


# Exercise to prevent falls

*A guide to setting up an effective Strength and Balance programme within your community*





This guide has been written to help community groups who want to run a strength and balance programme to help prevent falls.

It gives some ideas on how to develop and run such a programme and gives examples of some successful programmes.

Please note that it is a guideline only. Once you have decided on a programme, ACC recommends you discuss it with qualified instructors and health professionals for guidance with your chosen participants.

The reference page lists some resources for people who wish to do some further research.

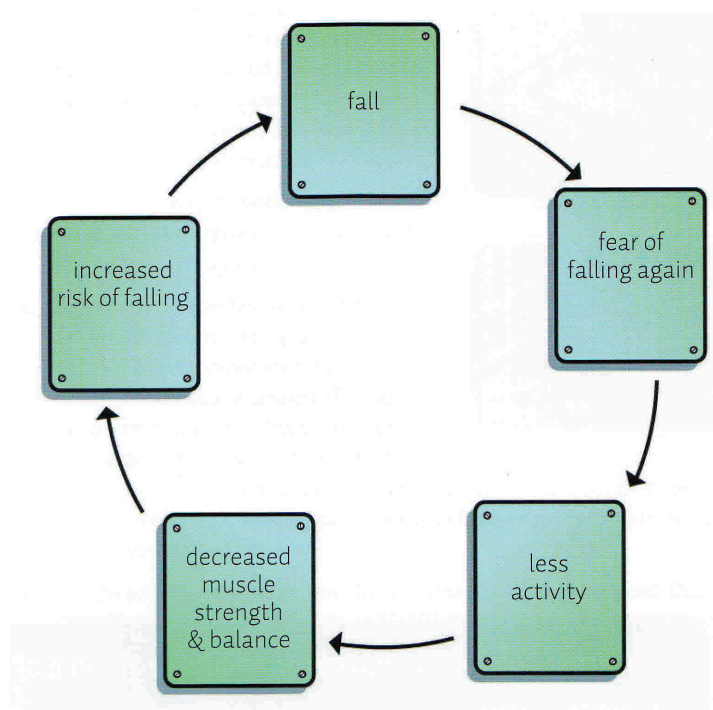
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## Why have such programmes?

Falls are a significant cause of injury for all age groups.

The diagram below shows how falls can lead to a significant loss of activity. People who have experienced a serious fall can worry so much about falling that they restrict their activity. They gradually do less activity, which can actually increase their risk of falling.



Leg muscle weakness and impaired balance contribute most to falls.

Activities common to older people such as gardening and walking do not usually help increase muscle strength on their own.

**The number of falls can be reduced by promoting exercise programmes that improve people's strength and balance.**

## Think about what is appropriate for your group

Once you have decided who the programme is for — for example adults over 65, rest home residents, a group at a place of work — you must decide:

- What do they need from such a programme?

For example: leg muscle strengthening, social activities, improved balance.

- What sort of programme is appropriate for them?

For example: dancing, aerobics, Tai Chi.

- What help will you need to run the programme — tutors, helpers, transport etc?

### So what type of programme will do this?

It could be an exercise programme, or a dance programme perhaps; see some examples on pages 13 to 17.



## What programmes already exist in your community?

Are any other strength and balance programmes or services currently being offered in your community? You can find out from such sources as the local council, SPARC, or the local ACC Community Injury Prevention Consultant.

Would any existing programmes meet the needs of your group? You may be able to join them or link up to share such things as resources or venues.

If none exist, offer a new programme.

## Who can help you?

Does your organisation need any help to offer the programme?

Some examples of people and organisations that could help you:

To help develop the programme:

- ACC Community Injury Prevention Consultants.
- Health professionals such as physiotherapists.

To spread the message:

- News media — newspapers, radio stations, local television stations.
- Church groups.
- Older person's organisations.
- Healthcare providers — doctors, practice nurses, physiotherapists.
- Recreation departments of district and city councils.

