

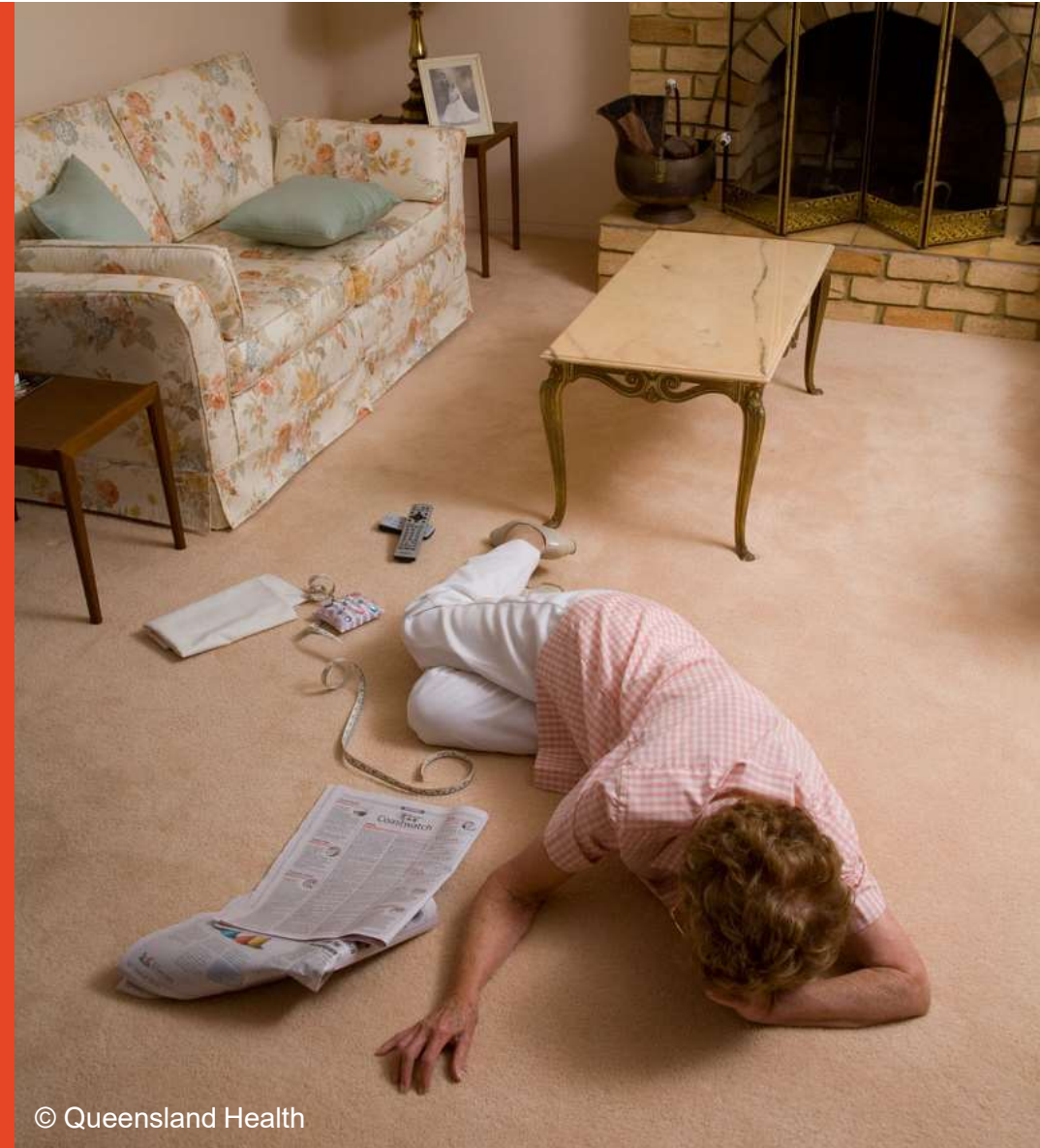
Falls prevention in people with Parkinson's disease

