

Falls and physical activity in community-dwelling older people: understanding and addressing the evidence practice gap

Prof Cathie Sherrington

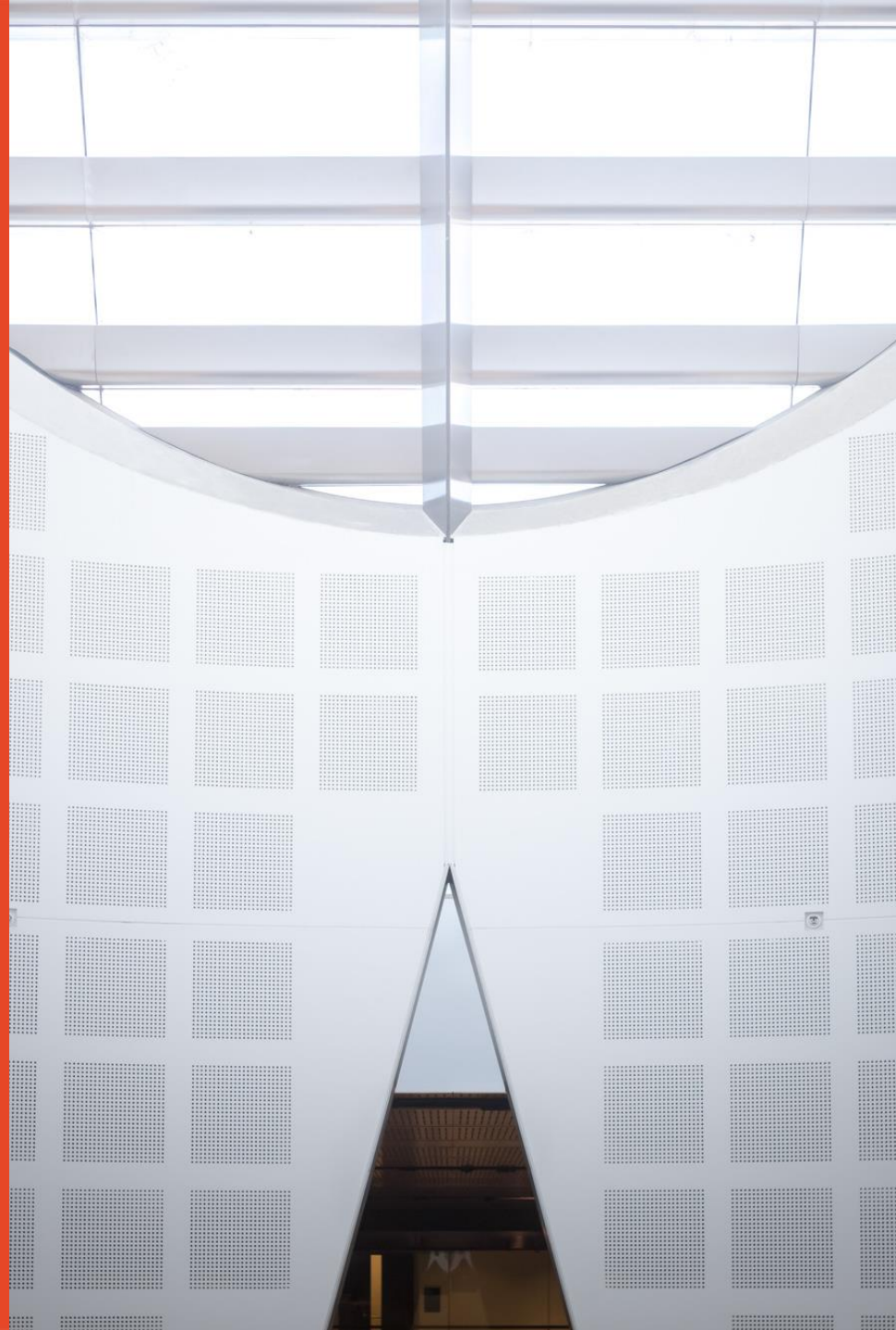
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Overview of 6 studies

1. Exercise to prevent falls: systematic review of RCTs
2. Participation in fall prevention exercise in NSW: cross-sectional study
3. Understanding physical activity participation in older adults
systematic review of qualitative studies
4. Cost-effectiveness of program delivery: modelled analysis
5. Education to change health professional behaviour: RCT
6. Coaching to change older people's physical activity behaviour:
systematic review of RCTs

Understanding falls

- Interaction between physiology, behaviour and environment
- People with better physical function fall in more challenging environments/ activities
- People with impaired physical function fall in less challenging environments/ activities
- Exercise impacts on many fall risk factors



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Exercise to prevent falls in older adults: an updated systematic review and meta-analysis

Catherine Sherrington,¹ Zoe A Michaleff,^{1,2} Nicola Fairhall,¹ Serene S Paul,¹
Anne Tiedemann,¹ Julie Whitney,³ Robert G Cumming,⁴ Robert D Herbert,⁵
Jacqueline C T Close,^{5,6} Stephen R Lord⁵

- Update of reviews from 2008 and 2011
- 88 trials, 99 comparisons
- 19,478 participants

Systematic review update 2016: community

- 21% fewer falls in exercise than control participants
 - pooled rate ratio 0.79 (95% CI 0.73 to 0.85)
 - I^2 47%
 - 69 comparisons
- Greater effects from exercise programs that challenged balance and involved 3+ hours exercise per week
 - 76% variability explained
 - both features led to a 39% reduction in falls (pooled rate ratio 0.61, 95% CI 0.53 to 0.72)