To help with funding:

- ACC Community Injury Prevention Consultants for advice.
- <http://www.communityconnect.org.nz/index.php?page=FUNDING>
- District and city councils.
- Service clubs — Rotary, Lions, Kiwanis.
- Charitable Trusts.

To help provide people such as tutors, helpers, transport providers:

- Red Cross.
- Service clubs — Rotary, Lions, Kiwanis.
- Churches.

To help with finding a venue to hold the activity:

- Churches.
- Chartered clubs — Workingmens clubs, RSAs.
- District and city councils.

## Setting up the programme

### Experience shows that a successful programme:

- Meets the criteria set out below.
- Is accepted and enjoyed by the participants
- Has a strong social aspect.
- Is held at a time and place that is convenient for participants.
- Provides some challenge, especially for older men.
- Encourages people to continue exercising out of class.
- Has been advertised so that people know about it.
- Has been carefully budgetted for (see the working sheet on page 21).
- Includes additional activities such as health checks, talks and presentations of interest to the group, or guest/celebrity visits — for example, a visit by the Mayor or local sports personality.

## Strength and Balance criteria

For a strength and balance programme to be effective at reducing the incidence and severity of falls, the following criteria are required:

### Frequency

- Exercise undertaken at least once per week.
- Exercise is available on an ongoing basis (i.e. the programme is not a one-off block of exercise).

### Intensity

- Exercise programme shows progression (i.e. may start at an easy level and gradually get harder).
- Exercise can be adapted to various skill/ fitness levels.

### Time

Duration of at least 45 minutes.

### Type

Exercise that challenges and improves both balance and muscle strength as follows:

- Progressively challenges balance.
- Progressively challenges muscle strength.

## Teaching safely<sup>1</sup>

### Make sure the venue is safe

- Well lit.
- Comfortable temperature.
- Non-slip floor.
- Chairs within easy reach.
- Plenty of room to move around freely (clear away unneeded objects).

### Make sure you can deal with medical and other emergencies

- Formulate an emergency procedure.
- Keep an up-to-date list of emergency-related phone numbers and make sure there's a phone handy.
- Have a person present who is CPR and First Aid-certified.

### Make sure participants are fit to participate

Encourage participants to see their GP before starting the classes to ensure they are capable of the exercise planned.

Do not ask participants to undertake any activity that their doctor may have advised against.

Do not offer any medical advice to participants

### Warm up and cool down properly

Remember the gentle warm-up and cool-down exercises; these will minimise the risk of soreness or injury, both during and following the exercise class.

### Watch participants carefully

Always remember that older people can tire quickly:

- Make sure they take breaks as they need them.
- Never over-extend them, and always take notice of what they say about their limitations: they will know these very well.
- If they signal any kind of soreness or discomfort (or complain of dizziness, shortness of breath or chest pains) have them cease exercising immediately.
- Have chairs available and close by.

## The step test

Evaluate the fitness of each participant before they commence the programme. This means you can make sure the programme meets the needs of each person.

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1. Lam, P. *Teaching Tai Chi Effectively, How to attract and retain more students and get more fulfilment from your teaching*. 1996.

You might like to consider using a step test assessment at the start and end of an exercise programme or after a set period of time in order to track the progress of participants. Before deciding to use the step test with a participant you must consider any risks that may result from them taking the test – for example heart problems or the risk of falling. This is particularly important if the participant has any balance issues such as having had a stroke or Parkinsons disease. GP approval will be needed here.

Equipment Required:

- Stop watch
- 7.5cm (3”) high block. The block should be wide enough that the participant can stand on it comfortably.

