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PREVENT FALLS & FRACTURES



# IN HOME STRENGTH & BALANCE

EXERCISE EFFECTIVENESS CRITERIA



The Technical Advisory Group established the following criteria for effective in-home strength and balance programmes to reduce falls in older people. These criteria are supported by research and evidence, which can be provided on request.

### Criteria 1

The exercise programme must be specifically designed to prevent falls, and consist of progressive leg muscle strengthening and standing balance training exercises.

Clarification: The strengthening exercises focus on the major lower limb muscles for balance and walking.

Ankle cuff weights provide resistance to the knee flexors, knee extensors and hip abductors; the ankle dorsiflexor and plantarflexor are strengthened using body weight alone.

The balance exercises need to be of sufficient difficulty to challenge balance.

### Criteria 2

The exercise programme must be targeted to those who will benefit most; those who have identified strength and balance deficits, a history of a fall and for whom it is clinically inappropriate to attend community class-based programmes.

Clarification: In-home programmes are of most benefit for those over-75 years (Māori and Pacific Island people 65 years and over) who meet referral criteria (section 2).

### Criteria 3

The exercise programme must be individually prescribed for a person who has identified strength and balance deficits, and conducted by an appropriately qualified registered health professional, who actively monitors and modifies the exercise programme to suit the health and physical capacity of the person.

Clarification: The clinician visits the person to individually prescribe and progress the exercises. Home exercise visits are recommended on week 1, 2, 4 and 8; month 6 and 12.

Between the home visits, the person is telephoned in order for the clinician to check on the person's progress, answer any questions, and motivate the person to keep up with the programme.

During the home visits the instructor should demonstrate, explain and closely observe the person performing the exercises, ensuring that the person:

- Completes gentle warm-up (flexibility) exercises first
- Has appropriately tailored exercises
- Is able to safely complete the exercises unsupervised between visits.

## Criteria 4

Exercises should have clear instructions and illustrations with advice to perform them at least three times a week, with the intention of maintaining self-managed exercise in the longer term.

Clarification: The exercises must be maintained to sustain the benefits. Strategies to help achieve this are:

- Start the programme slowly and set realistic progressions
- Provide ongoing support and motivation including telephone contact between home visits
- Provide booster visits as necessary, particularly if the programme needs to be restarted or modified after a short-term illness
- Encourage walking and other physical activity, if considered safe to do so (note: walking will not lower the risk of falls on its own)
- Involve the person's primary care team and home care support workers
- Involve family members.

Each person should receive:

- A booklet with illustrations and instructions in large print of the exercises currently prescribed in their individual programme
- An ankle cuff weight, which must be easy to take on and off (note: the weight of the cuff will need to be increased as strength improves).

## Criteria 5

**Individual, conventional measures of strength and balance should be monitored at intervals and the exercise programme progressed to maintain improvement.**

Clarification: On-going review of the appropriateness of the exercise programme for the person should be taking place (e.g. whether exercise is delivering benefits to the person, whether the person can progress from in-home to community group strength and balance programmes).

*An example of a programme that meets all of these criteria is the Otago Exercise Programme (OEP).*

Clarification: The OEP is an internationally recognised, evidence-based falls prevention exercise programme that improves strength and balance and reduces falls and fall related injury in community living older people by 35%<sup>1</sup>. The OEP is an individually tailored, home-based programme that in the research trials was delivered by physiotherapists or trained nurses supervised by an experienced physiotherapist over the course of 52 weeks.

The OEP instructor's manual which includes the exercise sheets can be downloaded free of charge at

[www.acc.co.nz/otagoexerciseprogramme](http://www.acc.co.nz/otagoexerciseprogramme).

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<sup>1</sup>Robertson MC, Campbell AJ, Gardner MM, Devlin N. Preventing injuries in older people by preventing falls: a meta-analysis of individual-level data. *Journal of the American Geriatrics Society* 2002;50:905-911.

## Criteria 6

### **Exercise programme should be an integral part of the local integrated falls and fracture system.**

Clarification: The falls and fracture system will include a local governance group and outcome measures.

In summary, the TAG recommended that programmes directed at improving strength and balance and preventing falls in older adults living in the community and delivered in their homes in New Zealand must meet the following five assessment criteria. These are:

1. The exercise programme must be specifically designed to prevent falls, and consist of progressive leg muscle strengthening and standing balance training exercises.
2. A person referred to the exercise programme must have identified strength and balance deficits and where it is clinically inappropriate to attend a community class based programme.
3. The exercise programme must be individually prescribed and supervised by an appropriately qualified registered health professional, who actively monitors the exercise programme.
4. Exercises should have clear instructions and illustrations with advice to perform them at least three times a week.
5. Individual, conventional measures of strength and balance should be monitored at intervals and the exercise programme progressed to maintain improvement.
6. The exercise programme should be an integral part of a coordinated falls and fragility fracture prevention approach adopted across local health systems.

# REFERRAL CRITERIA

In-home strength and balance programmes are most appropriate for those who have poor strength and balance and are too frail for or have no access to community group-based falls prevention exercise programmes. This programme is not suitable for people in rest home or hospital care. To get maximum benefit, potential persons need to have strength and balance or mobility deficits that would improve with a strength and balance exercise programme. Simple criteria are used to screen for those older people who will benefit from the programme.

The following three screening questions will determine the likely benefit of strength and balance training. Ask all people aged 75 years and over (Māori and Pacific Island people 65 years and over) living in the community three questions that are the key in determining benefit of in-home strength and balance programme:

1. Have you slipped, tripped or fallen in the past year?
2. Do you have to use your hands to get out of a chair?
3. Are there some activities you have stopped doing because you are afraid you might lose your balance? Do you worry about falling?<sup>2</sup>

A person who responded positively to any of these questions, has identified strength and balance deficits, and is identified as requiring a clinician supervised programme is likely to benefit from in-home strength and balance exercises.

Presence of the following additional features suggests a higher risk:

- Use of a walking aid (or requires a walking aid)
- Is receiving a personal care package
- Persons transitioning from an early (hospital) discharge programme.

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<sup>2</sup> Health Quality & Safety Commission, Topic 2: Which older person is at risk of falling? Ask, assess, and act

## Inclusion and exclusions

People may be excluded or deferred from in-home strength and balance training due to risk factors that may increase their risk of falling. Thus assessment and management, and a referral from an appropriate health professional is needed prior to starting the programme.

The other falls risk factors include, but are not limited to: cognitive impairment, medications, impaired vision, foot problems, home hazards, and other factors that may increase the risk of falling<sup>3</sup>.

## Measures

Metrics are essential for programme modification for the person, and to evaluate programme success overall. It is recommended to use objective, standard tests to assess strength and balance to ascertain 'appropriateness of referral', and to provide a 'baseline', in order to monitor 'improvement' and 'outcome'.

The Health Quality & Safety Commission includes a suite of tests such as The Timed Up and Go, Four Stage Balance Test and the 30 Second Chair Test (TAG recommends the 30 Second Chair Test as the primary measure).

Test results can be used to show improvement and to motivate a person to exercise regularly. Test results should be/can be used to determine whether a person is not benefiting from the in-home programme: either is suited to a community-based group strength and balance programme, self-managed exercises, or a Green Prescription; or has other health issues that should be addressed.

The metrics will capture utilisation of service, effectiveness, timeliness and integration of care for the health system and the funders.

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<sup>3</sup> Health Quality & Safety Commission, Topic 3: Falls risk assessment: a multifactorial approach

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