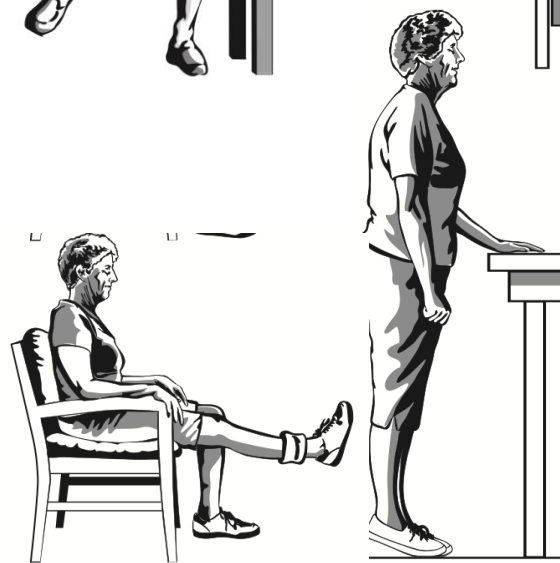
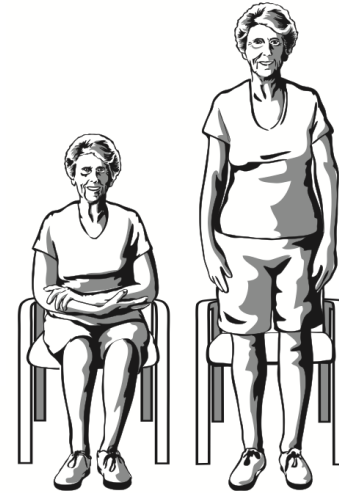
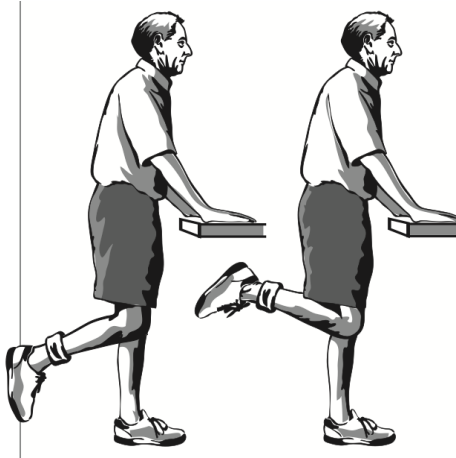
Systematic review: community-dwelling clinical groups

- Exercise had a fall prevention effect in people with
 - Parkinson's disease (pooled rate ratio 0.47, 95% CI 0.30 to 0.73, I^2 65%, 6 comparisons)
 - cognitive impairment (pooled rate ratio 0.55, 95% CI 0.37 to 0.83, I^2 21%, 3 comparisons)