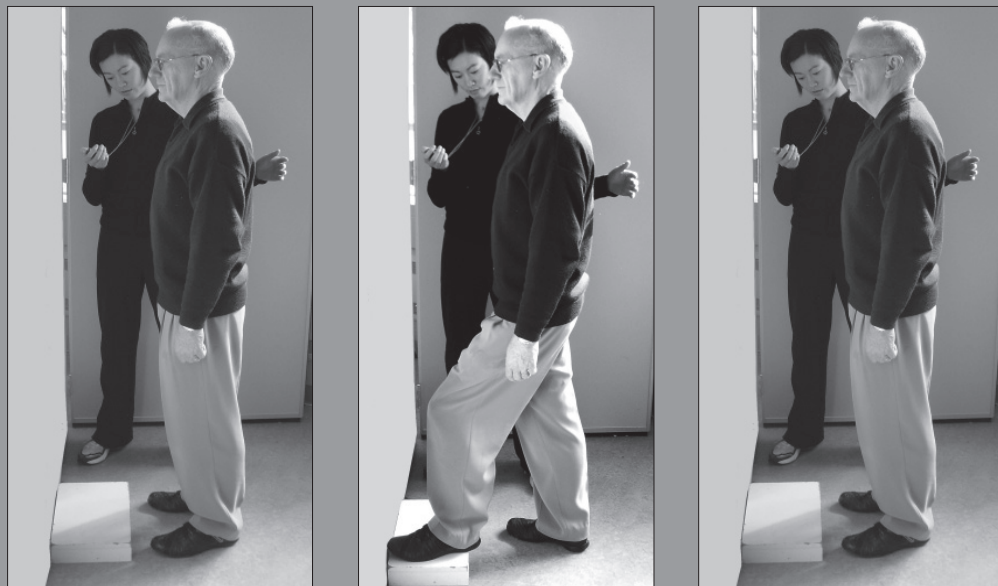
Place the block against a wall so it does not move during the test.

If balance is lost during the test, stop the test.

Record the number of completed steps in 15 seconds (or until balance was lost).

### Instructions for participants

- Stand unsupported, feet shoulder-width apart, directly in front of the block.
- Using left OR right leg, place whole foot onto the block, then return it fully back down to the floor DO NOT STEP UP ONTO THE BLOCK.
- Repeat this as fast as possible for 15 seconds.
- Do not move the supporting foot during the test.
- No support will be given, unless you lose your balance (however your instructor will be close by)
- You may take several practice steps before the test.
- Wait for “GO” to begin the test and “STOP” to finish.



For safety the instructor must stand to one side of the participant and be ready to support them if necessary. Have a chair waiting close by in case participant has an urgent need to sit down.



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**There is a photocopy master on page 19**

## Collecting useful information

By collecting some information about the programme you can measure how effective it is.

When collecting information you must get the written permission of each participant after telling them how the information will be used and stored. You must consider privacy and ethical concerns, including those set out in the Privacy Act, 1993.<sup>2</sup>

As well as helping you to make improvements it gives you information you can share with people such as those who provide funds, and which you can use to promote the programme to new participants as long as people have consented to their information being used in this way (an evaluation/consent form with signed permission is an example here).

Information you could collect:

- The step test to measure improvement in strength and balance.
- Are participants falling less than before?
- How many people are attending the classes?
- Are participants enjoying the programme and finding it worthwhile?

Participants also like to see their own progress, so having a report card for each participant is a good idea — see page 22 for an example of a report card.

## Keeping the programme going

How long do you want the programme to last?

How will you:

- Keep paying for the programme?
- Keep existing participants?
- Recruit new participants?
- Make sure the programme remains interesting?
- Make sure you have enough leaders?

## Getting more information

Here is a list of some publications that you can use to get more in-depth information.

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2. See the reference on page 10 for the website of the Privacy Commissioner which has further information.

Available for download from the ACC website: [www.acc.co.nz](http://www.acc.co.nz). Type the publication number in the search box on the home page (ie ACC1162 or ACC 5209)

*Otago Exercise Programme to prevent falls in older adults.* Campbell A.J & Robertson M.C.  
ACC1162

*Preventing injuries in your community.* ACC5209.