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THE UNIVERSITY OF
SYDNEY

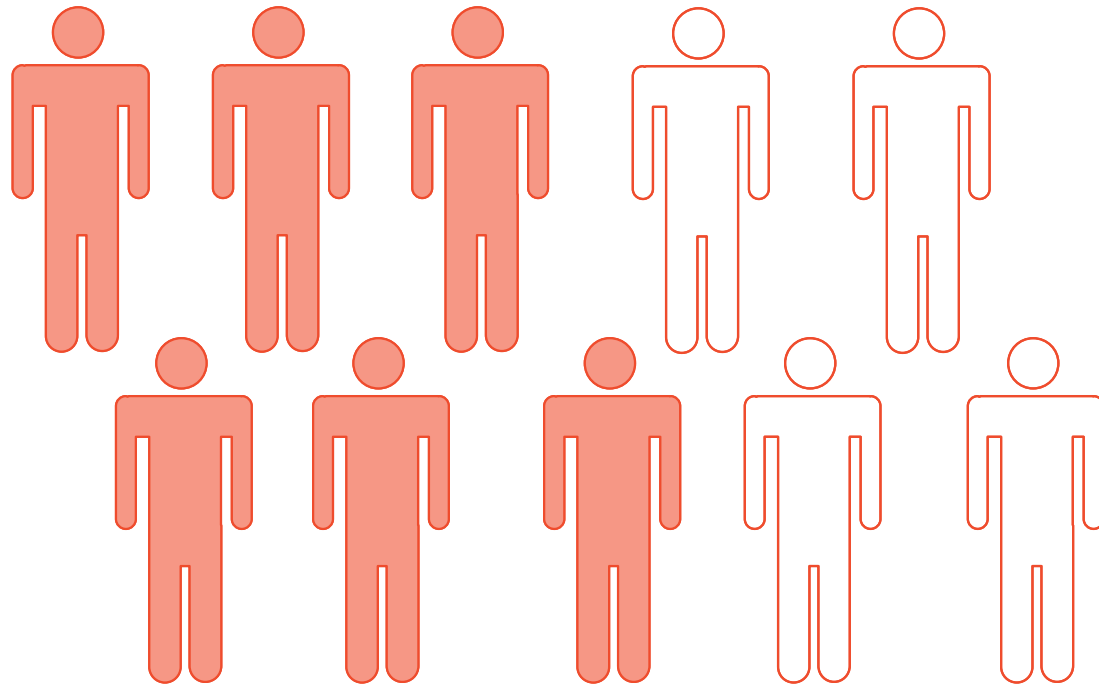


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Acknowledgments

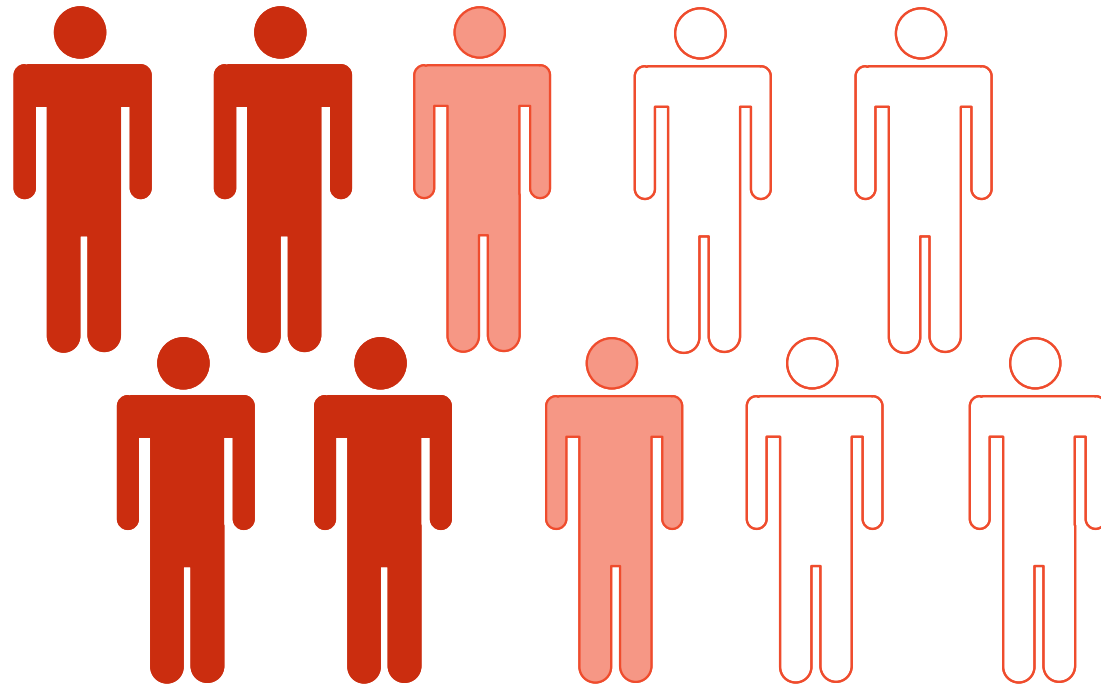
- Parkinson's NSW 
- University of Sydney 
- Research team – Cochrane Review team and the *Integrate* team, especially the physio and OT interventionists
- Participants with PD

