Understanding and managing fear of falling in older adults

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NSW Falls Prevention Network Rural Forum
Wagga Wagga
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www.NeuRA.edu.au
1. Understanding fear of falling

2. Managing fear of falling
Fear of falling

• Important psychological factor associated with falls in older people (since 1982)
  – Fear of falling is a persistent feeling related to the risk of falling during one or more activities of daily living

• Prevalence
  – 29-92% in older people who have already fallen
  – 12-65% in older people who have NOT fallen
  – Women > men
  – Increases with age

• Many associated factors
### Associated factors with fear of falling
based on prospective and retrospective cohort studies

<table>
<thead>
<tr>
<th>Falls</th>
<th>Physical factors</th>
<th>Psychological factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Previous falls</td>
<td>• poor health status</td>
<td>• restriction and curtailment of activity</td>
</tr>
<tr>
<td>• Future falls</td>
<td>• functional decline</td>
<td>• reduced quality of life</td>
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<tr>
<td></td>
<td>• frailty</td>
<td>• fear of pain</td>
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<tr>
<td></td>
<td>• reduced leaning</td>
<td>• anxiety</td>
</tr>
<tr>
<td></td>
<td>• balance</td>
<td>• depression</td>
</tr>
<tr>
<td></td>
<td>• poor muscle strength</td>
<td>• social isolation</td>
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<td>• impaired gait</td>
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</table>
Fear of falling – its helpful side

• Fear of falling may reflect a realistic appraisal of reduced functional abilities and consequent increased risk of suffering a fall and fall injuries.

• Such a fear may result from
  – First-hand experience, e.g. a near fall or a recent fall that resulted in pain, embarrassment or injury
  – Actual falls risk, as is reflected in the high correlation between objective measures of physiological factors and fear of falling.

• Fear of falling can be a normal adaptive response to challenged equilibrium. Such insight might prevent people from undertaking activities that could expose them to risky situations.
Fear of falling – its unhelpful side

• Fear of falling can be irrational, excessive or phobic which then results in a persistent and dysfunctional disruption of attention and behaviour.

• Such a fear may result from
  – Catastrophizing or thinking the worst of events

I’m getting a bit older and I feel that I am not as stable on my feet any more. The other day my sister had a bad fall and broke her wrist. She has always been the better one! I don’t want to imagine what would happen if I would break my hip after a fall … I think I would not be able to cope by myself anymore.
Fear of falling – its unhelpful side

• Fear of falling can be irrational, excessive or phobic which then results in a persistent and dysfunctional disruption of attention and behaviour.

• Such a fear may result from
  – Catastrophizing or thinking the worst of events

• Fear of falling may then have a detrimental effect upon several domains of life, including the needless restriction of activities of daily living and enjoyable pastimes, which may, then, lead to physical inactivity and social isolation.
Fear of falling: **helpful** vs **unhelpful**?

- **Vigorous**
- **Frail**
- **Anxious**
- **Stoics**

Perceived fall risk vs Actual fall risk graph.
Fear of falling: helpful vs unhelpful?

Pearson’s R = 0.19

F_{1,499} = 17.14

p < 0.001
Fear of falling: **helpful** vs **unhelpful**?

- **Vigorous (30%)**
  - 20% falls

- **Anxious worriers (10%)**
  - 40% falls

- **Stoics (20%)**
  - 30% falls

- **Frail aware (40%)**
  - 40% falls

**HIGH Perceived fall risk**

**HIGH Actual fall risk**

Delbaere et al, BMJ 2010
Summary findings

• Many elderly people under or over estimate their risk of falling

• Disparities between perceived and physiological fall risk influence the probability of falling
  – Worriers have a higher falls rate despite low actual risk
  – Battlers have a low perceived risk despite high actual risk + slightly lower falls rate

• Fear of falling leads to falls, independent of physiological fall risk factors
Worrier

- Similar fall risk
- Similar activity levels
- Psychological profile: neurotic personality traits, i.e. increased vulnerability to develop irrational fears
- More likely to be female
- Older
- Worse self-perceived health
- More medications
- More depressive symptoms
- Lower quality of life
Experiment

Walking on floor (near the edge)

Walking on height without safety harness
Fear of falling induces gait adaptations

- Gait speed
- Step length
- Single Support time
- Not fearful
- Fearful

Floor light | Floor dimmed | Height light | Height dimmed
---|---|---|---
Fear of falling induces gait adaptations

Cautious gait:

Decreases walking stability and could therefore increase fall risk rather than protect against it.
Battler

- Lower levels of fear of falling
- Less previous falls
- Psychological profile: emotionally stable, less reactive to stress, happy and satisfied with life
- Younger
- Better self-perceived health
- Better quality of life
- More planned exercise
Understanding fear of falling

Negative thoughts $\rightarrow$ Fear of falling $\rightarrow$ Previous fall, poor balance

Fear of falling $\rightarrow$ Avoidance behaviour

Avoidance behaviour $\rightarrow$ Adaptive behaviour
1. Understanding fear of falling
2. Managing fear of falling
What does fear of falling tell us?

