Understanding and managing fear of falling in older adults

Presentation by Kim Delbaere

NSW Falls Prevention Network Rural Forum
Lismore
8 October 2015

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>
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<tbody>
<tr>
<td>• Previous falls</td>
<td>• poor health status</td>
<td>• restriction and</td>
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<tr>
<td>• Future falls</td>
<td>• functional decline</td>
<td>curtailment of activity</td>
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<td></td>
<td>• frailty</td>
<td>• reduced quality of life</td>
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<td></td>
<td>• reduced leaning balance</td>
<td>• fear of pain</td>
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<td></td>
<td>• poor muscle strength</td>
<td>• anxiety</td>
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<td></td>
<td>• impaired gait</td>
<td>• depression</td>
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<td>• social isolation</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

• 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 – its unhelpful side

I had a fall at the markets in front of so many people. It was embarrassing...

So I just didn't go to the market anymore...

I didn't feel confident anymore in crowded places. I hardly got out of the house and I started to feel lonely.
Fear of falling: helpful vs unhelpful?

Fear of falling: helpful vs unhelpful?

Perceived falls risk (FES-I)

Actual falls risk (PPA)

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

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

- **Stoics (20%)**
  - aka Aussie Battlers
  - 30% falls

**Actual fall risk vs Perceived fall risk**

Delbaere et al, BMJ 2010
Summary findings

• Many older 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

- No obvious identifiable (instability-related) fall risk
- Psychological profile: neurotic personality traits, i.e. increased vulnerability to develop irrational fears
- Worse self-perceived health
- 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

Fear of falling induces gait adaptations

Cautious gait:

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

Factors:
- Floor light
- Floor dimmed
- Height light
- Height dimmed

Graph:
- Appropriate:
- Excessive:

%
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 ➔ Fear of falling ➔ Avoidance behaviour ➔ Adaptive behaviour

Previous fall, poor balance
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
Exercise to prevent falls

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

- All exercise programs
  - 18%
  - OR=0.82 (0.75-0.91)

- Moderately to highly challenging balance exercises
  - 27%
  - OR=0.73 (0.59-0.91)

- Program of 2 hours or more per week over 6 months
  - 20%
  - OR=0.80 (0.66-0.97)

Falls reductions by 42%
(Sherrington et al., 2008)
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)

## 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</th>
<th>IV, Fixed, 95% CI</th>
<th>Std. Mean Difference</th>
<th>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>Loghre 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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<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>
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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>
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<tr>
<td>Westlake 2007</td>
<td>0.34</td>
<td>0.34</td>
<td>17</td>
<td>20</td>
<td>2.3%</td>
<td>0.34 [-0.33, 1.01]</td>
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<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>
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<td>0.08</td>
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<td>0.08 [-0.27, 0.43]</td>
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<tr>
<td>Yoo 2010</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>10</td>
<td></td>
<td>Not estimable</td>
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<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>
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<tr>
<td><strong>Total (95% CI)</strong></td>
<td></td>
<td></td>
<td><strong>960</strong></td>
<td><strong>759</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>0.24 [0.14, 0.34]</strong></td>
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</table>

Heterogeneity: $\chi^2 = 25.05, df = 20 \ (P = 0.20); I^2 = 20$

Test for overall effect: $Z = 4.76 \ (P < 0.000001)$

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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).

Cognitive behavioural approach

- Cautious behaviour
- Negative thoughts
- Positive thoughts
- Low fear of falling
- Adaptive behaviour
- High fear of falling
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 provide people with better anxiety management skills
  – Reduce competing attentional resources during exercise
  – Improve level of concentration during hazardous situations

• 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
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  - i.e. high intensity balance training for a minimum of 50 hours
Maximising long-term adherence

- Average attrition rate
  - After 1 year: 52% (range 43-61) (Simek et al., 2012)
  - After 2 years: 65% (Campbell et al., 1999)

- Evidence from surveys and systematic reviews:
  - Older people prefer home-based exercise programs
    - Especially in those older and more socially deprived people who are at the highest risk of falling. (Yardley et al., 2008)
  - Inclusion of balance training is associated with better adherence in home-based exercise programs (Simek et al., 2012)
Study protocol for the Standing Tall randomised controlled trial
Standing Tall will help you towards doing 2 hours of balance exercises per week for 6 months (and longer).

Some key features of our Standing Tall balance exercise program:

1. Convenient:
   - In your own home
   - At your own time

2. Individual:
   - Tailored to your ability
   - Progress at your pace

3. Motivating:
   - Variety with 2,000+ exercises
   - Feedback on your progress
Randomised controlled trial

Recruitment of community-dwelling older adults aged 70 years and older

Telephone screening

Baseline assessment (n=500)

Concealed randomization

Exercise intervention group (n=250)

First home visit – installation

Second home visit – 1 month follow-up

Health education control group (n=250)

First phone call

Second phone call – 1 month follow-up

Follow-up and reassessments

Continuous monitoring in all participants:

- Fall frequency will be monitored through weekly fall diaries
- Use of health and community services through a monthly questionnaire

Re-assessment at 6 months, 12 months, 18 months and 24 months:

- Physical and cognitive assessments (6/12 months, subsample of 200 participants)
- Questionnaire assessments and 1-week activity monitoring (500 participants)
- User experiences and adherence rates (intervention group participants)
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

• To achieve long-term effects, it is important to achieve long-term exercise adherence.

• The most successful approach to fall prevention may combine simultaneous attempts to improve both efficacy and physical skills
Thank you!