Falls in Parkinson's disease



**60% of people with
PD fall each year**

Falls in Parkinson's disease



**60% of people who
fall do so recurrently**

Overview



Interventions for preventing falls in Parkinson's disease (Review)

Allen NE, Canning CG, Almeida LRS, Bloem BR, Keus SHJ, Löfgren N, Nieuwboer A, Verheyden GSAF, Yamato TP, Sherrington C

The *Integrate* trial



Be Safe



Cochrane review aim

- To assess the effects of interventions designed to reduce falls in people with Parkinson's disease (PD)
 - Exercise
- Randomised controlled trials that aimed to reduce falls and reported the effect on falls
 - Rate of falls (falls per person)
 - Number of fallers (number of people who fell)

Standard Cochrane procedures including GRADE

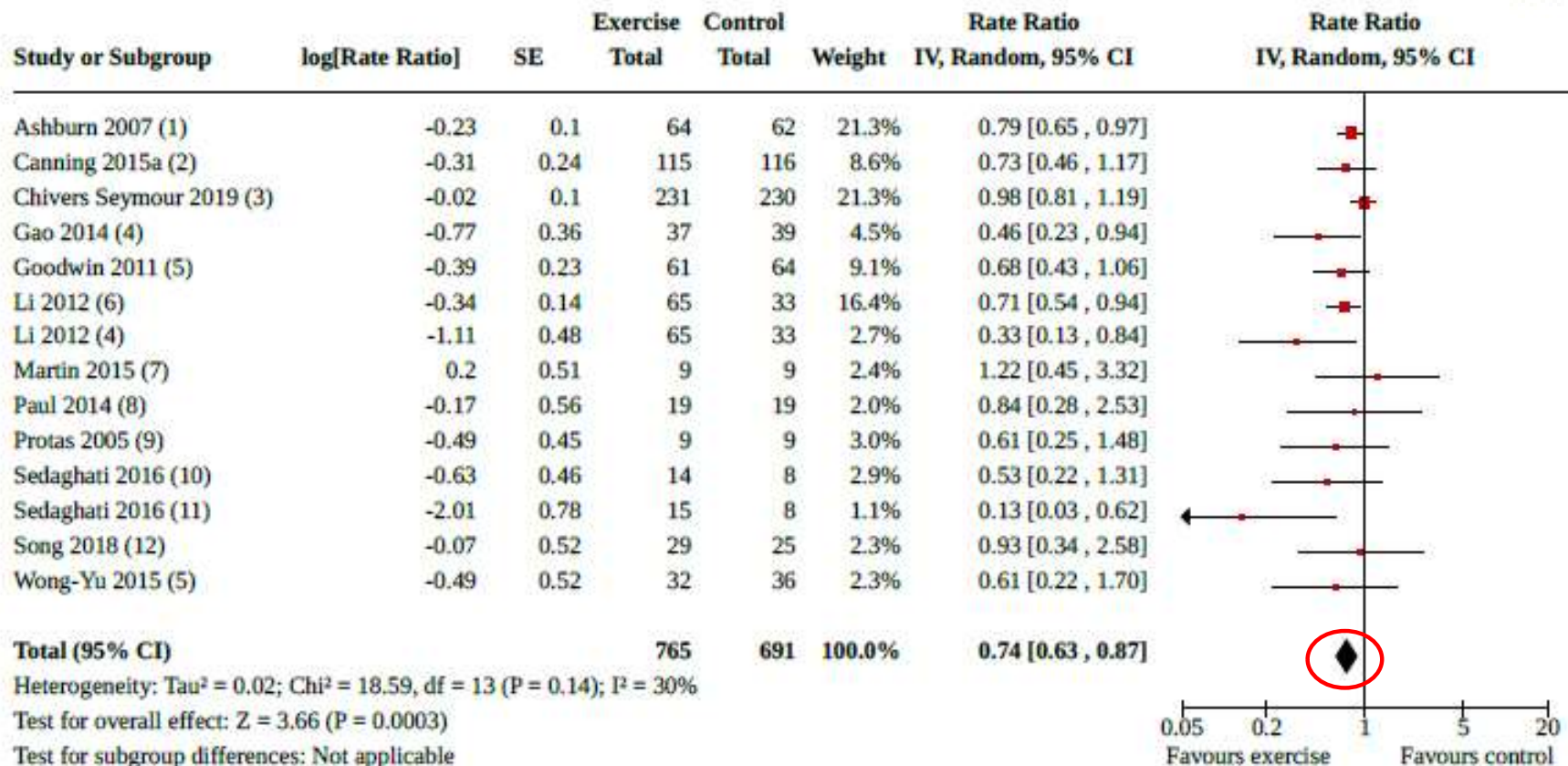
- Searched 7 databases (up to 13th October 2021)
- GRADE approach to rate the certainty of the evidence
 - Very low ⊕○○○
 - Low ⊕⊕○○
 - Moderate ⊕⊕⊕○
 - High ⊕⊕⊕⊕

