

The effect of calcium supplementation on bone density in 8-13 year old female twins

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The age range and magnitude of response of bone mass to calcium supplementation in young females remains controversial. We demonstrated previously that calcium supplementation increased bone mineral density (BMD) in female twins with mean age of 14 years⁽¹⁾. The greatest effect was seen in the interval 0-6 months, where the twin receiving calcium had a 1.6% greater increase in BMD at the lumbar spine (LS) and 1.3% at the total proximal femur (PF) compared with cotwin controls. We now report the change in bone density (QDR 1000W) in 26 pairs of premenarcheal twins with a mean age of 9.88 yrs (1.28) SD, after 6 months supplementation with 1200mg calcium carbonate (Caltrate), where one twin received calcium and the other a matched placebo (randomized, single blind, cotwin design). The mean weight of those taking calcium was 39.3 ± 1.89kg (SEM) compared with 38.5 ± 1.86kg for those taking placebo, and the mean baseline dietary calcium intake was 1295.56 ± 143.29mg and 1235.58 ± 116.47mg, respectively.

	calcium - placebo ¹	P (paired t-test)
Proximal Femur	1.82 ± 0.63	0.008
Lumbar Spine	-0.05 ± 0.84	0.951
Total Body	0.11 ± 0.38	0.783

¹Percentage within-pair differences of BMD changes at 6 months (Mean ± SEM)

Mean change in BMD between baseline and 6 months for the placebo group was 0.032 ± 0.005 g/cm² at the lumbar spine and 0.024 ± 0.005 g/cm² at the hip, and for the supplemented group; 0.034 ± 0.005 g/cm² at the lumbar spine and 0.038 ± 0.005 g/cm² at the hip.

Therefore, calcium supplementation in this group of younger twins increased BMD at the hip, but there was no significant increase at the spine. These results are comparable to those seen in females with a mean age of 14 years at the hip but not at the spine.

1. Nowson C., Green RM, Hopper JL, Sherwin AJ, Young D, Kaymakci B, Guest CS, Smid M, Larkins RJ, Wark JD. A Co-twin study of the effect of calcium supplementation on bone density during adolescence. *Osteoporosis Int* 1997;7:219-225.