Exercise for reducing fear of falling in older people living in the community: A Cochrane systematic review

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Falls

- One third of people aged 65 years and over fall once or more annually

- Important cause of:
  - morbidity,
  - premature mortality,
  - long term disability and
  - reduction in quality of life

- Injuries that limit daily activities, threaten autonomy and increase the risk of being admitted to a care home
Fear of Falling (FOF)

- **Prevalence:** 21% to 85% fallen; 12% to 65% not fallen in adults ≥ 65 years

- **Long term, negative consequences:**
  - Increased likelihood of falling
  - Activity limitation/avoidance
  - Lack of independence and confidence
  - Poorer mental health, depression, reduced quality of life
  - Associated health care costs
Risk factors for FOF

- Lower Economic Resources
- Old Age
- Female
- Previous Falls
- Environmental Hazards
- Visual Problems
- Dizziness
- Depression & Anxiety
- Poor Self Related Health
- Poor Balance & Gait Abnormalities
- Cognitive Impairment
- Functional Dependence
- Living Alone
DEFINING FOF

“A lasting concern about falling that leads to an individual avoiding activities that he/she remains capable of performing" (Tinetti 1993)

MEASURING FOF

• Single-item questions (e.g. are you afraid of falling?)
• Scales
  • 'falls efficacy' - a person's belief in their ability to avoid falling during activity (e.g. FES, MFES)
  • Confidence in maintaining balance (e.g. ABC)
  • Concern or worry about falling during activities (e.g. FES-I, Short FES-I)
Systematic Review

• **Primary Outcome:**
  • What are the effects of exercise on FOF?

• **Secondary Outcomes**
  • Occurrence of falls
  • Activity avoidance or restriction
  • Depression
  • Cost
Search strategy & inclusion criteria

• 9 databases, reference lists, experts.

• Included:
  • RCT’s with FOF as a primary or secondary outcome
  • Community dwelling people ≥ 65 years
  • Single component structured exercise interventions
  • Control group condition not aimed at increasing exercise.

• Excluded:
  • Studies restricted to specific medical conditions
Methods

- **Selection of relevant studies**: Two of the review team independently checked all titles and abstracts, full text
- **Data Extraction**: Data extraction forms
- **Quality Assessment**: Assessed risk of bias
- **Analysis**
  - **Dichotomous data**: Risk ratios with 95% confidence intervals (CI)
  - **Continuous data**:
    - Mean differences and 95% CI where studies reported the same measure in the same format
    - Standardised mean differences and 95% CI where different measures were used or where the same measure was presented in different formats
  - **Fall rates**: Log incidence rate rate ratios and standard errors
Results

719 Articles

209 Full texts

30 studies (from 53 articles)

- 29 RCTs; 1 Quasi-randomised trial
- 12 countries: Australia (n = 8), USA (n = 7)
- 2,878 participants, mean age 68 to 85 years, 51 to 89% women
- 12 studies recruited those at risk of falls
- 3 studies recruited those with a fear of falling
## Results

<table>
<thead>
<tr>
<th>Exercise Type</th>
<th>Exercise Setting</th>
<th>Exercise Duration/Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>53% balance training</td>
<td>75% Supervised</td>
<td>61% up to 12 weeks</td>
</tr>
<tr>
<td>22% strength &amp; resistance training</td>
<td>25% Unsupervised</td>
<td>19% 13 to 26 weeks</td>
</tr>
<tr>
<td>25% Tai Chi and yoga</td>
<td>56% Group</td>
<td>19% &gt; 26 weeks</td>
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<tr>
<td></td>
<td>44% Individual</td>
<td>89% performed 1 to 3 times per week</td>
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<td></td>
<td>11% performed 4 or more times per week</td>
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</table>
## Outcomes

<table>
<thead>
<tr>
<th>Measuring FOF</th>
<th>Tool</th>
<th>Number of Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-item questions</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td><strong>Scales</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Falls Efficacy*</td>
<td>FES, K-FES, MFES</td>
<td>14</td>
</tr>
<tr>
<td>Balance Confidence*</td>
<td>ABC</td>
<td>9</td>
</tr>
<tr>
<td>Concern or worry about falling during activities</td>
<td>FES-I, Short FES-I</td>
<td>2</td>
</tr>
</tbody>
</table>

* Two studies used both FES and ABC
Exercise associated with a small to moderate reduction FOF at post intervention.

Sub group analysis

- No variation of effect by exercise
  - **Type** (Chi² = 3.46, df = 2, P-value = 0.18) or
  - **Duration** (Chi² = 0.20, df = 1, P-value = 0.66)
- **Setting**: Effect may be greater where exercise is delivered in groups (SMD 0.49, 95% CI 0.22 to 0.76) then those delivered to individuals (SMD 0.14, 95% CI -0.06 to 0.35).
Meta-Analysis: Short & Long term Follow up

- No significant effect on FOF beyond the end of the intervention
  - up to six months (4 studies; 356 participants)
  - six months and beyond (3 studies; 386 participants).

- Secondary outcomes
  - Falls: Significant proportion of participants having at least one fall
    - Risk Ratio 0.85, 95% CI 0.74 to 0.98; 9 studies, 1113 participants
  - Activity avoidance or restriction: No information.
  - Depressive symptoms: No significant effect (4 studies; 406 participants)
  - No studies evaluated the costs of the structured exercise programmes.
‘Risk of Bias’

- Random sequence generation (selection bias)
- Allocation concealment (selection bias)
- Blinding of participants and personnel (performance bias)
- Blinding of outcome assessment (detection bias)
- Incomplete outcome data (attrition bias)
- Selective reporting (reporting bias)
- Other bias

Legend:
- Green: Low risk of bias
- Yellow: Unclear risk of bias
- Red: High risk of bias
Conclusion

• Very low quality evidence that exercise reduces FOF and rate of falls immediately post intervention

• Insufficient evidence to determine how long this effect lasts

• Lack of evidence to determine effect on depression and cost-effectiveness of exercise

• Further evidence is needed to assess the effect of exercise interventions with community-dwelling older people.
Thank You

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