Exercise trials

- 12 studies compared exercise with a control (usual care or non-active) intervention
- Exercise categories:
 - Gait, balance and functional training (including PD-specific exercise) (10 interventions)
 - Resistance training (2 interventions)
 - 3D exercise (e.g. Tai Chi/dance) (2 interventions)
- Duration and dose: variable (6 to 26 weeks)
- Participants: mild to moderate disease and good cognition

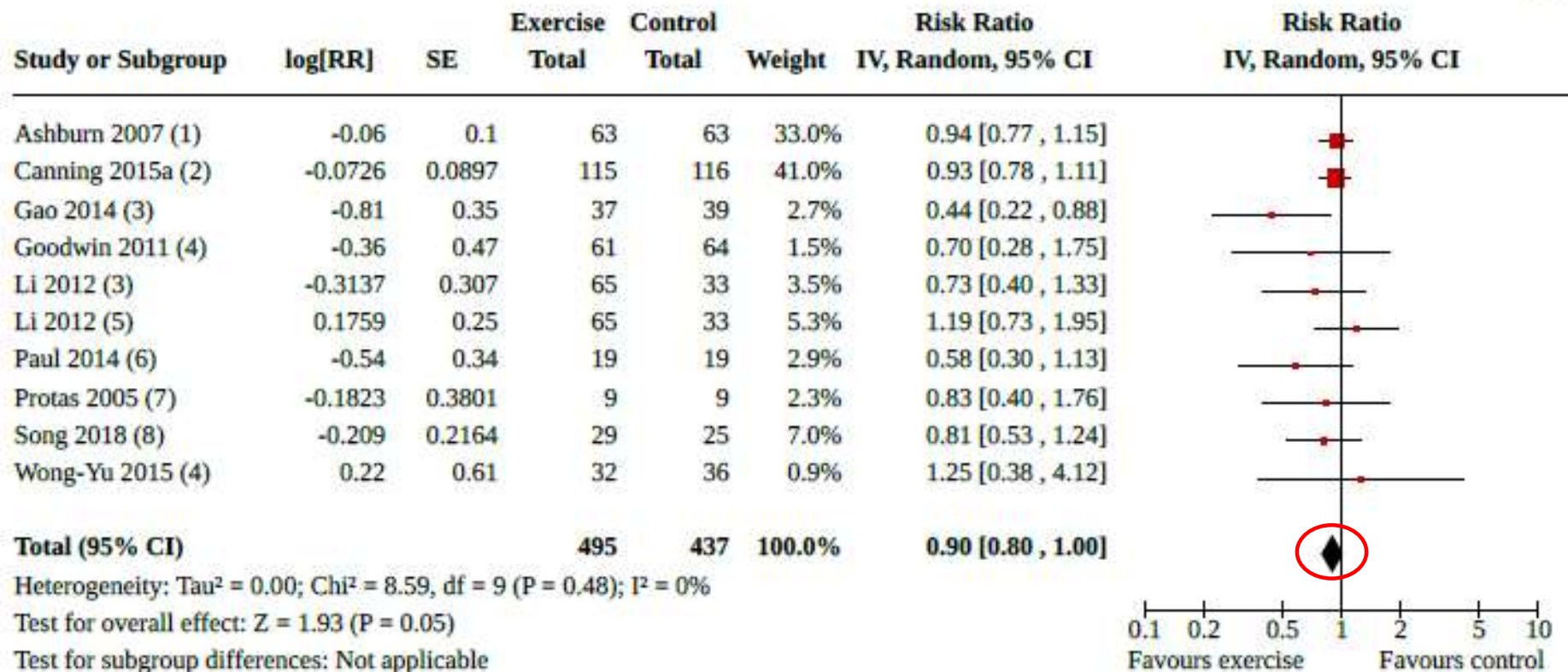
Exercise probably reduces the rate of falls by 26%

