



**Institute for  
Musculoskeletal  
Health**

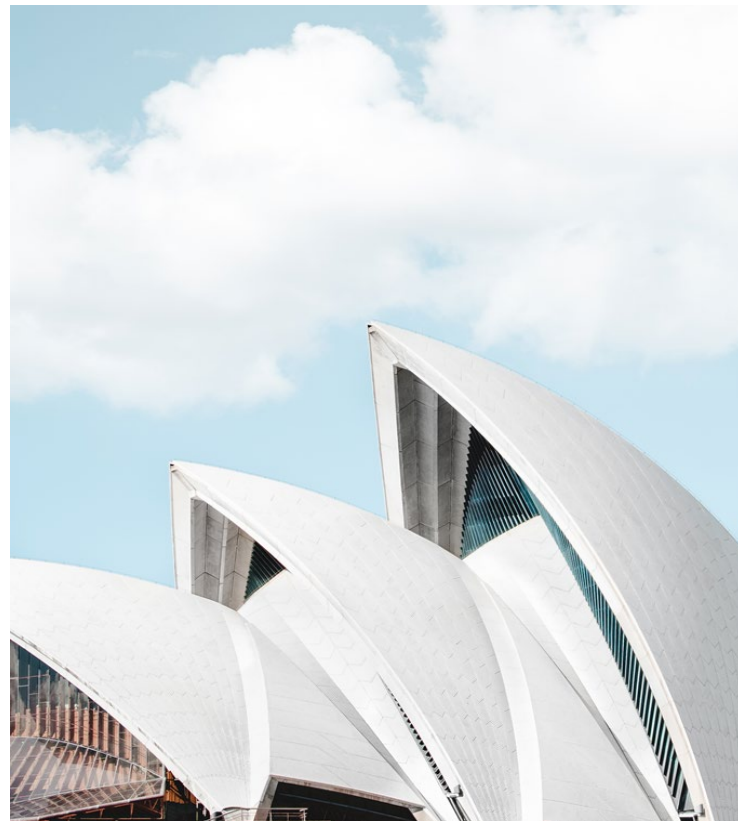
*A research partnership between Sydney Local Health District and the  
University of Sydney in musculoskeletal health and physical activity*

## **Physical activity for healthy ageing: development and evaluation of scalable interventions**

Associate Professor Anne Tiedemann

University of Sydney Robinson Fellow

@AnneTiedemann1



**Health**  
Sydney  
Local Health District



THE UNIVERSITY OF  
**SYDNEY**

# Outline

## Key questions

Why be active?

How much physical activity?

How active are older people?

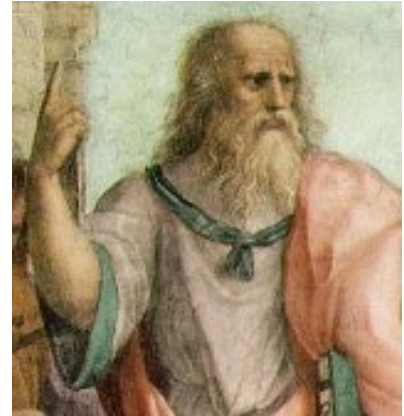
How can we promote physical activity?

What strategies are we currently testing?

# Importance of physical activity long known

*“Lack of activity destroys the good condition of every human being while movement and methodical physical exercise save it and preserve it”.....*

*Plato, Greek philosopher, 428-347 BC*



# Physical activity is an investment in future health

Reduces risk of:



Promotes:



