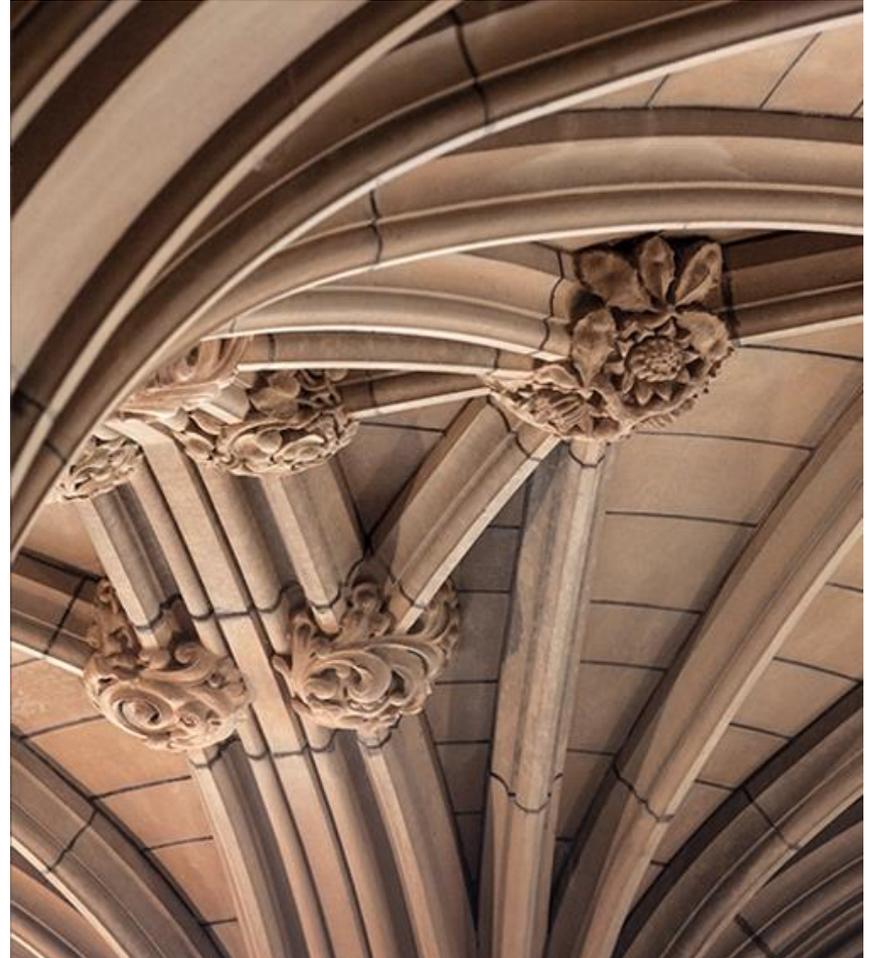


Exercise for fall prevention

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School of Public Health
The University of Sydney



Overview

- Systematic review evidence on exercise for fall prevention
- Improving mobility in rehabilitation populations
- Implementing the evidence- practical strategies and resources





Cochrane
Library

Cochrane Database of Systematic Reviews

Exercise for preventing falls in older people living in the community (Review)

Sherrington C, Fairhall NJ, Wallbank GK, Tiedemann A, Michaleff ZA, Howard K, Clemson L, Hopewell S, Lamb SE

Exercise to prevent falls in older adults: an updated systematic review and meta-analysis

Catherine Sherrington,¹ Zoe A Michaleff,^{1,2} Nicola Fairhall,¹ Serene S Paul,¹
Anne Tiedemann,¹ Julie Whitney,³ Robert G Cumming,⁴ Robert D Herbert,⁵
Jacqueline C T Close,^{5,6} Stephen R Lord⁵

2017; 51(24):1750-1758

Aims:

