Balance training to prevent injuries from falls in older people

A multicentre randomised controlled trial in France found that a 2-year balance training programme reduced the risk of falls that resulted in injury among community-dwelling women aged 75–85 years.

Overview:

- A 2-year group and individual training programme to improve balance (the Ossébo balance training programme) reduced the risk of falls that resulted in injury among women aged 75–85 years who lived in the community.
- More research is needed to establish if this specific training programme is of clinical benefit and cost effective.

Background: People aged 65 and older are at high risk of falling, with 30% of people older than 65 and 50% of people older than 80 falling at least once a year (NICE 2013). Falls are estimated to cost the NHS more than £2.3 billion per year.

Exercise programmes that emphasise balance training are effective at reducing falls among older people who live in the community (Gillespie et al. 2012). A meta-analysis suggested that such programmes also seem to prevent falls that result in injuries, including severe ones such as fractures (El-Khoury et al. 2013), but the quality of the evidence was not robust.

Current advice: The NICE guideline on falls in older people recommends that all older people who have fallen several times or are at increased risk of falling should be considered for an individualised multifactorial intervention.

A muscle-strengthening and balance programme should be offered as a specific component of the multifactorial intervention. This programme should be individually prescribed and monitored by an appropriately trained professional. Those most likely to benefit are older people living in the community with a history of recurrent falls and/or balance and gait deficit.

The NICE pathway on falls in older people brings together all related NICE guidance and associated products on the area in a set of interactive topic-based diagrams.

New evidence: El-Khoury et al. (2015) conducted a randomised controlled trial to assess whether a 2-year balance retraining programme reduced injurious falls among older women living in the community.

Voter registration lists were used to recruit women aged 75–85 who lived in the community in 16 cities in France. These women were invited by letter to attend a free balance and health examination. Women were eligible to participate in the study if they were assessed as having poor balance or gait.

A total of 4221 women attended the baseline balance and health examination (11% of those invited). Of these women, 1138 were eligible to participate in the study and 706 agreed to be randomised to the intervention group (n=352) or the control group (n=354).

The intervention comprised 2 years of free weekly supervised exercise sessions in small groups, supplemented by individually prescribed home exercises (the Ossébo balance training programme). The exercises were designed to improve muscle strength, muscle extensibility, postural stability, joint flexibility, balance, reaction time, coordination and spatial awareness. The intervention was delivered by a network of community-based instructors with moderate levels of training and expertise.

The primary outcome was the rate of injurious falls: both severe (such as those that caused fractures) and moderate (for example those that resulted in bruising or sprains).

Over the 2-year study, 397 injurious falls were reported in the control group (in 189 [53.4%] women), and 305 falls in the intervention group (in 170 [48.3%] women). The rate of injurious falls was 19% lower in the intervention group than in the control group (hazard ratio=0.81, 95% confidence interval 0.67 to 0.99, p=0.04).

Women in the intervention group were significantly better than those in the control group in a range of measures of balance and gait, such as time to walk 6 metres (p=0.005 at 2 years). When questioned about health-related quality of life, women in the intervention group reported significantly better physical function throughout the study (p=0.01 at 1 year and p=0.03 at 2 years) and better general health (p=0.04) and vitality at 1 year (p=0.01).

Limitations of this study include the low recruitment rate (11%) and the high dropout rates (16% in the intervention group and 14% in the control group). In addition, participation in the intervention programme was rarely consistent, with most participants missing some sessions throughout the intervention.

Commentary by Dr Alison Shepherd, Speciality Trainee in Geriatric Medicine and Dr Damien Reid, Consultant in Medicine for the Elderly, Hairmyres Hospital, NHS Lanarkshire:

"This large multicentre study assessed the efficacy of a defined strength and balance training programme in reducing injurious falls in a subgroup of people aged 75–85 years in France. Participants were female, living at home, and assessed as being at moderate risk of injurious falls, 'neither too fit nor too frail'. In the previous year, 42% of this 75–85 year old cohort had reported at least one fall, comparable to a figure of about 30% in the total population of over 65s living in the community (Gillespie et al. 2012). The authors specifically recruited women with low-to-moderate risk of falling to test the effects of their intervention on the general population of older people, rather than on people identified as at high risk of falls by their contact with medical services (El-Khoury et al. 2015).

"Given that reduction in injurious falls was the primary outcome measure in this study, it is surprising that neither the total number of previous falls, nor the number of injurious falls, was recorded before the intervention, even if this would have necessitated additional data collection. Randomisation was stratified for weight (<59kg and ≥59kg) and study centre, although not for history of falls. As a result, the control and intervention group weighed the same but had a different proportion of fallers: 45% and 39% respectively. This difference comprised 15.4% more people with a history of falls in the control group. The 19% difference in injurious falls between the

two groups during the intervention period should be interpreted in this context.

"There was no economic assessment of this intervention, and in the absence of follow up data it is not possible to comment on any lasting benefit.

"Despite these caveats, this is a significant study proving the feasibility of delivering a long-term, progressive strength and balance programme requiring weekly attendance by participants and using normal facilities. It has greatly added to our knowledge of the practical challenges and barriers to providing a large scale, population-level, single intervention to reduce falls in a moderately at-risk older population. Healthcare professionals should continue to follow NICE advice to offer individualised muscle-strengthening and balance interventions to people at risk of falling."

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