A home based, nurse delivered exercise programme reduced falls and serious injuries in people ≥80 years of age


QUESTION: In people ≥75 years of age, is a home based exercise programme that includes strength and balance retraining delivered by a nurse effective for reducing falls and related injuries?

Design
Randomised [allocation concealed]*, blinded (outcome assessors), controlled trial with 1 year of follow up.

Setting
A home health service in a geriatric assessment and rehabilitation hospital in New Zealand.

Participants
240 people who were ≥75 years of age (mean age 81 y, 68% women) and were living in their own homes. Exclusion criteria were inability to walk around their own residence, current receipt of physiotherapy, or inability to understand the study. 88% of participants completed 1 year of follow up.

Intervention
121 participants were allocated to a home based exercise programme run by a district nurse. The programme was implemented as part of the nurse’s usual work and included muscle strengthening and balance retraining exercises of increasing difficulty and a walking programme. Individually tailored exercise prescriptions took place during 5 home visits (at 1, 2, 4, and 8 wks and at 6 mo). Participants were to exercise ≥3 times per week (30 min/session) and walk twice weekly for 1 year. Between home visits, telephone calls were used to increase motivation and discuss problems. [Programme materials available from author]* 119 participants received usual care.

Main outcome measures
Number of falls and injuries related to falls, cost of implementation, and hospital costs related to falls.

Main results
43% of participants in the exercise group met the exercise goals. Participants in the exercise group had fewer falls than participants in the control group (80 v 109, p=0.02). Subgroup analysis showed that this reduction in the number of falls occurred only in participants ≥80 years of age (43 v 81 falls, p=0.007). Fewer serious injurious falls occurred in the exercise group (table), but the groups did not differ for total number of injurious falls, moderate injurious falls, and falls for which medical care was sought. The cost of the programme was NZ$432 per person for the first year. The incremental cost per fall prevented was $1803 for all participants. The exercise programme was more cost effective for older participants. When implementation costs and hospital costs averted were both considered for participants ≥80 years of age, the cost savings were $576 per fall prevented and $1563 per injurious fall prevented.

Conclusion
A home based exercise programme for elderly people implemented by a nurse reduced falls and serious injuries from falls and was more cost effective in people ≥80 years of age.

COMMENTARY
This important study by Robertson et al highlights the benefits of an individually prescribed exercise programme for seniors. Although exercise promotion is not always considered within the purview of nurses’ roles, findings support the incorporation of standardised exercise protocols for fall prevention among older seniors in home visiting programmes.

Clients were recruited with a letter from their physician. About 48% chose not to participate. Having letters sent out by physicians is a reasonable approach because they are important referents for seniors. Further increases in recruitment might be achieved by tailoring the content of letters to seniors based on their likely motivation to participate in an exercise regimen.

Costs were estimated from a societal viewpoint. Although the programme is ready for delivery, managers need to consider implementation costs (eg, training nurses to administer the exercise protocol) when integrating this exercise protocol into a home visiting programme. Client coverage rates of various health providers and the average length of client follow up would be important considerations in deciding which category of health provider could most efficiently deliver the programme.

Findings indicate that this programme results in cost savings after 1 year. Because sustainability is always an issue with behavioural interventions, such as exercise promotion, longer term studies are needed to determine which strategies optimise sustained behaviour change.

Study results are promising and suggest that nurses have an important role to play in the promotion of appropriate exercise that targets fall prevention among seniors. Based on other relevant research, it is recommended that multifactorial approaches to fall prevention should be used, where exercise protocols are included along with other interventions targeting the complex set of risk factors that increase seniors’ risk of falls.

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### Table: Home based exercise v usual care for people ≥75 years of age†

<table>
<thead>
<tr>
<th>Outcome at 1 year</th>
<th>Exercise</th>
<th>Usual care</th>
<th>RRR (95% CI)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious injury from falling</td>
<td>1.7%</td>
<td>7.6%</td>
<td>78% (13 to 95)</td>
<td>17 (9 to 140)</td>
</tr>
</tbody>
</table>

†Abbreviations defined in glossary. RRR, NNT, and CI calculated from data in article.