Some other useful resources:

*Effect of a Community-Based Argentine Tango Dance Program on Functional Balance and Confidence in Older Adults.* McKinley P, Jacobson A, Leroux A, Bednarczyk V, Rossignol M, and Fung J. *Journal of Aging and Physical Activity*, 2008, 16, 435-453  
Downloadable from:

[www.udel.edu/PT/PT%20Clinical%20Services/journalclub/.../tango.pdf](http://www.udel.edu/PT/PT%20Clinical%20Services/journalclub/.../tango.pdf)

*Preventing Falls: How to Develop Community-based Fall Prevention Programs for Older Adults.* National Center for Injury Prevention and Control. Atlanta, Georgia. 2008  
Downloadable from: <http://www.cdc.gov/HomeandRecreationalSafety/Falls/preventfalls.html#DevCommunityPrg>

*Preventing Falls: What works.* Stevens J.A & Sogolow E.D. National Center for Injury Prevention and Control. Atlanta, Georgia. 2008  
Downloadable from: <http://www.cdc.gov/HomeandRecreationalSafety/Falls/preventfalls.html#DevCommunityPrg>

The web site of the Privacy Commissioner

<http://privacy.org.nz/the-privacy-act-and-codes/>

Tai Chi for health:

<http://www.taichiforhealthinstitute.org/>

Tai Chi for Health Community New Zealand : [www.taichiproductionsnz.com](http://www.taichiproductionsnz.com)

## Some examples of what other communities are doing

### Modified Tai Chi

Modified Tai Chi was originally developed by Dr Paul Lam (a Tai Chi Master and Sydney General Practitioner) based on the Sun form of Tai Chi for people with arthritis. The only difference from the original form is that it does not involve kicks and the knees are only bent slightly.

Modified Tai Chi helps to prevent falls by improving lower limb strength and balance. It involves a series of slow, fluid, gentle movements that improve fitness, mobility, flexibility and balance. Participants also learn how to feel more relaxed and positive, helping their overall health. They also enjoy the social contact of group classes.

Classes are held by a certified instructor and last between 45 minutes to one hour.

Research has shown that Modified Tai Chi can reduce multiple falls by 47.5%<sup>1</sup>

## Langi Mai

Langi Mai was developed for older Tongan and Samoan adults living in South Auckland because not many of them were taking part in existing older adults' exercise classes such as Modified Tai Chi.

ACC Injury Prevention Consultants in Manukau decided to develop a strength and balance programme that would be appropriate for the older Pacific community in Manukau and which would not be too strenuous for them.

As a result they developed a programme that involved traditional dancing. It uses familiar, traditional music and movements to strengthen lower limbs, increase balance and boost self-confidence.

It has become popular because it uses activities from within the participants' own culture, it involves them having fun and it gives them chance to mix with people of their own age and culture.

The weekly classes, which are at least 45 minutes in length, are taken by a trained instructor who has standing within the local community. This ensures their acceptance by the participants.

Participants are also encouraged to continue to exercise in their own time:

- CDs of the music and songs are given to participants so that they can play them and dance to them at home.
- A local radio station plays the music at set times so that participants can listen and dance to it.

To find out more about Langi Mai please contact the Community Injury Prevention Consultants at ACC's Manukau office.



## Stay On Your Feet

Stay on your Feet Canterbury is a falls prevention programme in which trained volunteers deliver home-based muscle strength and balance retraining programme to older adults who have fallen or are at risk of falling.

The programme meets the criteria for a successful strength and balance programme in that exercises are tailored for the individual participant, they increase in difficulty and involve those most at risk.

The programme lasts for six months. This includes five home visits and telephone support between visits. Participants are expected to practise the exercises regularly in between visits or phone calls.

Because the programme is delivered in the participant's home it overcomes such difficulties as not being able to get to classes. The use of volunteers lowers the cost of the programme so that more participants can join the programme.

Participants gain physical benefits from taking part in this programme such as an improvement in physical strength and the ability to take part in other physical activities. They also gained a more positive outlook on life.