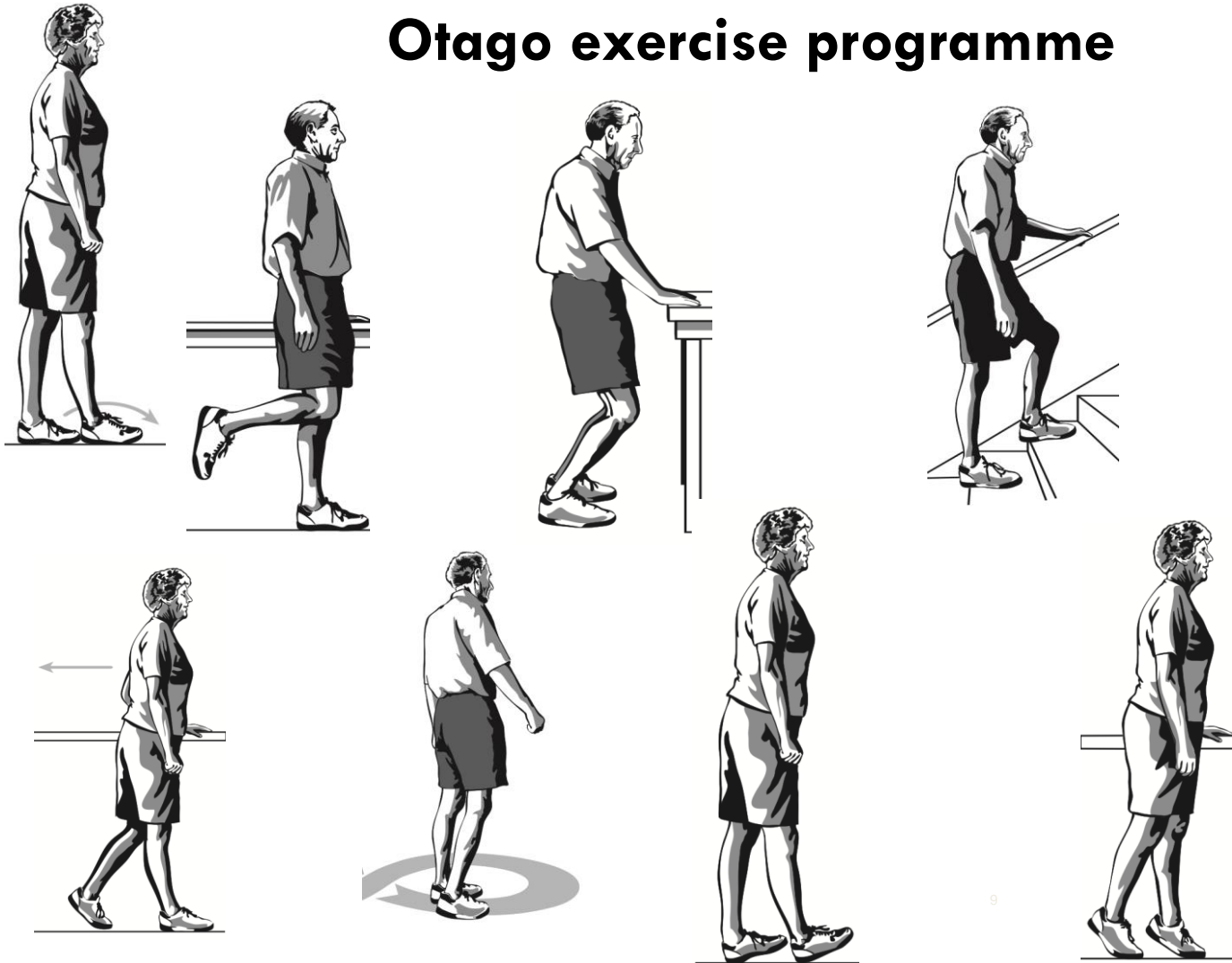
Systematic review update 2016

- No evidence of effect from exercise as a single intervention
 - residential care settings
 - stroke survivors
 - people recently discharged from hospital

Otago exercise programme



Otago exercise programme



Prevalence and correlates of participation in fall prevention exercise/physical activity by older adults

Preventive Medicine 55 (2012) 613–617

Dafna Merom ^{a,c,*}, Victoria Pye ^b, Rona Macniven ^c, Hidde van der Ploeg ^c, Andrew Milat ^d, Catherine Sherrington ^e, Stephen Lord ^f, Adrian Bauman ^c

	n	Prevalence % (95% CI)	Times/week Mean (95% CI)
Prompted activities			
Walking for all purposes	4579	80.8 (79.7–82.1)	5.3 (5.2–5.4)
Strength/resistance	670	12.0 (11.0–13.0)	4.3 (4.0–4.6)
Group exercise	443	7.9 (7.12–8.73)	2.7 (2.5–3.0)
Lawn bowls or other bowls	369	6.54 (5.81–7.27)	1.8 (1.7–1.9)
Balance training	331	5.95 (5.25–6.65)	3.8 (3.4–4.2)
Golf	289	5.36 (4.68–6.05)	2.0 (1.8–2.1)
Dancing	206	3.41 (2.89–3.93)	1.9 (1.6–2.1)
Tai Chi	158	2.70 (2.22–3.17)	3.0 (2.5–3.4)
Tennis	126	2.40 (1.91–2.88)	1.4 (1.2–1.6)
Yoga	101	1.79 (1.40–2.18)	3.2 (2.7–3.7)
Team Sports	50	1.03 (0.70–1.36)	1.5 (1.1–1.8)

Older people's perspectives on participation in physical activity: a systematic review and thematic synthesis of qualitative literature

Marcia R Franco,¹ Allison Tong,² Kirsten Howard,² Catherine Sherrington,¹
Paulo H Ferreira,³ Rafael Z Pinto,^{4,5} Manuela L Ferreira¹

- systematic review identified 132 studies from 11,841 screened
- thematic synthesis of study findings
- 5987 participants aged 60 to 89 years in 24 countries

Themes identified

- social influences (interaction with peers, social awkwardness, encouragement from others, professional instruction)
- physical limitations (pain or discomfort, concerns about falling, comorbidities)
- competing priorities
- access difficulties (environmental barriers, affordability)
- personal benefits of physical activity (strength, balance and flexibility, self-confidence, independence, improved health and mental well-being)
- motivation and beliefs (apathy, irrelevance and inefficacy, maintaining habits)

Economic modelling of a public health programme for fall prevention

INEZ FARAG¹, KIRSTEN HOWARD², MANUELA L. FERREIRA³, CATHERINE SHERRINGTON⁴

- Markov model costs and benefits of widespread rollout of a fall prevention program
- incremental cost-effectiveness ratio (ICER) of \$A28,931 per QALY gained assuming program cost of \$700 per person and at a fall prevention risk ratio of 0.75
- cost-effective at a threshold value of \$A50,000 per QALY gained

2014;4:e007032

BMJ Open Does a fall prevention educational programme improve knowledge and change exercise prescribing behaviour in health and exercise professionals? A study protocol for a randomised controlled trial

A Tiedemann,^{1,2} D L Sturnieks,³ A-M Hill,⁴ L Lovitt,⁵ L Clemson,⁶ S R Lord,³ L Harvey,² C Sherrington^{1,2}

Aim

To evaluate the effect of participation in a fall prevention educational program on health and exercise professionals' **knowledge, behaviour and confidence** to prescribe evidence-based exercise.

Methods

Recruitment from Sydney and surrounds, Central Coast, Orange and surrounds

Recruitment and consent

Baseline survey to assess fall prevention knowledge and exercise prescription behaviour and confidence

Concealed randomisation

Intervention group
Educational program and access to internet-based resources

Control group
Three month wait list (delayed intervention)

Three month follow-up survey
(same as baseline)

Intervention:

- Full day face-to-face workshop for up to 35 attendees/session
- Didactic and interactive teaching strategies
- Information about internet-based support resources
- Workshop notes provided in printed format
- Delivered by 2 fall prevention researchers with over 20 years of combined experience

Results

PARTICIPANTS

- n=200, 82% females
- 58% aged 20-39 years
- Physios (65%), Exercise Physiologists (12%), OTs (10%)

WORKPLACE/ EXPERIENCE

- 79% previous experience prescribing fall prevention exercise
- Workplace setting:
 - Hospital (53%)
 - Community (18%)
 - RACF (12%)
 - Other (17%)

