

BONE

Jump, run, climb—childhood exercise improves bone strength

A 4-year school-based moderately intense daily exercise program in prepubertal children improves bone mass and size without increasing fracture risk, reports a new study from Sweden. Studies previously showed that physical activity during childhood benefits bone strength. Bjarne Löfgren and colleagues now evaluated whether an extended exercise program (including ball games, running, jumping and climbing) induces long-term skeletal benefits at a population-based level, without increasing fracture risk.

The Malmö Pediatric Osteoporosis Prevention Study was conducted in a cohort of children aged 7–9 years. 446 boys and 362 girls had 40 min physical activity per day of school (the intervention group), and 807 boys and 780 girls did 60 min exercise per week of school (the control group) for a duration of 4 years. Fractures were prospectively registered, and bone mineral content (BMC) and bone width were measured by dual-energy x-ray absorptiometry in a subset of children

(73 boys and 48 girls in the intervention and 52 boys and 48 girls in the control group). The children also filled in an annual questionnaire assessing lifestyle factors such as diet, diseases and duration of physical activity.

The fracture rate ratio was 1.11 between the two groups. The mean annual gain in lumbar spine BMC was 7% higher in girls and 3.3% higher in boys in the intervention group, compared with the control group. The mean annual gain in femoral neck width was 1.7% and 0.6% higher in girls and boys, respectively, in the intervention group. The increases in BMC and bone width were associated with the duration of physical activity dose-dependently.

Practicing regular physical activity in prepubertal ages and continuing into puberty could be a promising strategy to build bone strength and reduce fracture risk in old age.

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