

Comparative effectiveness of exercise interventions for preventing falls in older adults: A secondary analysis of a systematic review with network meta-analysis

Summary

Falls are a major health concern for people aged 65 years or older. Previous reviews have established that exercise is effective in preventing falls in this population. However, these reviews lacked precise coding of exercise type, which limits the implementation of effective exercise programs. To our knowledge, this is the first network meta-analysis (NMA) for fall prevention exercise interventions and provides important clarity into which types of exercise are most effective in reducing falls.

Implications

This review is the first to identify the “key components” for effective fall prevention exercise: anticipatory control, dynamic stability, functional stability limits, reactive control, and flexibility. These results can inform the design and implementation of fall prevention exercise programs in a range of practice settings, and have the potential to significantly impact the health and well-being of older adults.

Reference: Sibley KM, Thomas SM, Veroniki AA, et al. Comparative effectiveness of exercise interventions for preventing falls in older adults: A secondary analysis of a systematic review with network meta-analysis. *Exp Gerontol.* 2020 Nov 10;143:111151.

PMID: [33186739](https://pubmed.ncbi.nlm.nih.gov/33186739/)

For more information, please contact
Dr. Andrea Tricco:
Andrea.Tricco@unityhealth.to

What is the current situation?

- Existing reviews have established that exercise reduces falls in older adults.
- However, these reviews lacked in precise coding of the specific types of exercise which limits the ability to implement effective exercise programs.

What is the objective?

- To extend the analysis of the primary review in order to determine comparative effectiveness of different types of fall prevention exercise interventions using network meta-analysis (NMA).

How was the review conducted?

- MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, and Ageline databases were searched from inception until April 19, 2017, after having the search developed and peer reviewed by experienced information scientists.
- Study selection, data abstraction, exercise intervention coding, and risk of bias assessments were conducted by independent reviewer pairs after pilot-testing, and a third reviewer resolved any disagreements.
- Random-effects network meta-analysis was conducted for connected networks including 10 or more RCTs. Pairwise random-effects meta-analysis was conducted across all outcomes with more than one study evaluating the same combination of interventions.

What did the review find?

- A total of 10650 citations and 1210 full-text articles were screened as part of the primary review. Of these, 169 studies involved an exercise intervention and were included in the present analysis.
- The most effective components of exercise for reducing the number of fallers included four components of balance (anticipatory control, dynamic stability, functional stability limits, reactive control) and flexibility.
- Examples of effective balance exercises:

Exercise	Targeted component
Standing and shifting weight as far as possible in all directions	anticipatory control, dynamic stability, functional stability limits
Tandem walking, sit-to-stand, or heel raises	anticipatory control, dynamic stability
External perturbations or throwing and catching a ball	reactive control

- Exercise and rehabilitation professionals can use these findings to inform the development and implementation of exercise programs, which have the potential to improve the health and well-being of older adults.