Analysis 1.1. Comparison 1: Exercise vs control (rate of falls), Outcome 1: Rate of falls



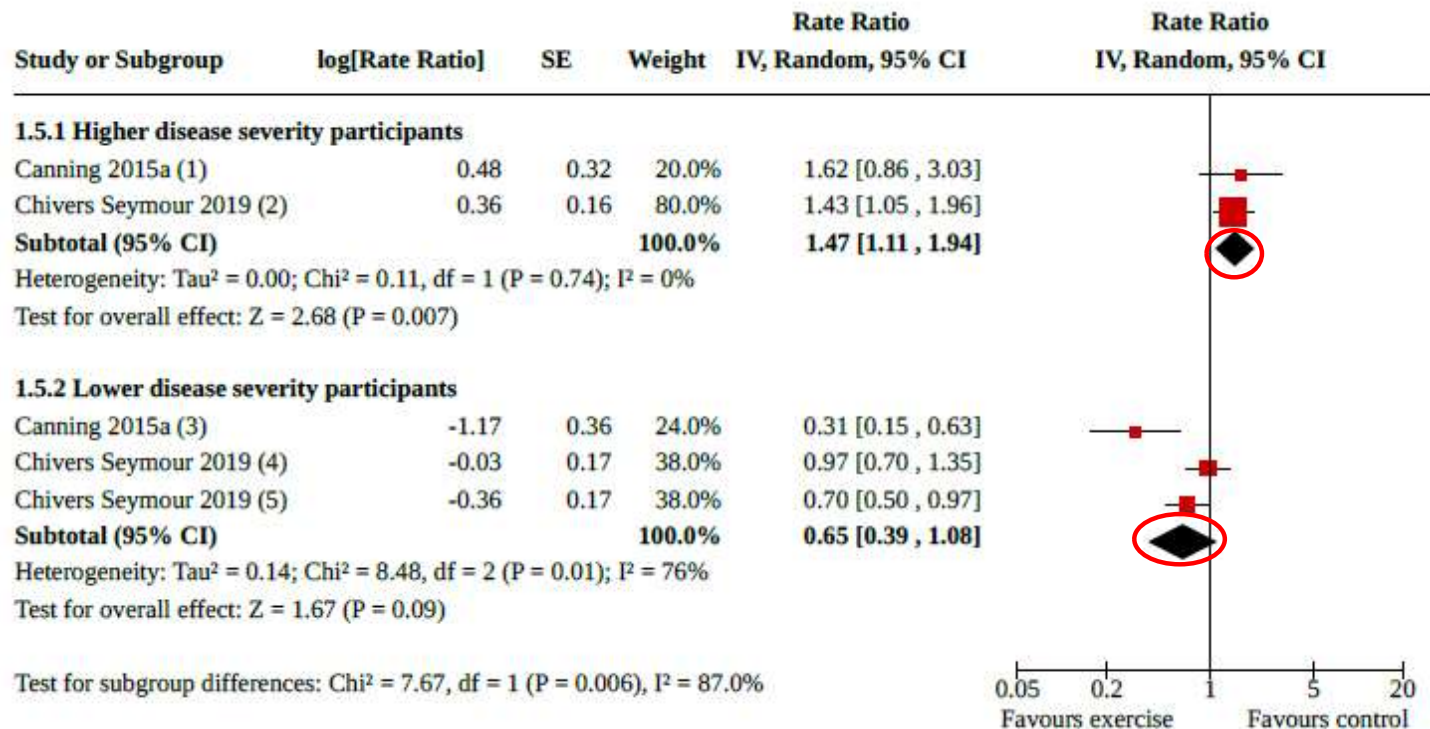
Exercise probably reduces the no. of fallers by 10%

