcium intakes. State-of-the-art measures of bone were used to determine the change in total-body, lumbar spine, and total hip bone mineral content (BMC) during supplementation and then two years after supplement withdrawal.

Over the eighteen-month period, girls who received supplemental calcium showed significantly greater gains in bone mineral content (with the exception of the hip), and bone mineral density was greater at all sites compared with the group that received a placebo. Indicators of bone loss were significantly lower in the supplemented group than in the control group after 18 months. However, after 24 months (or two years without supplements), the differences between groups were no longer observed.

Contrary to the conclusion of the recent meta-analysis, this study indicates that calcium supplementation does indeed enhance bone mineral accumulation in teenage girls, but the effect is short-lived. The likely mechanism for the effect of the calcium is suppression of bone turnover, which is reversed upon supplement withdrawal. Therefore, calcium supplementation must be consistent and life-long to achieve full bone health benefits.

American Journal of Clinical Nutrition, Vol. 87, No. 2, 455-462, February 2008.