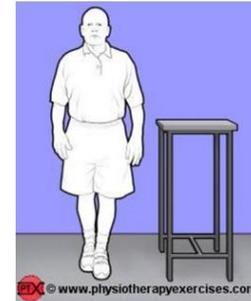
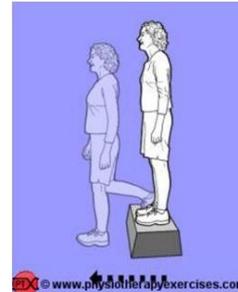
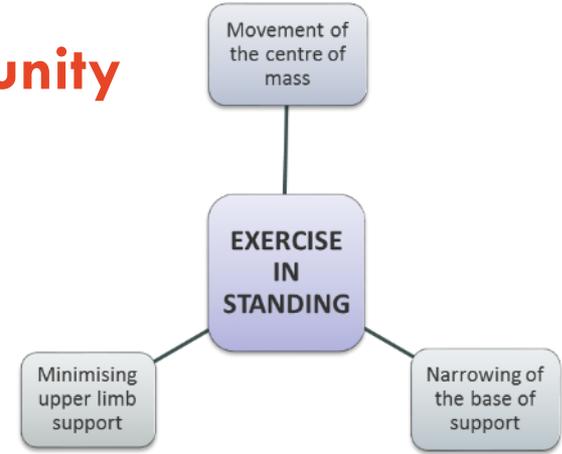
1. What is the effect of exercise on fall rates in older people when compared with no exercise in randomised controlled trials?
2. Are there bigger effects on falls in studies with different:
 - exercise program components?
 - populations?
 - design features?

99 comparisons (88 trials), 19 478 participants

Differences between study findings, community

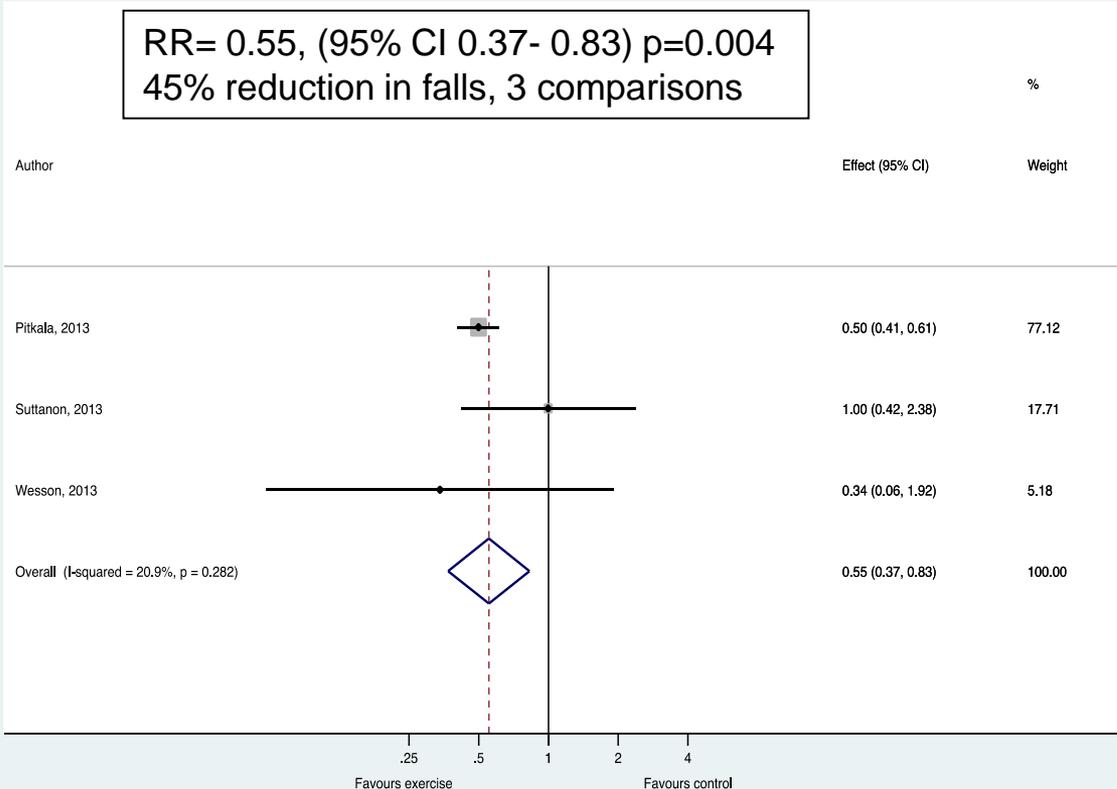
Greater effects on fall rates from exercise programs which:

- Included a high challenge to balance
- 3+ hours/ week of prescribed exercise (76% of variance explained)
- Programs with both of these attributes resulted in a pooled effect of **39% reduction** in fall rates (IRR 0.61, 95% CI 0.53- 0.72, $p < 0.001$).