Analysis 2.1. Comparison 2: Exercise vs control (number of fallers), Outcome 1: Number of fallers



Exercise might reduce falls in milder PD but increase them in more advanced PD

Rate of falls



Cochrane Review - Key points

- Fall rates are high, even after effective exercise interventions
- Minimally supervised exercise is pragmatic and sustainable, but it does not reduce falls in people with more severe disease.
- Most people with PD develop cognitive impairment – but they have been excluded from research (Domingos et al 2015)

The *Integrate* trial

ACTRN12619000415101

- Need to explore multidomain interventions for people with more severe disease and cognitive impairment:

- Home fall-hazard reduction (OT)
- Exercise (physio)
- Safer mobility behaviours (OT & physio)

tailored to the individual and targeting their specific impairments/mobility limitations

Aims

Small single group study

Evaluate the:

- Feasibility
- Acceptability and
- Effectiveness

of the *Integrate* program



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Participants

- Idiopathic PD
- Fallen at least twice in prior 6 months
- Able to walk $>10\text{m}$ +/- walking aid
- Those with substantial cognitive impairment required a willing and able care-partner to assist

Home-based intervention

- Collaborative approach
- Participants and care-partners actively involved in goal setting and shared problem solving
- 8 to 12 home visits over 6 months
- Supported by phone calls between visits
- Encouraged to continue beyond the 6-month intervention

OT Intervention

Functional cognitive assessment

- global cognitive processing
- learning potential
- performance
- problem solving ability

Using the Large Allen's Cognitive Level screen (LACLS-5)

(Manual for the Allen Cognitive Level Screen – 5 and Large Allen Cognitive Level screen – 5, 2007)




Home fall-hazard reduction

Delivered by the OT

- Westmead Home Safety Assessment
- fall risk factors and personal perceptions
- booklet of recommendations





FALLS PREVENTION

HOME AND COMMUNITY SAFETY

**WESTMEAD HOME SAFETY ASSESSMENT
SHORT FORM**

NAME: _____ THERAPIST: _____

DATE OF VISIT: ____/____/____

TYPE OF RESIDENCE: _____ OWNERSHIP: _____

DIAGNOSIS: _____ AGE: _____

No FALLS RISK YEAR: _____ FUNCTIONAL VISION: _____

MOBILITY: _____

FUNCTIONAL COGNITION: _____

HOME & COMMUNITY SUPPORT/ASSISTANCE: _____

SUMMARY AND ACTION PLAN

© Cleverton 1997-2019. The Westmead Home Safety Assessment (Short Form) is used for identifying need and/or for baseline. It is not an assessment of risk. Assessment of risk is the primary role of a [qualified health professional](http://www.nsw.gov.au/health-and-care-services/health-professionals/occupational-therapists). The tool can be downloaded at no cost from the website: www.westmead.nsw.gov.au/health-and-care-services/health-professionals/occupational-therapists

<https://fallspreventiononlineworkshops.com.au/resources>

Exercise

Delivered by the physiotherapist
Exercise targeting remediable
fall risk factors:

- Balance
- Leg muscle weakness
- Freezing of gait

STANDING STILL – Semi Tandem

WHERE: Stand next to _____

HOLD ON: Until you are steady – then lighten up your hold as much as possible

EYES: Open / Closed

WHAT: Take a short step forward
Stand still in this position
Hold for _____ slow counts

HOW MANY: Repeat _____ times



Safer mobility behaviour strategies

Combined physio and OT

- Focus on safer mobility strategies, eg:
 - Slow down and concentrate
 - Pause between standing up and walking
 - Strategies to reduce freezing

Signs, notes, mantras, reminders



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Outcome measures:

Feasibility of the intervention

- recruitment rate
- retention rate
- adherence
- adverse events

Acceptability of the intervention

- interviews

Outcome measures:

Measures of effectiveness assessed at 6 months:

- Goal Attainment Scale
- Mobility: Short Physical Performance Battery (composite measure of standing balance, walking speed and sit to stand time)
- Falls (measured for 2 months at baseline and for 0-6 and 6-12 months)