• The presence of fear of falling is likely to be a sign that something is wrong:
  – The person has an accurate perception of falls risk
  – The person is spiralling into a vicious circle of general frailty through depression or other psychological factors

• Lower levels of fear of falling are likely to be protective of falls:
  – The person has an low actual falls risk
  – The person has a positive attitude to life and has engaged him/herself in falls preventative activities
Fallers (33%)

- Low actual (40%)
  - Fallers (25%)
    - Low perceived (29%)
      - Fallers (20%)
    - High perceived (11%)
      - Fallers (39%)
- High actual (60%)
  - Fallers (38%)
    - Low perceived (20%)
      - Fallers (34%)
    - High perceived (40%)
      - Fallers (41%)

Vigorous
  - Intervention
    - Nothing
  - Anxious
    - Intervention
      - Mainly psychological + Standard falls prevention
  - Stoic
    - Intervention
      - Mainly physical falls prevention
  - Aware
    - Intervention
      - Both psychological and physical falls prevention
Exercise to prevent falls

"The handle on your recliner does not qualify as an exercise machine."
Exercise to prevent falls

Exercise modalities

Exercise Overall  Moderate to high balance  High dose

RR=1  RR=0.82 (0.75-0.91)  RR=0.73 (0.59-0.91)  RR=0.80 (0.66-0.97)

18%  27%  20%
Exercise to reduce fear of falling

- 25 studies including a total of 2,578 community-dwelling older adults

- Provided or prescribed exercise was associated with a significant reduction in fear of falling, immediately post-intervention (SMD 0.24, 95% CI 0.14 to 0.34)

- There was no significant effect of exercise interventions on fear of falling beyond the end of the intervention period (3 studies included data up to 6 months and 2 included data at 6 months and beyond).

Kendrick D et al, Cochrane (submitted)
Exercise to reduce fear of falling

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Std. Mean Difference</th>
<th>SE</th>
<th>Experimental Total</th>
<th>Control Total</th>
<th>Weight</th>
<th>Std. Mean Difference IV, Fixed, 95% CI</th>
<th>Std. Mean Difference IV, Fixed, 95% CI</th>
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</thead>
<tbody>
<tr>
<td>Campbell 1997</td>
<td>0.45</td>
<td>0.14</td>
<td>103</td>
<td>109</td>
<td>13.3%</td>
<td>0.45 [0.18, 0.72]</td>
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<tr>
<td>Clemson 2010</td>
<td>0.87</td>
<td>0.4</td>
<td>17</td>
<td>12</td>
<td>1.6%</td>
<td>0.87 [0.09, 1.65]</td>
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<tr>
<td>Freiberger 2012</td>
<td>-0.12</td>
<td>0.18</td>
<td>57</td>
<td>64</td>
<td>8.1%</td>
<td>-0.12 [-0.47, 0.23]</td>
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<tr>
<td>Haines 2009</td>
<td>-0.15</td>
<td>0.3</td>
<td>19</td>
<td>28</td>
<td>2.9%</td>
<td>-0.15 [-0.74, 0.44]</td>
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<tr>
<td>Halvarsson 2011</td>
<td>0.07</td>
<td>0.28</td>
<td>34</td>
<td>21</td>
<td>3.3%</td>
<td>0.07 [-0.48, 0.62]</td>
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<tr>
<td>Hartmann 2009</td>
<td>0.81</td>
<td>0.29</td>
<td>45</td>
<td>14</td>
<td>3.1%</td>
<td>0.81 [0.24, 1.38]</td>
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<tr>
<td>Hinman 2002</td>
<td>-0.07</td>
<td>0.23</td>
<td>58</td>
<td>30</td>
<td>4.9%</td>
<td>-0.07 [-0.52, 0.38]</td>
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<tr>
<td>Lajoie 2004</td>
<td>0.48</td>
<td>0.42</td>
<td>12</td>
<td>12</td>
<td>1.5%</td>
<td>0.48 [-0.34, 1.30]</td>
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<tr>
<td>Logghe 2009</td>
<td>0.18</td>
<td>0.16</td>
<td>73</td>
<td>89</td>
<td>10.2%</td>
<td>0.18 [-0.13, 0.49]</td>
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<tr>
<td>McCormack 2004</td>
<td>0.65</td>
<td>0.43</td>
<td>27</td>
<td>7</td>
<td>1.4%</td>
<td>0.65 [-0.19, 1.49]</td>
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<tr>
<td>Resnick 2008</td>
<td>0.11</td>
<td>0.26</td>
<td>64</td>
<td>39</td>
<td>3.9%</td>
<td>0.11 [-0.40, 0.62]</td>
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<tr>
<td>Shumway-Cook 1997</td>
<td>0.48</td>
<td>0.25</td>
<td>84</td>
<td>21</td>
<td>4.2%</td>
<td>0.48 [-0.01, 0.97]</td>
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<tr>
<td>Ullmann 2010</td>
<td>0.2</td>
<td>0.29</td>
<td>25</td>
<td>22</td>
<td>3.1%</td>
<td>0.20 [-0.37, 0.77]</td>
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<tr>
<td>Vogler 2009</td>
<td>0.06</td>
<td>0.16</td>
<td>114</td>
<td>57</td>
<td>10.2%</td>
<td>0.06 [-0.25, 0.37]</td>
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<tr>
<td>Vrantsidis 2009</td>
<td>0.63</td>
<td>0.28</td>
<td>26</td>
<td>29</td>
<td>3.3%</td>
<td>0.63 [0.08, 1.18]</td>
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<tr>
<td>Wallsten 2006</td>
<td>0.34</td>
<td>0.28</td>
<td>25</td>
<td>28</td>
<td>3.3%</td>
<td>0.34 [-0.21, 0.89]</td>
<td></td>
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<tr>
<td>Weerdesteyn 2006</td>
<td>0.42</td>
<td>0.28</td>
<td>29</td>
<td>23</td>
<td>3.3%</td>
<td>0.42 [-0.13, 0.97]</td>
<td></td>
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<tr>
<td>Westlake 2007</td>
<td>0.34</td>
<td>0.34</td>
<td>17</td>
<td>19</td>
<td>2.3%</td>
<td>0.34 [-0.33, 1.01]</td>
<td></td>
</tr>
<tr>
<td>Wolf 2001</td>
<td>0.2</td>
<td>0.23</td>
<td>37</td>
<td>40</td>
<td>4.9%</td>
<td>0.20 [-0.25, 0.65]</td>
<td></td>
</tr>
<tr>
<td>Yang 2012</td>
<td>0.08</td>
<td>0.18</td>
<td>59</td>
<td>62</td>
<td>8.1%</td>
<td>0.08 [-0.27, 0.43]</td>
<td></td>
</tr>
<tr>
<td>Yoo 2010</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>10</td>
<td>Not estimable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zhang 2006</td>
<td>0.59</td>
<td>0.3</td>
<td>24</td>
<td>23</td>
<td>2.9%</td>
<td>0.59 [0.00, 1.18]</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td></td>
<td></td>
<td>960</td>
<td>759</td>
<td>100.0%</td>
<td>0.24 [0.14, 0.34]</td>
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</tbody>
</table>