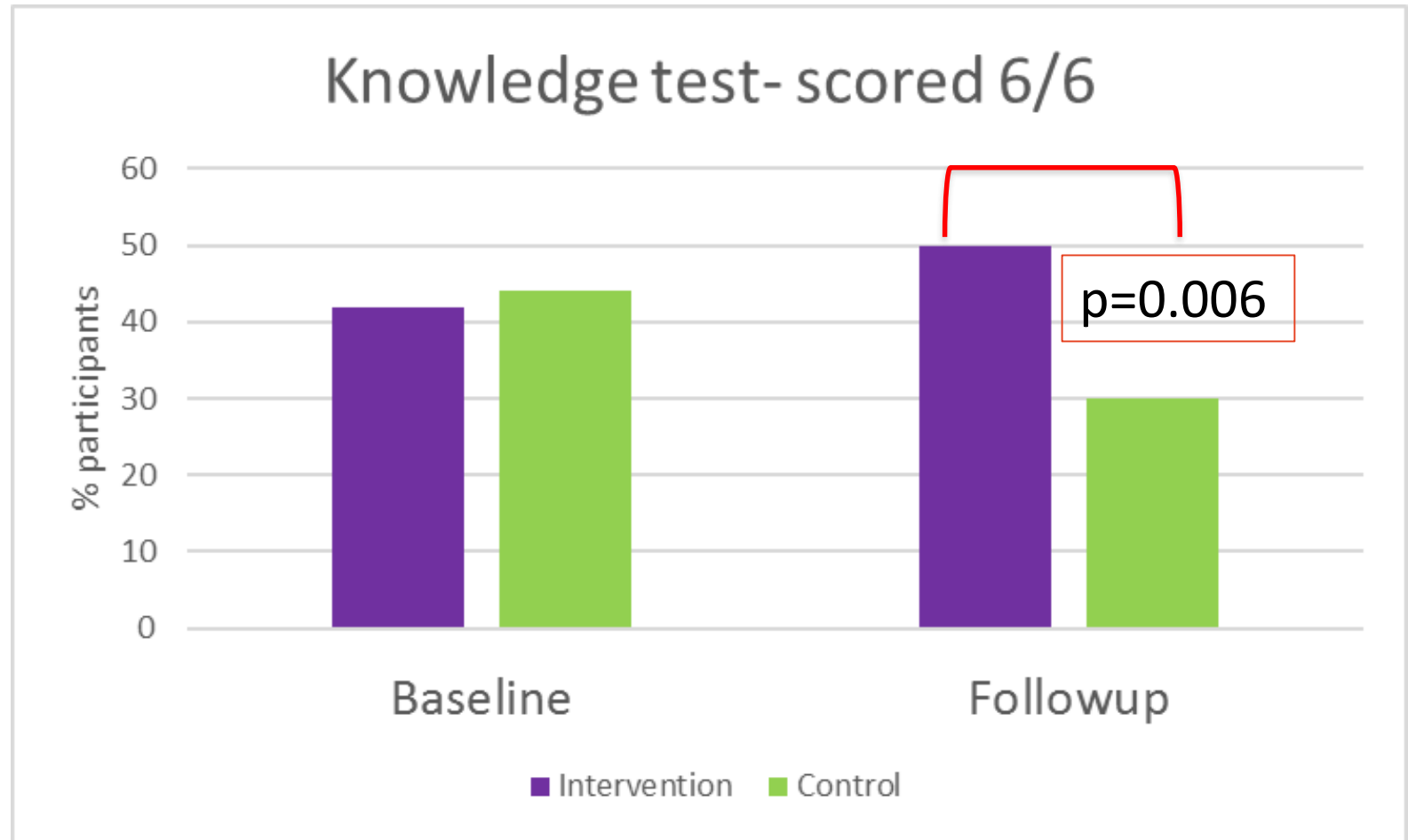
ATTITUDES

- 97% believed it's possible to improve balance in older age
- 90% believed it's possible to prevent falls in older age

Results

Primary outcome 1, knowledge:

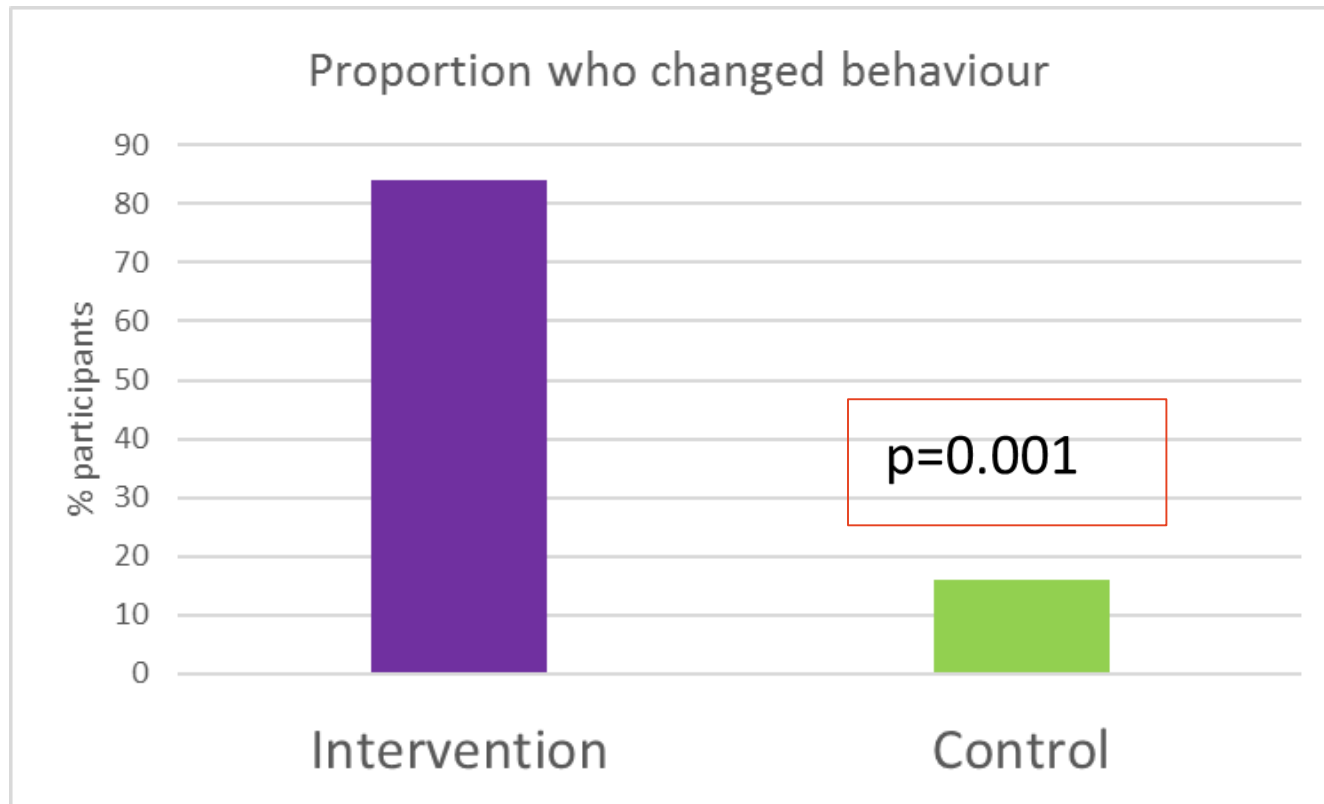
-Knowledge about fall prevention-6 multiple choice questions