Results – the intervention was feasible

- 29 participants:
 - moderate to moderately advanced PD
 - mild to moderate cognitive impairment
 - frequent falls (median 12 falls per person in prior year)
- Recruitment rate 49%
- 3 drop-outs (elective THR, fall-related fracture, care-partner illness)
- No adverse events while undertaking the intervention

Results – good adherence

Home fall-hazard reduction:

- 90% of recommendations completed
 - 58% fully completed
 - 32% partially completed



Realsimple.com

Results – good adherence

Home fall-hazard reduction:

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 - 32% partially completed

Exercise:

- 97% (range 12 to 221%)



Results – good adherence

Home fall-hazard reduction:

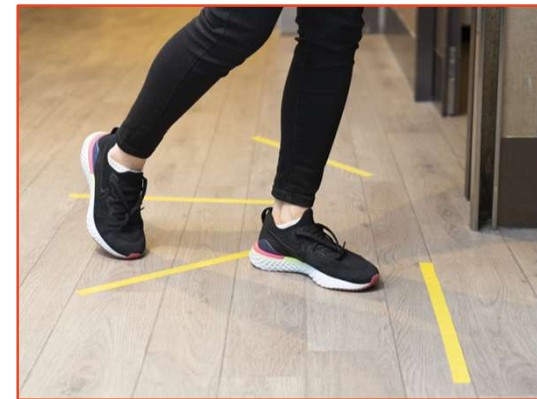
- 90% of recommendations completed
 - 58% fully completed
 - 32% partially completed

Exercise:

- 97% (range 12 to 221%)

Safer mobility strategies

- 68% of time
- Habit score 3.5/5



physiohk.com



www.nhs.uk/Livewell/fitness/Pages/strength-exercises-for-older-people.aspx

Results – intervention was acceptable

Analysed interviews from 16 participants

4 themes

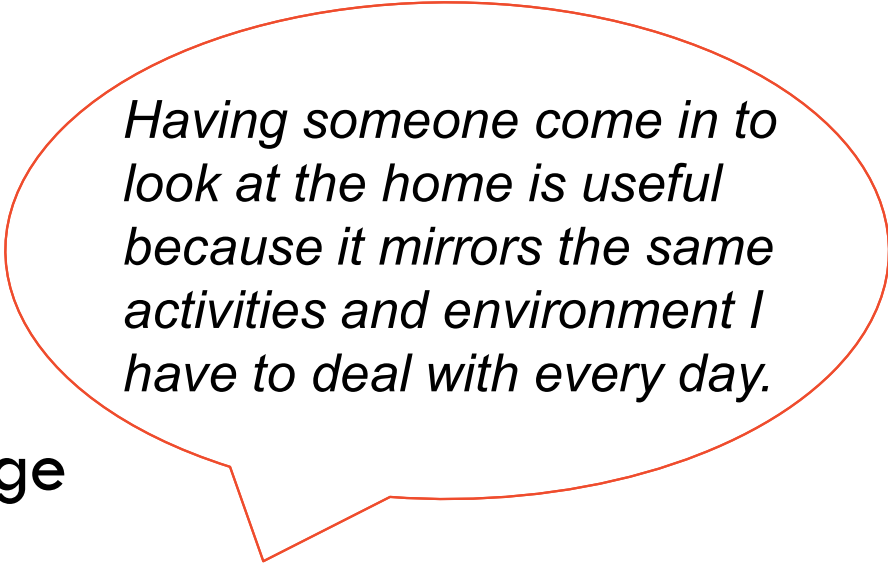
1. Appreciation of a home-based, individually tailored program
2. Benefits of collaboration and shared decision making
3. Increased awareness of safety
4. Having a purpose to drive change

Results – intervention was acceptable

Analysed interviews from 16 participants

4 themes

1. Appreciation of a home-based, individually tailored program
2. Benefits of collaboration and shared decision making
3. Increased awareness of safety
4. Having a purpose to drive change



Having someone come in to look at the home is useful because it mirrors the same activities and environment I have to deal with every day.