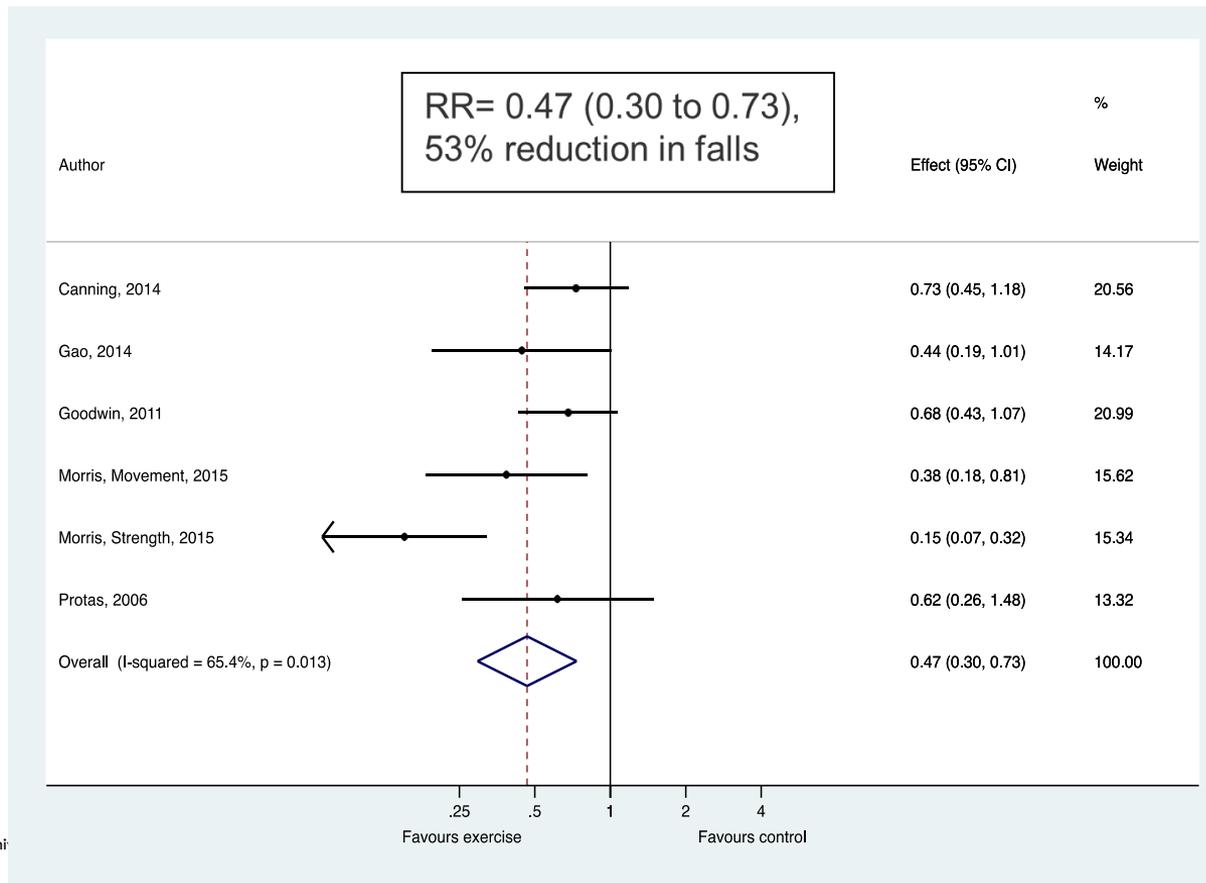


Effect of exercise on fall rates in people with cognitive impairment

RR= 0.55, (95% CI 0.37- 0.83) p=0.004
45% reduction in falls, 3 comparisons



Effect of exercise on fall rates in people with Parkinson's disease



Effect of exercise on fall rates- other populations

Overall **no reduction in rate of falls** from exercise in:

- People with **stroke**, 3 trials
(RR=0.74, 95% CI 0.42 to 1.32, p=0.31)
- People in **residential aged care**, 15 trials
(RR= 0.90, 95%CI 0.72 to 1.12, p=0.35)
- People **recently discharged from hospital**, 3 trials
(RR=1.16, 95% CI 0.88 to 1.52, p=0.30)