Results

Primary outcome 2, behaviour:

“Do you think you have changed the way you prescribe fall prevention exercise in the past three months?”



Main factors that changed:

- Increased focus on balance challenging exercise (n=40/76)
- Increasing the dose of exercise prescribed (n=10/76)

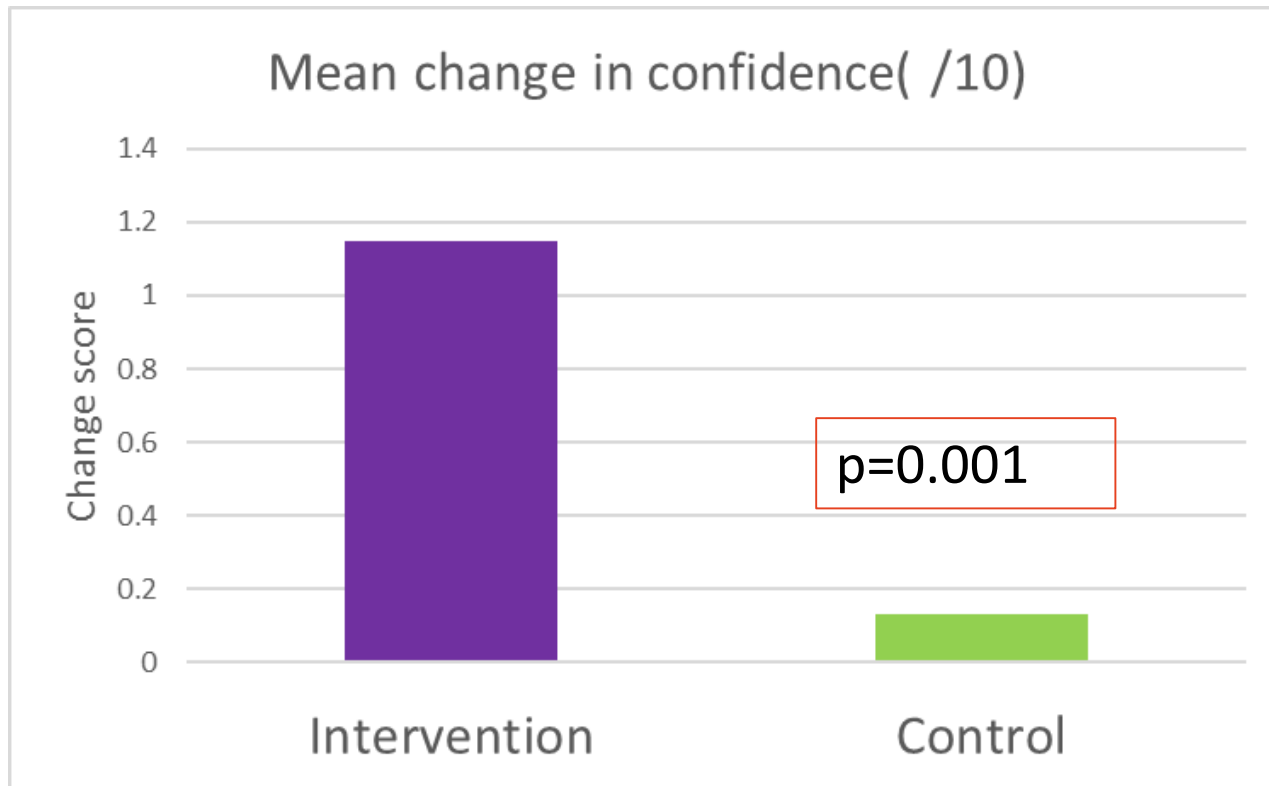
Results

Secondary outcomes- confidence:

Q4. How confident are you at prescribing exercises to people aged 60+ years for fall prevention?