Results – most goals met

- 81% achieved or exceeded their safer mobility goal
 - 46% met the goal
 - 23% somewhat better than expected
 - 12% much better than expected
- 19% did not meet goal - stayed at baseline ability

Results – improved mobility

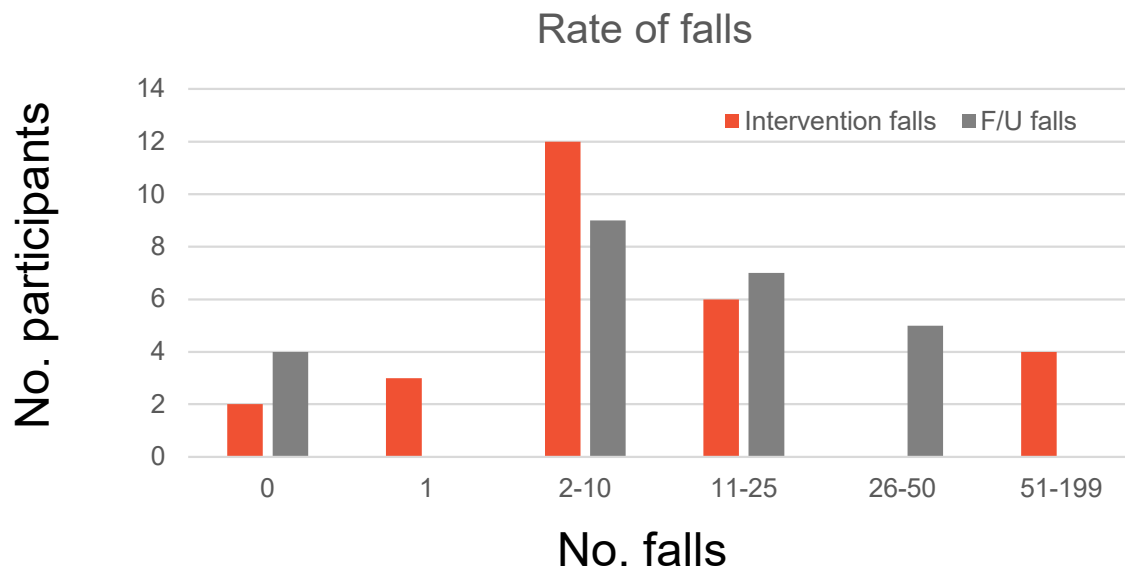
- Improved mobility
 - Short Physical Performance Battery
mean change 1.1, $p < 0.01$

Results – reduced falls

- Reduced falls in the follow-up period
 - 32 falls per person during the 6-month intervention
 - 17 falls per person during 6-month follow-up

Results – reduced falls

- Reduced falls in the follow-up period
 - 32 falls each during the 6-month intervention
 - 17 falls each during 6-month follow-up



Incidence rate
ratio = 0.51
(49% reduction
in fall rate)

Integrate study - Key points

- People with frequent falls and mild to moderately impaired cognition were able to safely engage in a multidomain program with support from care-partners
- Most met or exceeded their safer mobility goal
- Improvement in mobility
- Reduced falls in the follow-up period

Future directions

- Cochrane Review
- *Integrate* study



Large-scale RCT
of a multidomain
intervention
warranted

For all people with Parkinson's disease,
including more advanced disease



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Future directions

- Cochrane Review
- *Integrate* study
- **World Guidelines for Falls prevention**



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Large-scale RCT
of a multidomain
intervention
warranted

For all people with Parkinson's disease,
including more advanced disease

Exercise recommendations: early to mid-stage Parkinson's (strong recommendation with high quality evidence)

- People with early to mid-stage PD and mild or no cognitive impairment should be offered individualised exercise programmes, including balance and resistance training
- Combine with general mobility and ADL rehabilitation

Exercise recommendations: more advanced Parkinson's (strong recommendation but low-quality evidence)

- People with more advanced disease should be offered exercise training, targeting balance and strength, if supervision by a physiotherapist or other suitably qualified person is available
- A rough guide to identify those with more advanced disease:
 - MDS-UPDRS motor score of ≥ 34 and/or
 - Presence of moderate or severe cognitive impairment

Overall recommendations for people with Parkinson's (weak recommendation)

- Offer multidomain interventions - a combination of interventions, tailored to the individual and based on a PD-specific and multifactorial risk assessment
 - Exercise
 - Cueing strategies
 - Environmental modification
 - Medication review



Things to think about...

- Do the people with Parkinson's you see have access to multidisciplinary care? How could you facilitate this?
- Do you train safer mobility strategies for fall prevention? What do these look like?