Heterogeneity: $\chi^2 = 25.05$, $df = 20$ ($P = 0.20$); $I^2 = 20\%$
Test for overall effect: $Z = 4.76$ ($P < 0.000001$)
Cognitive behavioural approach

- Cautious behaviour
- High fear of falling
- Negative thoughts
- Positive thoughts
- Low fear of falling
- Adaptive behaviour
Cognitive behavioural therapy

Best-practice principles used in CBT towards fall prevention

• Cognitive restructuring of misconceptions to promote a view of fall risk and fear of falling as controllable
  – E.g. education on commonness of fear of falling

• Problem solving towards activity avoidance, unsafe behaviour, and unsafe environment
  – e.g. install a handrail next to the bath tub
  – e.g. ask for assistance

• Behavioural activation, graded exposure: setting goals to encourage patients to approach activities that they are avoiding
  – e.g. first time together with someone else
A Matter of Balance trial

540 subjects with fear of falling, aged 70+ years

• Intervention: 8 weekly CBT group sessions over 2 months

• Aim: instilling adaptive and realistic views on falls, reducing fall risk, and increasing activity and safe behaviour

• Results: significant between-group differences
  – At 2 months: fear of falling, activity avoidance, and daily activity levels
  – At 14 months: fear of falling, perceived control over falling, and recurrent fallers
    • but not in activity avoidance or daily activity levels

Exercise + CBT

The inclusion of CBT sessions in fall prevention programs is likely to enhance the effects of exercise programs on both falls and fear of falling.

- CBT can address factors such as loss of motivation and apathy to promote uptake and adherence to exercise programs.
  - i.e. high intensity balance training for a minimum of 50 hours

- CBT can provide people with better anxiety management skills
  - Reduce competing attentional resources during exercise
  - Improve level of concentration during hazardous situations
Conclusion
Conclusions

• A fear of falling can be a realistic appraisal of risk, although excessive fear has adverse effects for mobility and quality of life.

• Exercise interventions are likely to beneficial effects to prevent falls and reduce fear of falling.

• The most successful approach to fall prevention may combine simultaneous attempts to improve both efficacy and physical skills.
Acknowledgements

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  1. Fear of Falling Study:
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     • Chief Investigators: Prof. Stephen Lord, Prof. Jacqueline Close
  2. Memory and Ageing Study of the Brain and Ageing Program
     • School of Psychiatry, UNSW
Thank you!