This programme has been shown to reduce falls in older community dwelling people by 34%.<sup>1</sup>

To find out more about Stay on your feet, contact Presbyterian Support (Upper South Island branch).

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<sup>1</sup> Figure quoted in *Stay On Your Feet Canterbury: A Report*. Thomas, I. pgiii

## Steady As You Go (SaYGo)

Steady As You Go is a Dunedin-based community falls prevention programme that was modified and adapted from the Otago Exercise Programme.

It is most suited to older people who have the ability to attend a group strength and balance class, yet are too frail to attend Modified Tai Chi or would prefer this programme to Modified Tai Chi.

The programme starts with an introductory education session on falls prevention plus a series of gentle exercises designed to improve balance, leg strength, general fitness and well-being.

Each 45-minute class starts with a warm-up while sitting in a chair, then standing exercises such as standing on one leg (using the chair for balance) and walking exercises, such as marching, side-steps or walking backwards. The class ends with a warm-down, again in a chair.

Some participants use leg weights to increase the resistance of the exercises, but everyone needs a medical certificate before attending.

SaYGo is unique as it has a two-step process:

- For the first 10 week classes are run by trained instructors usually in a community hall once a week for 10 weeks.
- A member of the class is then trained to teach the class. Some classes have three people trained so they can take turns, or cover for anyone who goes on holiday. Class members pay for the venue and the equipment used, and decide where and how often the class will take place.

Participants report increases in confidence and improved mobility with everyday activities.

To find out more about Steady As You Go please contact Age Concern Otago.





## Aqua aerobics

Also known as water aerobics, aqua aerobics involves exercising in shallow water such as a swimming pool.

Older people choose to do aqua aerobics because they do not have to be strong swimmers and the exercises are gentle. They can enjoy a wider range of exercises safely in water than out of it.

The exercise uses water as a form of resistance and the movements occur at a slower pace because of the water. Aqua aerobics is safe and there is a low risk of injuries to joints and muscles.

Because the exercises are undertaken in water they tend to consume more energy than if they were undertaken out of water.

Most classes last for 45-55 minutes and are held twice a week. A trained instructor takes the classes.

A 12-week trial was held in Dunedin recently. At the end of the trial participants showed improvements in their posture, balance and strength. Participants said that the two major benefits were that they felt fitter and they enjoyed meeting other people.

To find out more about Aqua Aerobics in your area please contact the Recreation Department of your local District or City Council.

# Planning your programme

*Write brief notes as you plan your programme.*

1. Who is your programme for? (see page 6)

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- 1a. Are there things about a programme that they will accept or not accept? Write down the details:

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2. Do any programmes already exist in your community? Yes/No  
Can you make use of those programmes? Yes/No  
If No — what sort of programme will you run? (see page 6)

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3. Are there any people or organisations that can help you? Yes/No  
List them and who will approach each: (see page 6)

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4. The programme

Have you completed a budget? (see page 20) Yes/No

Does your programme meet the strength and balance criteria listed on pages 7 and 8? Yes/No

Will the criteria for teaching safely list on page 8 be followed? Yes/No

Will the step test be done properly and the results written down and stored? Yes/No

5. What useful information will you collect? (see page 10)

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6. How will people find out about the programme?

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7. How will you keep the programme going? (see page 10)

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# Plan the activities

*This sheet can be used to help you to plan the activities that you will use in your programme.*

1. What is the purpose of this programme?

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2. Why would someone choose to do this programme?

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3. What activities will the programme use?

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4. How will the activities be organised?

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5. What benefits will people get from doing this programme?

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6. How many times per week will the activity take place?

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7. How long will each session last?

