

Does adherence to falls prevention exercise programmes benefit bone mineral density in older people? The ProAct65+ bone study

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Introduction

Falls prevention exercise programmes can reduce fall incidence, and also include some strengthening exercises suggested to load bone. This study compared BMD changes in good adherers with home (Otago Exercise Programme, OEP) and group (Falls Exercise Management, FaME) falls prevention exercise programmes with usual care in older people to determine whether these interventions can improve bone strength.

Methods

Men and women aged over 65 years were recruited through primary care and randomised by practice to OEP, FaME or usual care. Bone mineral density (BMD) was measured by dual X-ray absorptiometry prior to randomisation and following the 24 week intervention. Monthly diaries were used to identify OEP and FaME participants who had completed at least 75% of prescribed exercise. Comparisons between treatment arms were made using linear regression models, adjusted for baseline values, gender, medication use and comorbidities.

Results: Intention to treat analysis showed no differences in BMD changes between the three groups. 29 of the 77 OEP participants and 27 of the 95 FaME participants were classified as good adherers and compared to 117 usual care participants. Femoral neck BMD changes did not differ between treatment arms, with mean effect

sizes in OEP and FaME adherers relative to usual care arms being 0.000 and +0.001 g/cm² respectively (P = 0.98 and 0.86). Effect sizes for section modulus were -4.5 and -10.4 mm³ in OEP and FaME respectively (P = 0.63 and 0.27). There were no significant effects at other skeletal sites.

Conclusion

The OEP and FaME programmes did not influence bone mineral density even in older people that reported good adherence with the prescribed interventions. Falls prevention programmes have an important role in preventing fractures by preventing falls, but to increase bone strength, programmes may need to incorporate exercise that exerts higher strains on bone and/or have a longer duration.