The Effect of Different Exercise Modes on Bone Density in Middle-aged and Older Men: A Systematic Review*

PP303

Kate A. Bolam[1], Jannique G.Z. van Uffelen[1,2,] Dennis R. Taaffe[1,3,4]

[1] School of Human Movement Studies, The University of Queensland, Brisbane, QLD, Australia; 2 Institute of Sport, Exercise & Active Living, Victoria University, Melbourne, VIC, Australia; 3 School of Environmental and Life Sciences, The University of Newcastle, Ourimbah, NSW, Australia; 4 Edith Cowan University Health and Wellness Institute, Edith Cowan University, Joondalup, WA, Australia

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Purpose

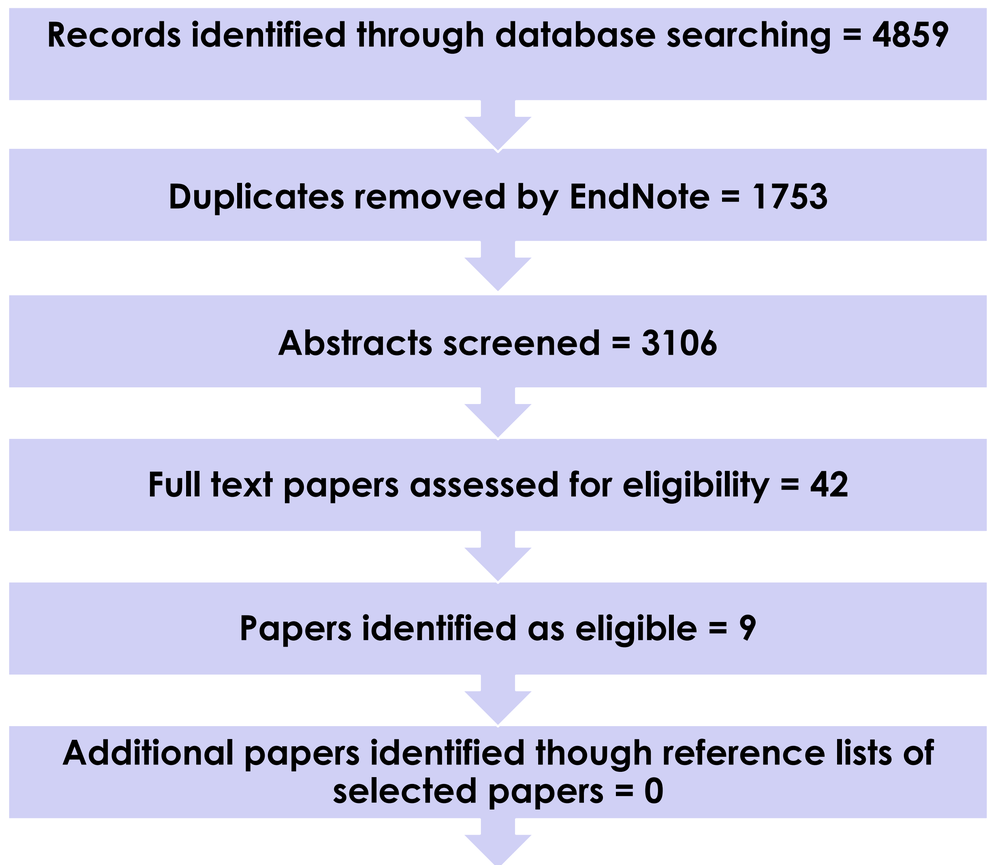
1) To review and summarize the findings of exercise trials examining the effect of **weight-bearing** and **resistance-based exercise** modalities on **bone mineral density** (BMD) of the hip and lumbar spine in middle-aged and older **men; 2)** To assess the study quality of these trials.

Methods

LITERATURE SEARCH (August 2012)
PubMed, EMBASE , CENTRAL (Cochrane Central Register of controlled trials), PEDro and SPORTDiscus

INCLUSION CRITERIA
Design: randomized controlled trials or controlled trials
Population: men aged 45+ years. Studies including men and women in which results for men were reported separately were eligible for inclusion
Intervention: any exercise protocol involving resistance training, impact-loading exercise, weight-bearing exercise or a combination
Outcome: lumbar spine, total hip, trochanter, femoral neck or Wards's triangle BMD by DXA

QUALITY RATING LIST
7-item Delphi methodological quality rating list with score from 0-100%; higher score indicating better quality



Results

Study Quality: 5 of the 8 trials had a quality rating score of less than 50%, indicating relatively low methodological quality

Population: men aged 50-79 years old. Sample sizes ranged from 11-147 participants

Intervention: duration ranged from 3 months to 4 years

- walking (n=2)
- resistance training (n=3)
- resistance training + walking (n=1)
- resistance training + impact-loading activities (jumping & leaping) (n=1)
- resistance training + Tai Chi (n=1)

Outcome:

- 6 trials, 2 with a quality score >50%, showed a positive effect on BMD of hip or lumbar spine
- 2 trials, quality score of 43% and 78%, showed no significant effect on BMD of hip and/or lumbar spine
- only 2 studies reported adverse events and these were only of a minor nature

Conclusions

- Resistance training alone, or in combination with impact-loading activities, is safe and may assist in the prevention of osteoporosis in middle-aged and older men
- Additional high-quality randomized controlled trials are required to establish evidence-based guidelines for the optimal exercise prescription to prevent osteoporosis in this population

Take home message

Regular resistance training and impact-loading activities (jumping) should be considered as a strategy to prevent osteoporosis in middle-aged and older men

***Bolam, KA., van Uffelen, JG., Taaffe, DR. The effect of physical exercise on bone density of middle-aged and older men: A systematic review. *Osteoporos Int*. Mar 2013 [Epub ahead of print]**

Please contact
Kate A Bolam
k.bolam@uq.edu.au
Stockholm, Sweden

CREXPAH
Centre for Research on Exercise, Physical Activity & Health