(0=least confident & 10=most confident)

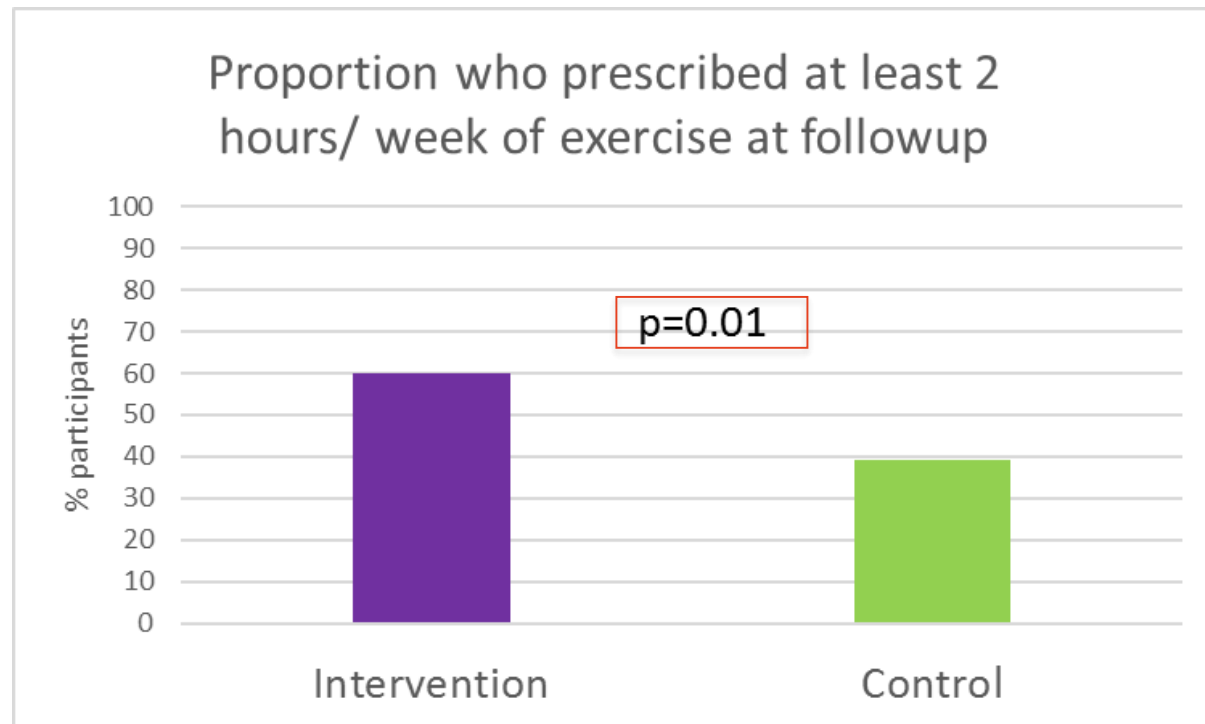
0 1 2 3 4 5 6 7 8 9 10
least confident most confident



Results

Secondary outcomes- confidence:

- Proportion of older people seen by participants in the past month that were prescribed fall prevention exercises (%)
 - **No significant difference** between groups at follow-up
- Proportion of fall prevention exercises prescribed to older people in the past month that comply with evidence-based guidelines and dose
 1. *Type of exercise*- **no difference between groups** in number of exercises prescribed
 2. *Dose*



Summary

Study limitations

- self report measures
- preaching to the converted?

Participation in a face-to-face workshop resulted in small improvements in:

- knowledge
- confidence
- behaviour



What is the effect of health coaching on physical activity participation in people aged 60 years and over? A systematic review of randomised controlled trials

Juliana S Oliveira,¹ Catherine Sherrington,¹ Anita B Amorim,² Amabile B Dario,² Anne Tiedemann¹

Aim

To evaluate the effect of health coaching on physical activity among people aged 60 years and older.

