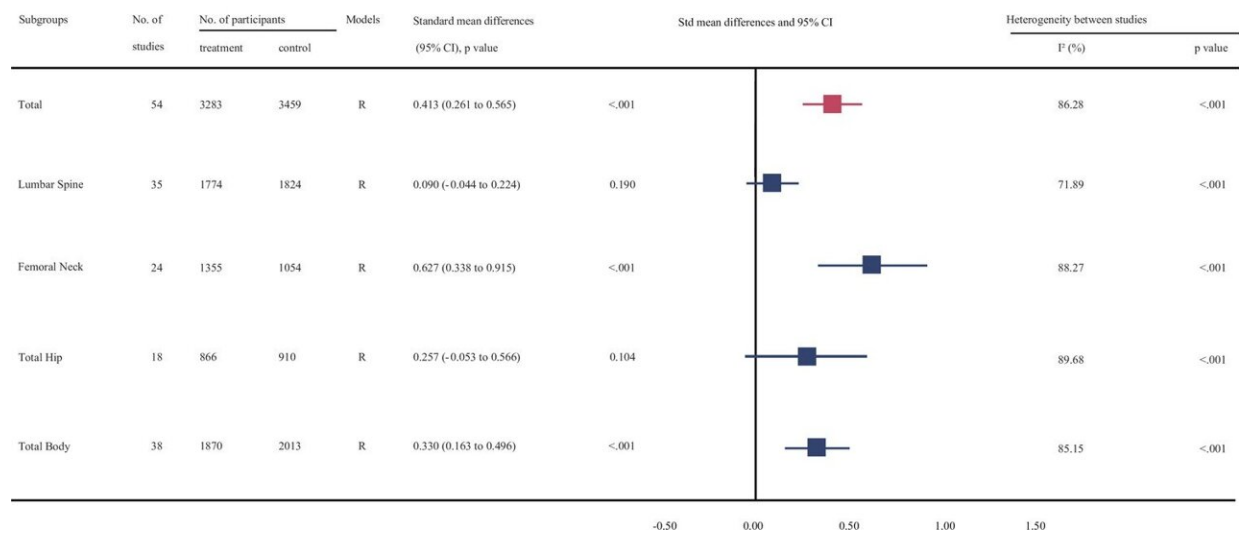


Calcium supplementation in people under the age of 35 improves bone mass

September 27 2022

Figure 2. Effect of calcium supplementation on bone mineral density (BMD) in each sites



Effect of calcium supplementation on bone mineral density (BMD) in each site.
Credit: *eLife* (2022). DOI: 10.7554/eLife.79002

Calcium supplementation in young adults can significantly improve bone mass, offering a potential new window for intervention to prevent osteoporosis, according to a review published today in *eLife*.

The findings provide novel insights and new evidence on the benefits of [calcium supplementation](#) and suggest that people should pay more attention to their [bone health](#) at a young age.

"Osteoporosis and fractures are important global public health problems, particularly in [elderly women](#)," explains lead author Yupeng Liu, researcher at the School of Public Health and Management, Wenzhou Medical University, China.

"However, although [calcium](#) supplementation has been widely used in older age to increase [bone mass](#), a number of studies suggest that it is unlikely to translate into clinically meaningful reductions in fractures. On the other hand, intervention before young adults reach peak bone density might have a greater impact on bone health and prevent osteoporosis later. There has been considerable debate about whether calcium supplementation has effects on bone health among [young people](#), so we conducted a comprehensive review of the evidence for calcium supplement effectiveness in people under the age of 35."

The team searched for randomized controlled trials, often considered the gold standard for [clinical research](#), comparing calcium or calcium plus vitamin D with a placebo or no treatment in participants under the age of 35. Specifically, they looked at results reported for bone mineral density (BMD) or bone [mineral content](#) (BMC). They included 43 studies involving more than 7,300 participants, of which 20 looked at dietary calcium and 23 looked at calcium supplementation. They then pooled these data to look at changes in BMD and BMC in the lumbar spine, femoral neck, total hip and total body.

Their main finding was that calcium supplements in people under 35 could significantly improve the BMD levels of both total body and femoral neck, and slightly increase the BMC of femoral neck, total body and lumbar spine. This improvement was most pronounced in people aged between 20 and 35 years (the peri–peak bone mass age, where the bone mass plateaus) compared with those younger than 20 years (the pre–peak bone mass age).

Both dietary sources of calcium and calcium supplementation had positive effects on femoral neck and total body BMD, but BMC measurements of the femoral neck and lumbar spine were only improved following calcium supplementation. There were also mixed results for the importance of vitamin D: combined calcium and vitamin D proved more beneficial on the femoral neck bone mineral density and content, but not for BMCs of lumbar spine and total body, or total body BMD.

The authors conclude that calcium supplementation can significantly improve both bone mineral density and content, especially in the neck, and that treating people with supplements during the peri–peak bone mass age has a better effect than treating them earlier or later in life.

"Although further trials will be needed to verify these findings, our review provides a new train of thought regarding calcium supplementation and the optimal timing of its effects," concludes senior author Shuran Wang, Professor at Wenzhou Medical University. "In terms of bone health and an individual's full life cycle, the intervention window of calcium supplementation should be advanced to the age around the plateau of peak bone mass—namely at 20–35 years of age."

More information: Yupeng Liu et al, The effect of calcium supplementation in people under 35 years old: A systematic review and meta-analysis of randomized controlled trials, *eLife* (2022). [DOI: 10.7554/eLife.79002](https://doi.org/10.7554/eLife.79002)

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