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8. Learn to do this by

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# Plan your budget

*This can be used for individual classes/groups or for a programme involving several classes/groups.*

## Budget Plan

Project name:

This budget is for a programme lasting \_\_\_\_\_ weeks

Items	How much \$	Source of funds <sup>1</sup>	Who is responsible
Hire of venue			
Cost of tutor(s)			
Travel			
Class materials			
Promotion/ advertising			
Administration (eg photocopying, postage, phone calls)			
Safety equipment			
Food			
Other items			
<b>Total cost</b>			

Possible sources of funding include:

- <http://www.communityconnect.org.nz/index.php?page=FUNDING>
- District and city councils.
- Service clubs — Rotary, Lions, Kiwanis.
- Charitable Trusts



# An example of a report card

*Change the numbers and details to suit your programme.*

xyz programme			
Report card for:			
Number of steps in 15 seconds			
At the start of the programme	After 5 weeks	After 10 weeks	At the end of the programme
Number of falls			
In the 6 months before starting the programme		Since the programme started	
Number of classes attended			
In the first 4 weeks	In the second 4 weeks	In the third 4 weeks	In the fourth 4 weeks

# An example of how to run a step test

## Tai Chi Instructor: Step Test Prompt Sheet



### Equipment Required:

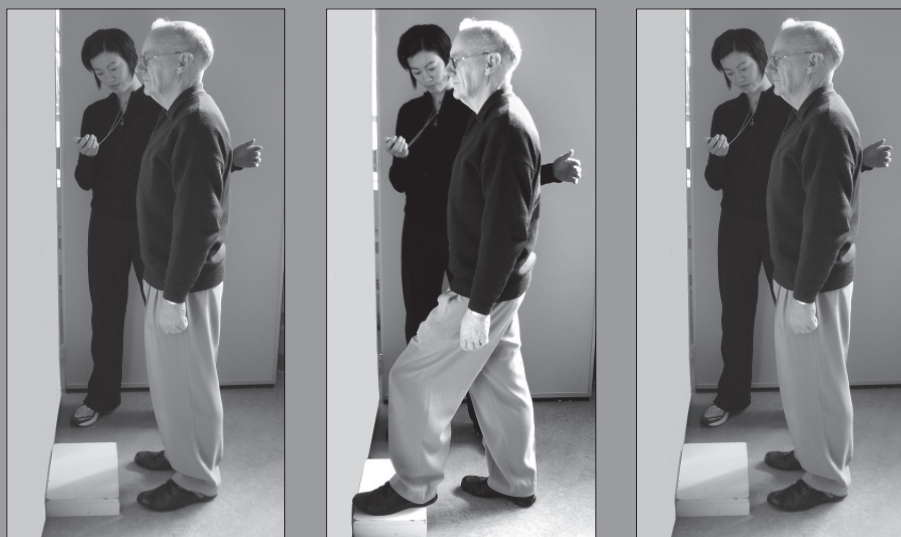
Stop watch and 7.5cm (3") block.

### Instructions:

1. Place the block in front of a wall to ensure that it does not move during the test.
2. Give the participant the following instructions:
  - Stand unsupported, feet shoulder width apart, directly in front of the block.
  - Using your left OR right leg, place your whole foot onto the block, then return it fully back down to the floor (refer to photos below)
  - **DO NOT STEP UP ONTO THE BLOCK.**
  - Repeat this as fast as possible for 15 seconds and we will count the number of steps you do.
  - Do not move the supporting foot during the test.
  - No support will be given, unless you lose your balance in which case we will stop the test.
  - You may take several practice steps before the test.
  - Wait for "GO" to begin the test and "STOP" to finish.

### Notes to Instructor

1. If balance is lost during the test, stop the test.
2. On the Tai Chi Assessment form record the number of completed steps in 15 seconds (or until balance is lost).



For safety the instructor must stand to one side of the participant and be ready to support them if necessary. Have a chair waiting close by in case participant has an urgent need to sit down.

For more information visit [www.acc.co.nz](http://www.acc.co.nz)  
or contact your local Community Injury  
Prevention Consultant by calling 0800 844 657





[www.acc.co.nz](http://www.acc.co.nz)  
0800 844 657