

## Therapeutics

# Muscle strength training for reversing frailty: how strong is the evidence?

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*A recent systematic review assessing interventions to delay or reverse frailty found a combination of muscle strength training, and protein supplementation was the most effective intervention and the easiest to implement in primary care. The quality of data, however, leaves some uncertainties about the evidence.*

Though definitions differ, frailty is seen as a distinct, yet multi-dimensional, health state where a minor event can trigger major changes in health from which the individual may fail to return to their previous level of health. Frailty is underpinned by ageing-related degeneration across multiple physiological systems.<sup>1,2</sup> Estimates of its prevalence in community-dwelling older adults range from 5% to 17%.<sup>3</sup>

The importance of frailty as a risk factor is its association with other adverse health outcomes including falls and mobility decline resulting in dependency, need for long-term care and mortality.<sup>4</sup> A need for care and support arises when someone is no longer able to manage vital activities of daily living such as washing, dressing and feeding themselves. For illustration, the ability to get to the toilet in time is a threshold marking the difference between having carers visit twice a day and requiring live-in or residential care. The cost of care increases fivefold as this threshold is crossed.<sup>5</sup>

Given the above, the management of frailty is a priority, particularly for primary care providers.<sup>6,7</sup> Travers and colleagues set out to systematically review the evidence for the effectiveness of different interventions for preventing and managing frailty in primary care settings.<sup>8</sup>

## What did they do?

Scientific databases were searched from inception to May 2017 for randomised controlled trials or cohort studies with control groups on primary care frailty interventions. Screening methods, interventions and outcomes were analysed in included studies. Effectiveness was determined by a change of frailty status or other frailty indicators. The authors devised a scoring system based on the 'relative effectiveness' of interventions mapped against their ease of implementation in terms of human resources, marginal costs and time requirements. The authors did not assess the quality or validity of evidence in terms of the risk of bias and other important methodological considerations.

## EBM Verdict

**EBM Verdict on:** Delaying and reversing frailty: a systematic review of primary care interventions. *Br J Gen Pract* 2019;69(678):e61–e69. doi: 10.3399/bjgp18X700241

- ▶ Strong evidence supports a beneficial effect of balance and functional task training with or without resistance (strength) training for reducing falls but not other important outcomes due to frailty in community-dwelling older adults both at lower and high risk. The evidence for primarily strength training is less clear due mainly to a lack of high-quality clinical trials.

## What did they find?

A total of 46 studies involving 15 690 participants (median study size 160 participants) met the inclusion criteria. Of the frailty interventions, 23 involved physical activity, and other interventions involved health education, nutrition supplementation, home visits, hormone supplementation and counselling. Due to the heterogeneity of interventions, the authors were not able to perform a meta-analysis. The authors report a 'significant improvement' of frailty status in 10 (71%) out of 14 studies reporting this outcome. They report similar findings for frailty indicators in 69% (n=22) of studies where measured. The authors report that interventions with both muscle strength training and protein supplementation were consistently placed highest for effectiveness and ease of implementation (date not given).

There are limitations to consider. No data for effect sizes or CIs around them are presented, something recognised by the authors. There is no mention of adverse events nor their inclusion as a specific outcome, and we are therefore unsure about the harms of interventions, including strength training and nutrition supplementation. The review does not inform us which studies underpin their recommendations for implementing exercise and nutrition interventions nor the quality of their data. Finally, the authors perform crude indirect comparisons that do not take into consideration the inherent methodological issues in doing so (eg, confounding).

Existing guidelines recommend strength and balance training as part of a multifactorial intervention but not low-intensity exercise, brisk walking or untargeted group exercise for preventing falls in high-risk individuals (physically frail), including National Institute for Health and Clinical Excellence guidelines.<sup>9</sup> Other guideline organisations recommend a community-based exercise programme including balance, strength, flexibility and endurance training.<sup>10</sup>

There is at least one Cochrane review that assessed the effectiveness of exercise interventions for the prevention of falls in community-dwelling adults. It reported high certainty of evidence for a protective effect on falls from gait, balance and functional task training (rate ratio 0.77 [95% CI 0.71 to 0.83]; Number Needed to Treat for Benefit: 4) and with resistance (strength) training (rate ratio 0.66 [95% CI 0.50 to 0.88]; NNTB 3; moderate certainty) but not for strength training alone [rate ratio 1.14 [95% CI 0.67 to 1.97], very low certainty].<sup>11</sup> There was also insufficient evidence to determine the effects of exercise, including strength training, on the risk of a fall requiring hospital admission and adverse events.

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**Competing interests** None declared.

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