

9. The effect of sedentary behaviour on bone mineral density in older adults: A systematic review

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This abstract contributes to the Active Scotland Outcomes Framework as it highlights the potential benefit of reducing sedentary behaviour on bone health in older adults, therefore emphasises the importance of being active.

Background: Older adults spend a large proportion of their waking hours in sedentary activities, with literature reporting a mean of 9.4 hours/day. The detrimental effects of sedentary behaviour (SB) on cardiovascular health and mortality have been well established, yet little is known regarding the relationship between SB and bone health (bone mineral density (BMD)) in older adults.

Aim: The aim of this review is to determine the effects of SB on BMD in older adults.

Methods: Five electronic databases were searched: Web of Science (Core Collection); PubMed; EMBASE; Sports Medicine and Education; and PsycInfo. Inclusion criteria for studies were 1) healthy older adults mean age ≥ 65 years, 2) measured SB, 3) measured BMD using dual-energy X-ray absorptiometry. Quality was assessed using National Institute of Health Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies. Outcome data from included studies were extracted and presented in an evidence table.

Results/Findings: Following the search of databases, 17,811 potential articles were screened. Five studies were included for review based on inclusion criteria (two based on the same population). All studies were observational design: three cross-sectional; two longitudinal. Two studies were rated good and three were rated fair using the quality assessment criteria. Studies varied in the areas of measurement of BMD; these included: femoral neck; lumbar spine; pelvis; legs; arms; total hip; whole body. Results were varied across the studies and differed based on gender. Three studies reported positive associations between SB and BMD at different sites for women, whilst two found the opposite effect (a significant negative association). For men, there was uniformity in results with all three studies that had male participants reporting negative associations between SB and femoral neck, pelvic, whole body and leg BMD.

Conclusion: Results suggest differences between men and women when it comes to the effect of SB on BMD, and overall results are varied. This is likely due to the varying anatomical sections examined for BMD, the different methods used to measure SB (self-report vs accelerometer), and the scarcity of published literature. More research is required to determine the relationship between SB and BMD in this population.