Background

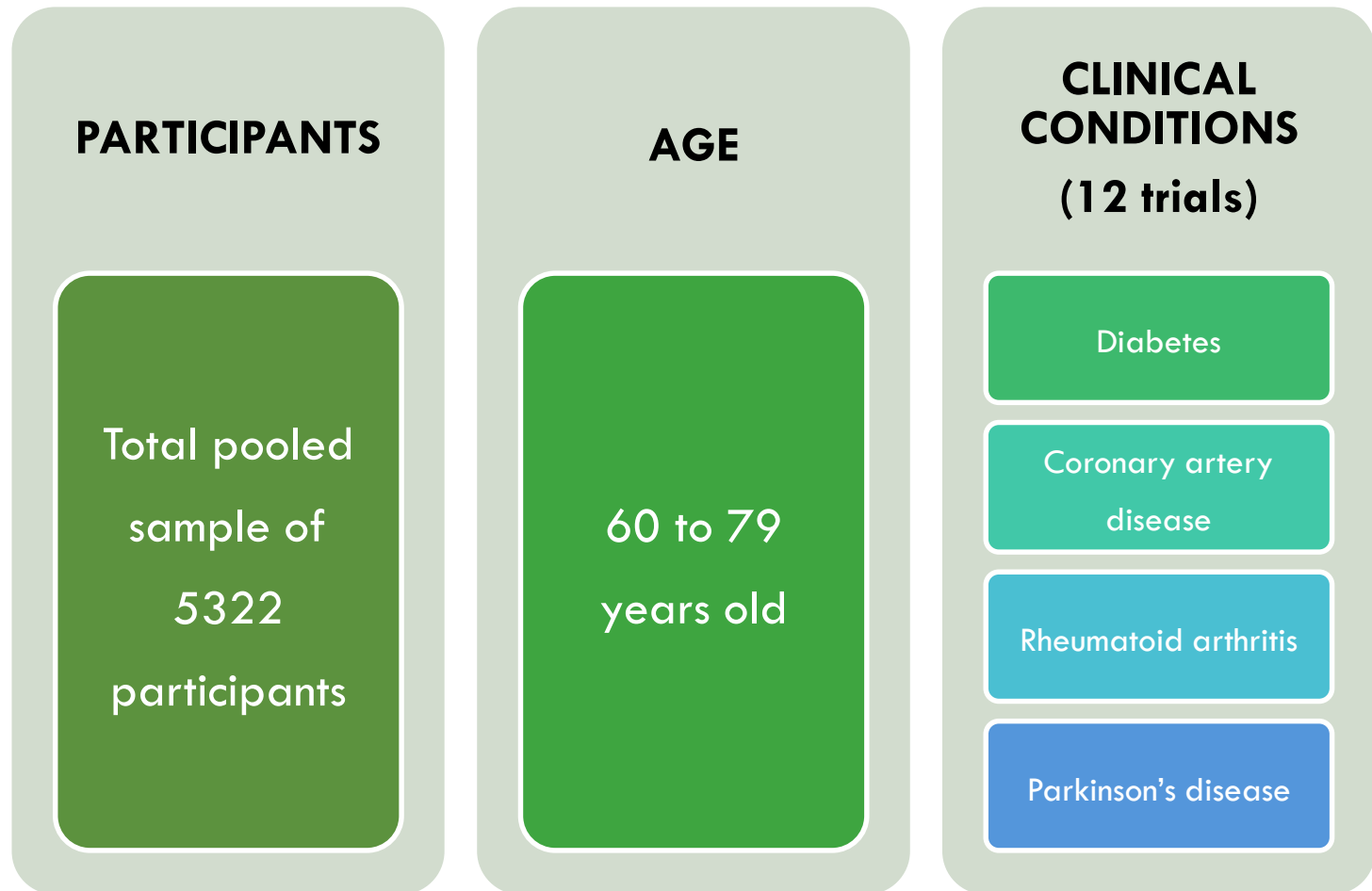


Methods

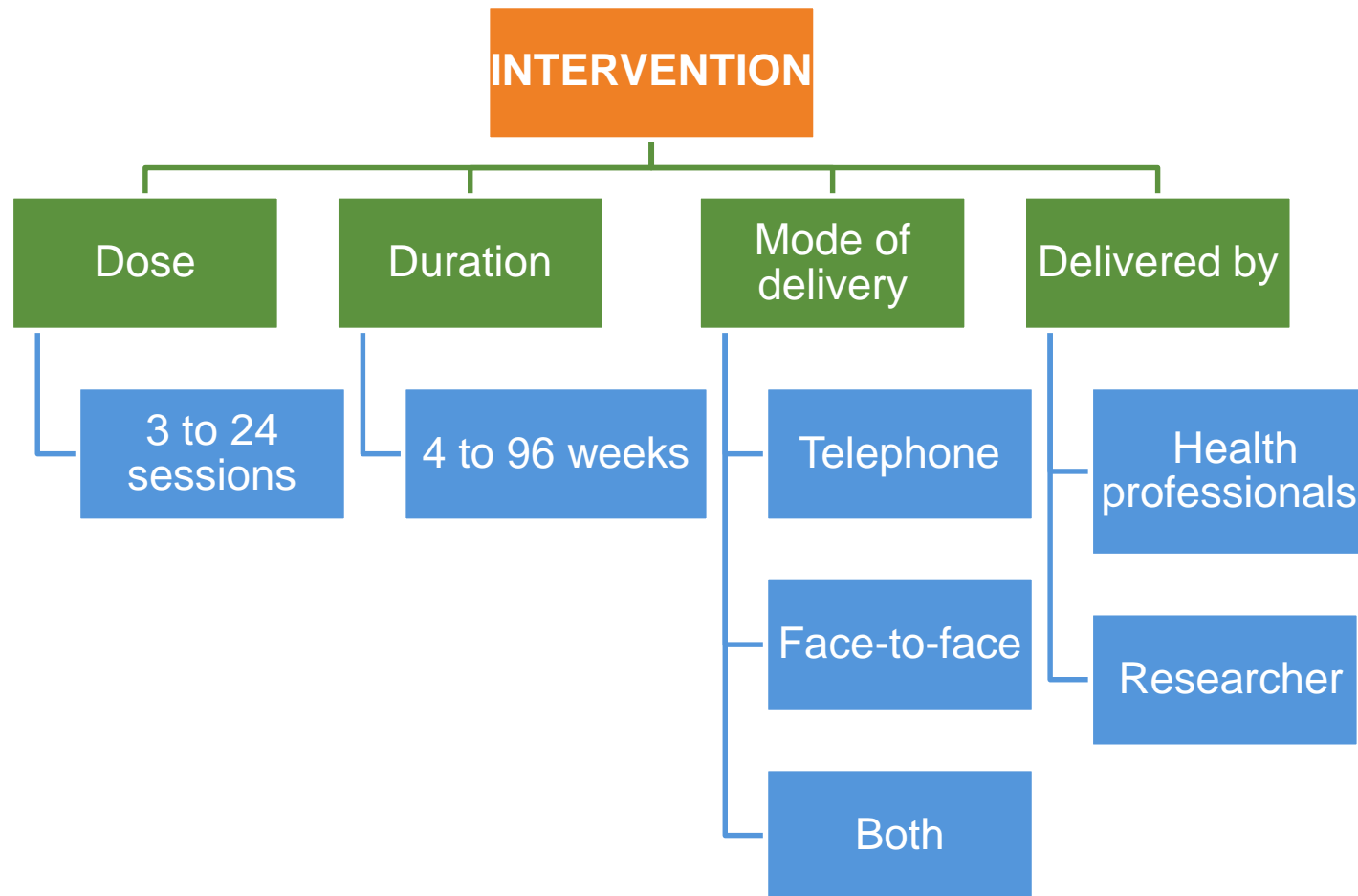
Protocol	Search strategy	Keywords	Inclusion criteria
<ul style="list-style-type: none">• PROSPERO• CRD42014013224	<ul style="list-style-type: none">• Medline• Embase• CENTRAL• PsycInfo• PEDro• SPORTDiscus• LILACS• CINAHL	<ul style="list-style-type: none">• Health Coaching• Wellness coaching• Physical Activity counselling• Aged• Randomised clinical trials	<ul style="list-style-type: none">• Design- RCTs• Age- 60+• Intervention- health coaching• Comparator- usual care/ waitlist/ no intervention• Outcome- physical activity

