Exercise for fall prevention

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Overview

- Systematic review evidence on exercise for fall prevention
- Improving mobility in rehabilitation populations
- Implementing the evidence - practical strategies and resources
Exercise for preventing falls in older people living in the community (Review)

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
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

<table>
<thead>
<tr>
<th>Author</th>
<th>Effect (95% CI)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitaia, 2013</td>
<td>0.50 (0.41, 0.61)</td>
<td>77.12</td>
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<tr>
<td>Suttanon, 2013</td>
<td>1.00 (0.42, 2.38)</td>
<td>17.71</td>
</tr>
<tr>
<td>Wesson, 2013</td>
<td>0.34 (0.06, 1.82)</td>
<td>5.18</td>
</tr>
<tr>
<td>Overall (I-squared = 20.9%, p = 0.282)</td>
<td>0.55 (0.37, 0.83)</td>
<td>100.00</td>
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Effect of exercise on fall rates in people with Parkinson’s disease

<table>
<thead>
<tr>
<th>Author</th>
<th>Effect (95% CI)</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Canning, 2014</td>
<td>0.73 (0.45, 1.18)</td>
<td>20.56</td>
</tr>
<tr>
<td>Gao, 2014</td>
<td>0.44 (0.19, 1.01)</td>
<td>14.17</td>
</tr>
<tr>
<td>Goodwin, 2011</td>
<td>0.66 (0.43, 1.07)</td>
<td>20.99</td>
</tr>
<tr>
<td>Morris, Movement, 2015</td>
<td>0.38 (0.18, 0.81)</td>
<td>15.62</td>
</tr>
<tr>
<td>Morris, Strength, 2015</td>
<td>0.15 (0.07, 0.32)</td>
<td>15.34</td>
</tr>
<tr>
<td>Protas, 2006</td>
<td>0.62 (0.26, 1.48)</td>
<td>13.32</td>
</tr>
<tr>
<td>Overall (I-squared = 65.4%, p = 0.013)</td>
<td>0.47 (0.30, 0.73)</td>
<td>100.00</td>
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Effect of exercise on fall rates - other populations

Overall no reduction in rate of falls from exercise in:

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

- Intervention planning, tailoring and trialing
- Supervised inpatient sessions 30-60 mins ≥ 5x per week + usual care
- Discharge planning and set up of technology in home
- Independent sessions at home 30-60 mins ≥ 5x week, weekly to fortnightly physio phone/email/skype follow-up; ≤ 5 HV + usual care
Included technologies: recreational commercially available

Nintendo Wii Fit

Xbox Kinect

Fitbit

Smartphone physical activity apps
Included technologies: rehabilitation specific

Humac

iPod & iPhone apps

Hi Ashley, off to the blue mountains today to see a quilt show and gardens. Hope to reach my target easily. F

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

Who we are and what we do

Health Change 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 by increasing 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 intervention such as telephone 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 Health Change® Methodology workshops.

Health Change 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 Health Change® Methodology.
Active and Healthy website

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

Read More

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

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

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