Recommendations for exercise to prevent falls in older adults

1. Exercise must provide a **moderate or high challenge to balance**
2. Exercise must be of sufficient **dose** to have an effect
3. **Ongoing** exercise is necessary
4. Fall prevention exercise should be targeted at the **general community** as well as those at **high risk** for falls
5. Fall prevention exercise may be undertaken in a **group or home-based** setting
6. **Walking** training may be included **in addition to balance** training but high risk individuals should not be prescribed brisk walking programs
7. **Strength training** may be included **in addition to balance** training
8. Exercise providers should make **referrals for other risk factors** to be addressed

Recently completed trials aiming to improve mobility in rehabilitation populations



Note studies are not published so no tweeting please

Exercise and fall prevention self-management after fall-related lower limb fracture: the RESTORE (Recovery Exercises and Stepping On after fracture) trial

Sherrington C¹, Fairhall N¹, Kirkham C¹, Clemson L¹, Howard K¹, Vogler¹, Close JCT², Moseley AM¹, Cameron ID¹, Mak J¹, Sonnabend D¹, Lord SR².

¹University of Sydney ²Neuroscience Research Australia, UNSW

Aim: Evaluate the effects of an exercise and fall prevention self-management intervention on mobility-related disability and falls in older people following fall-related lower limb or pelvic fracture.

RESTORE methods

Population: older people following fall-related lower limb or pelvic fracture who have completed usual care

Intervention: exercise and fall prevention self-management intervention

Control: usual care

Outcome: mobility-related disability and falls

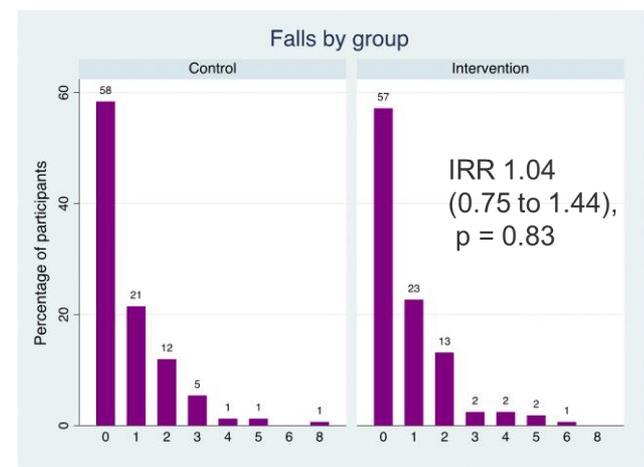
Time: 12 months after randomisation

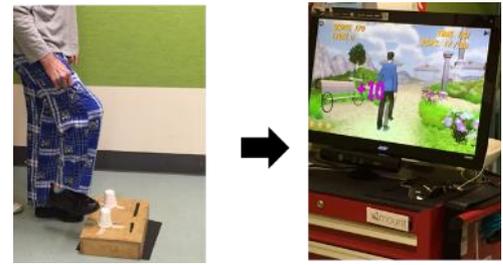
RESTORE intervention

- 10 home visits and 5 phone calls from a physiotherapist to prescribe an individualised exercise program with motivational interviewing
- Home exercise based on Weight Bearing for Better Balance (WEBB) available at www.webb.org.au
- 3 times/week strength and balance exercises: challenging balance and functional strength (based on Borg RPE “hard” level) and use of weight belts or vests as appropriate
- Fall prevention education through individualised advice from the physiotherapist or attendance at “Stepping On” program

RESTORE results and conclusion

- No impact of the intervention on primary outcomes of falls and mobility
- Significant impact on secondary outcomes e.g. balance, activity and functioning
- Greater impact on some measures in faster walkers
- Possible to teach a safe home exercise program to older people up to two years after fall-related fracture
- Falls and community participation may require more specific interventions
- ? Impact of more supervised intervention





Individualised technology prescription by physiotherapists to enhance function in rehabilitation settings

Funding: NHMRC Project Grant APP1063751

Chief Investigators: Prof Cathie Sherrington, Prof Richard Lindley, Prof Maria Crotty, Dr Annie McCluskey, A/Prof Hidde van der Ploeg, Prof Stuart Smith, Mr Karl Schurr

Protocol paper: Hassett L et al, 2016, *BMJ Open*

Aim: To evaluate the effect of the addition of affordable technology to usual care on physical activity and mobility in people with mobility limitations admitted to inpatient rehabilitation units compared to usual care alone.