Results

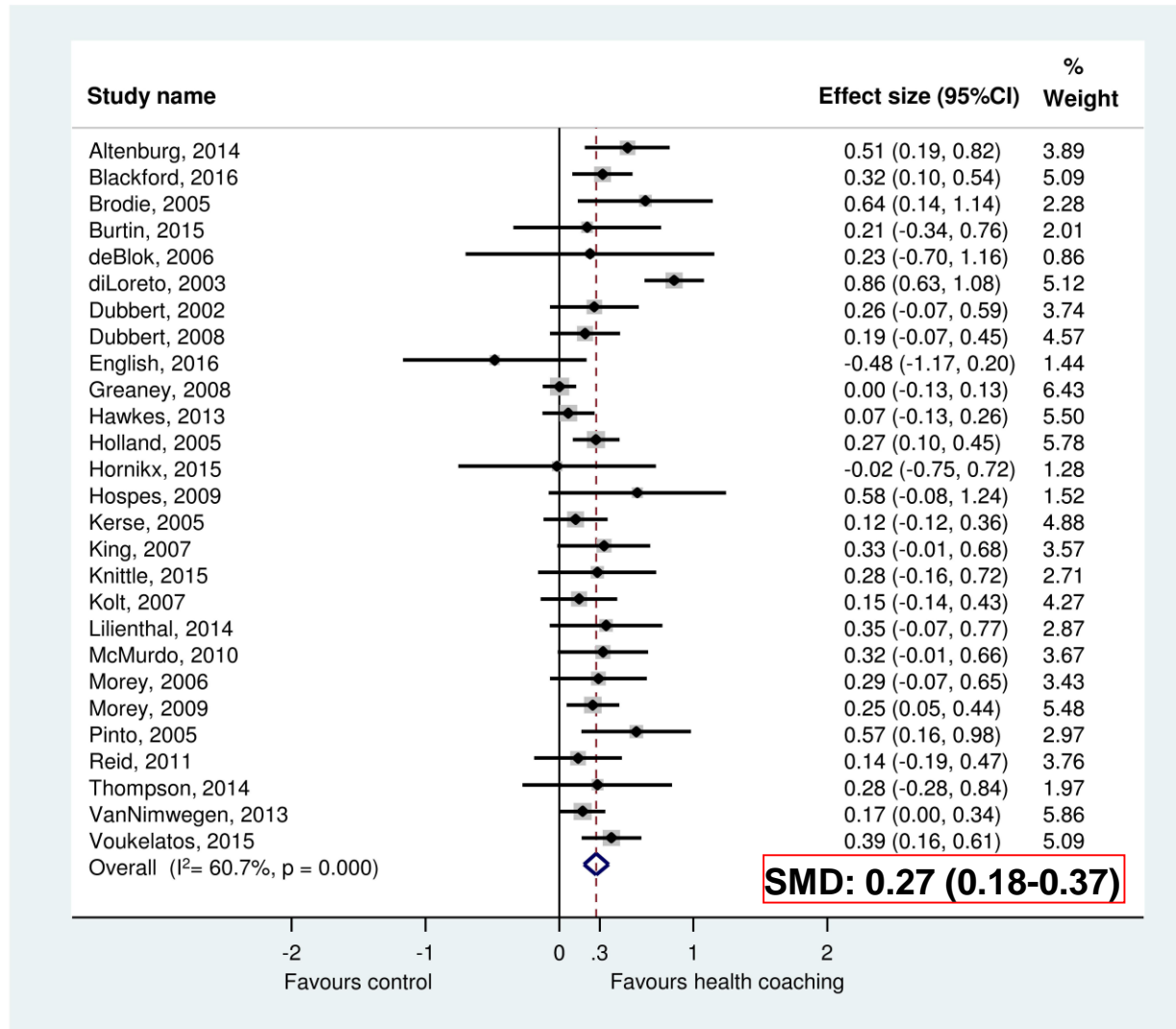
-1092 records screened, 27 trials met inclusion criteria



Results



Results



Results

■ Exploratory meta-regression analyses:

- No difference in the effect of health coaching between trials:
 - Clinical condition x general population
 - Objective measures x self-report questionnaires

Summary

- Health coaching was effective in improving PA participation in people aged 60+ (SMD=0.27), although average effects were small
 - Variation in the health coaching methods
 - Equally as effective in healthy older people and clinical groups

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Conclusions

- Falls in older people in the community are preventable, particularly with exercise that targets balance
- Participation in balance-challenging exercise is low
- Physical activity behaviour is complex
- A population health fall prevention program would be cost-effective
- Workshops can improve health professional prescription of fall prevention exercises
- Health coaching can enhance physical activity in older adults
- Exercise and physical activity have many other health benefits for older people
- Widespread implementation of fall prevention strategies in the general community is urgently needed

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Thanks to

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