Primary methods

Population: people with mobility limitations admitted to inpatient aged and neurological rehabilitation units

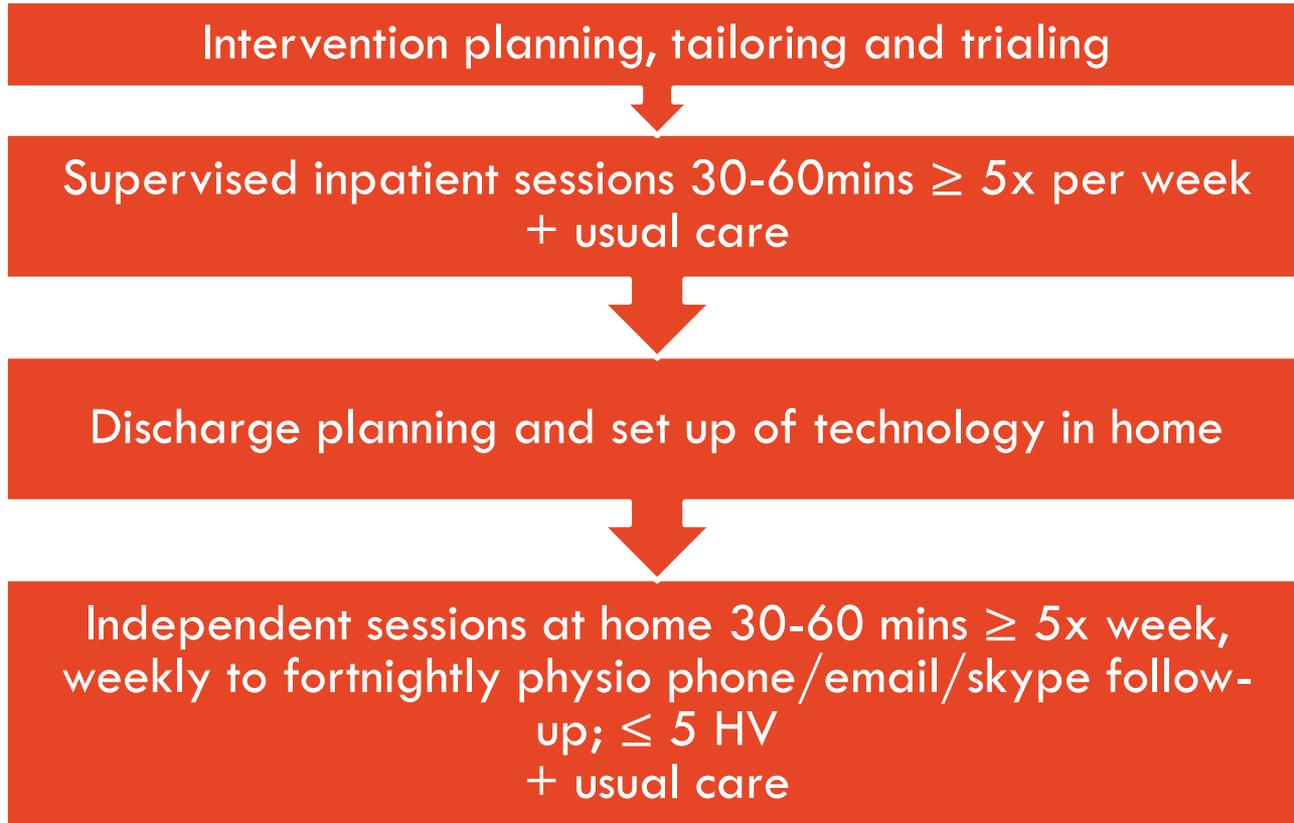
Intervention: addition of affordable technology to usual care

Control: usual care alone

Outcome: physical activity and mobility

Time: 6 months after randomisation

Intervention overview: 6 months



Included technologies: recreational commercially available

Nintendo Wii Fit



Xbox Kinect



Fitbit



Smartphone physical activity apps

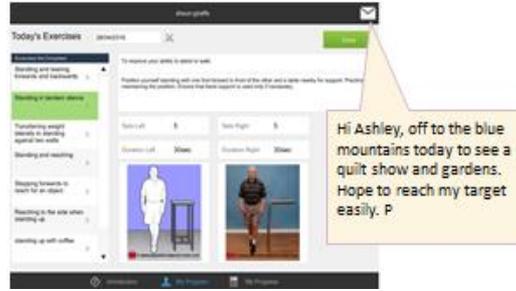


Included technologies: rehabilitation specific

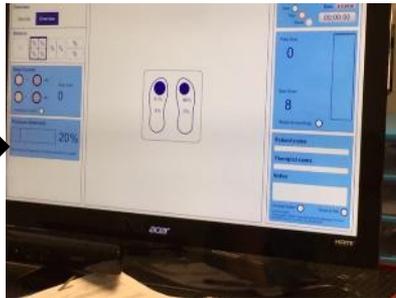
Humac



iPad & iPhone apps



UTS stepping tiles



Fysiogaming



Results

Tailored intervention using technology, targeting specific mobility limitations and promoting physical activity, in addition to usual rehabilitation

- is feasible (with physiotherapy support)
- is enjoyable for participants (with physiotherapy support)
- improved mobility and some aspects of physical activity
- appears to have greater impacts in younger people (<76)
- most improvements occurred with more intense inpatient intervention, but maintained with less intense community intervention
- no impact on falls



Overall conclusions

- Can safely improve mobility with physiotherapy-prescribed “functional” exercise in these two high risk groups
- Does not appear that we can prevent falls in rehabilitation populations with home exercise plus fall prevention advice

Implementing the evidence- practical strategies and resources

Behaviour change and poor program adherence

- Poor uptake- only 6% of NSW residents aged over 65 years undertake balance training, i.e. the type of exercise known to prevent falls. *Merom et al, 2012, Preventive Medicine; 55: 613-7*
- Low rates of ongoing adherence- on average, by 12 months, only half of community-dwelling older people are likely to be adhering to trial interventions. *Nyman et al, 2011, Age Ageing; 41: 16-23*
- Need to consider strategies for maximising uptake and adherence to fall prevention programs- marketing of the message, health coaching, goal setting, use of technology etc.

Health coaching

The screenshot shows the homepage of HealthChange Australia. At the top, there are logos for HealthChange Australia and HealthChange Associates. Below the logos is a navigation menu with links for Home, HealthChange® Methodology, Consultancy Options, Training Options, Resource Library, About Us, Shop, and Contact Us. A shopping cart icon indicates it is empty, and there is a search bar and a Member Login link. The main content area features a 'HealthChange Home' section with three featured items: 'About HealthChange® Methodology', 'HealthChange® Workshop options and Train the Trainer', and 'Resources and Video Library'. To the right, there are three promotional banners: '2018 MELBOURNE & SYDNEY WORKSHOPS NOW OPEN FOR REGISTRATION!', 'HealthChange® Training Options', and 'HealthChange® Train the Trainer'. At the bottom right, there is a banner for 'Contact for Workshops in Victoria and Tasmania'. A 'Who we are and what we do' section is located in the bottom left of the main content area.

Home | **HealthChange® Methodology** | **Consultancy Options** | **Training Options** | **Resource Library** | **About Us** | **Shop** | **Contact Us**

Shopping cart is empty | Search | Member Login

HealthChange Home

- About HealthChange® Methodology**
[CLICK HERE](#)
- HealthChange® Workshop options and Train the Trainer**
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Who we are and what we do

HealthChange Associates provides a behaviour change methodology to embed and support person-centred care and self-management in health service delivery.

Our unique methodology improves health service delivery for increased adherence to evidence-based treatment and lifestyle recommendations leading to better patient outcomes. The methodology is particularly well suited to clinical consultations, care planning, care coordination and patient education and rehabilitation programs. It is also used as the basis for delivering telephone-based disease management programs and population health promotion interventions such as telephonic care coordination and health coaching.

Our training and support have assisted dozens of community health programs and government, NGO and corporate health services to systematically embed person-centred health behaviour change support in their service delivery in Australia, Canada, Denmark and Singapore. Over the last 15 years more than 10,000 clinicians and other health service providers have attended HealthChange® Methodology workshops.

HealthChange Associates is committed to delivering the highest quality training, train the trainer and consulting services within our area of expertise. All of our consultants and training facilitators are qualified health professionals and specialists in HealthChange® Methodology.

- 2018 MELBOURNE & SYDNEY WORKSHOPS NOW OPEN FOR REGISTRATION!**
[CLICK HERE](#)
- HealthChange® Training Options**
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Active and Healthy website

www.activeandhealthy.nsw.gov.au/

active & HEALTHY

Staying Active | Preventing Falls | Be Inspired | Contact Us

Request your Free Printed Copy of the Staying Active and on your Feet Booklet [Order Now](#)

Welcome to Active and Healthy

Staying physically active is the single most important thing you can do to stay fit and independent, as you get older. Physical activity is good for the body and mind.

Age is no barrier - research shows that an exercise or any type of walk is worth the effort. If you're at any stage about exercise, please talk to your doctor.

This website can help you find an exercise program in your area and provides information and tools that can assist you to increase your physical activity.

[Find an Exercise Program](#)

Find an Exercise Program

You can use this website to identify Exercise Programs that have specific resources to improve balance and strength, available in your local area. How to find a program?

LOCATION:

DISTANCE:

[Search Programs](#)

News and Events

[Learn more](#)

Information for Health Professionals

[Learn more](#)

Information for Exercise Providers

[Learn more](#)

Greg
70 years old | Staying Active and Healthy.

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The screenshot shows a web browser window with the URL <https://www.physiotherapyexercises.com/>. The website header features the logo "PTX PhysioTherapy eXercises for people with injuries & disabilities" and a language dropdown set to "English".

On the left side, there is a navigation menu with the following items:

- Search
 - Search For Exercises
 - Show Examples
- Information
- Site Reports
- Feedback
- Bookmarks
- Sharing/Social

At the bottom of the menu are icons for mobile devices: iPhone, Android, Apple, and Windows.

The main content area contains the text: "Physiotherapyexercises.com is a FREE tool to create exercise booklets for people with injuries and disabilities". Below this, a diagram illustrates the workflow:

- Search For Exercises**: Search and select exercises for your client.
- Show Examples**: Display pre-made booklets for common conditions.

An arrow points from these two steps to a stack of exercise booklet examples. At the bottom right, the following text is displayed:

Website developed by:
Illustrations by:
Content developed by :
Peter Messenger : Google+
Paul Pattie
Physiotherapists, NSW Department
of Health, Sydney, Australia

At the very bottom, a small logo for the World Confederation for Physical Therapy is visible, along with the text: "We are pleased to be a professional partner of the World Confederation for Physical Therapy - the sole..."

The screenshot shows a web browser window displaying the website <https://www.physiotherapyexercises.com/>. The page title is "108/950 Exercises, 0/21 Video clips". The sidebar on the left contains several filter categories:

- Search
- Condition
- Exercise difficulty
- Equipment available
- Exercise type
 - wheelchair
 - Transferring 32
 - Mobilising in wheelchair 14
 - Moving into standing 57
 - Maintaining a standing position 104
 - Walking 131
 - Climbing stairs 31
 - Running 37
 - Jumping and hopping 24
 - Speaking and swallowing 10
 - Preventing Falls 108
 - Body part
 - Age category
 - Image orientation
 - Select text to display with exercise images

The main content area displays a grid of 108 exercise thumbnails, each showing a person performing a specific physical activity. The thumbnails are arranged in a 6x18 grid. The "Preventing Falls" filter is highlighted with a red circle in the sidebar.



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8th Biennial Australia and New Zealand Falls Prevention Conference

18th-20th November 2018, Hotel Grand Chancellor, Hobart, Tasmania

Who Should Attend?

Up to 400 delegates are expected to attend the conference from throughout Australia, New Zealand and overseas.

[Find Out More](#)

Key Dates

Program: Available August 2018
'Early' Registration Deadline:
Friday 14th September
Accommodation Booking Deadline:
Friday 12th October

Destination

The Australian and New Zealand Falls Prevention Conference will be held in Hobart, Tasmania.

[Read More](#)

What can I do to prevent falls in the community?

- Use any interaction with middle aged or older people as an opportunity to prescribe/ encourage ongoing appropriate exercise
- Raise awareness of the problem of falls and the benefits of exercise among patients, health professionals and the community
- Advocate for suitable programs to be run by a range of organisations
- Advocate for greater funding of evidence-based interventions

Acknowledgements

- NHMRC salary
- NHMRC project funding
- Colleagues, staff, students, study participants

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