# How much physical activity for older adults?

## UK Chief Medical Officers' Physical Activity Guidelines

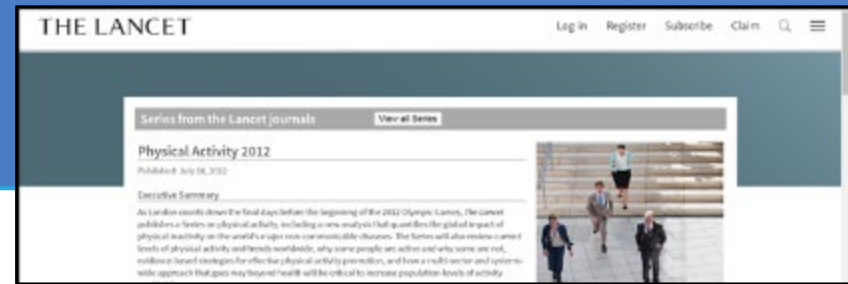
Some is good,  
more is better

Make a start today:  
it's never too late

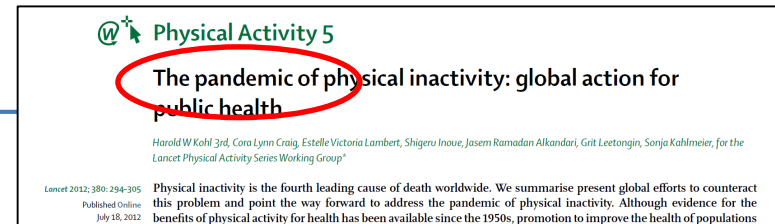
Every minute  
counts



# An inactive world....



- In Australia less than half (**48%**) of the adult population are sufficiently **active** (AIHW, 2018)
- Globally **5.3 million deaths/ year due to inactivity** (Lee et al, 2012)
- Physical inactivity of **similar importance** as a modifiable risk factor for chronic disease as **obesity** and **tobacco**
- Economic cost of physical inactivity estimated at **INT\$67.5 billion** worldwide in 2013 (Ding et al, 2016)



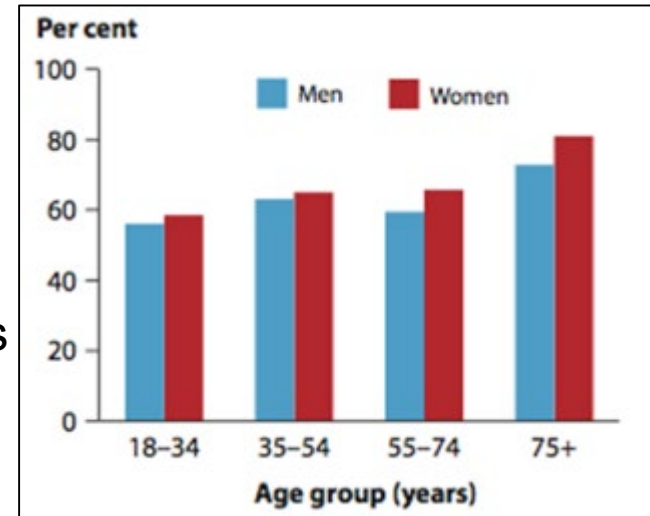


# Physical inactivity increases with age

## In older adults, aged 65+ years....

- Around 25% meet the guidelines for moderate to vigorous intensity physical activity (*ABS 2015*)
- Participation in balance and strength training is even lower:
  - NSW fall prevention survey of over 5600 people aged 65+ in 2009 showed only 6% of respondents did regular balance training and 12% did strength training (*Merom et al, Preventive Medicine, 2012*)

Physical inactivity across age groups, *ABS 2011*



# Evidence to practice gap

Huge disconnect between the compelling evidence of benefit of physical activity on health and wellbeing and the very low rates of participation





# WHO Global Action Plan on Physical Activity

GLOBAL ACTION PLAN ON PHYSICAL ACTIVITY 2018-2030

## MORE ACTIVE PEOPLE FOR A HEALTHIER WORLD

### GOAL TO REDUCE PHYSICAL INACTIVITY

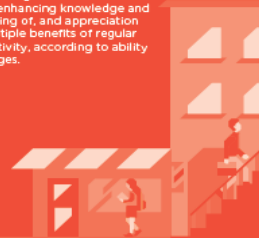
BY 2025  
**10%**

BY 2030  
**15%**

## 1 CREATE ACTIVE SOCIETIES

SOCIAL NORMS AND ATTITUDES

Create a paradigm shift in all of society by enhancing knowledge and understanding of, and appreciation for, the multiple benefits of regular physical activity, according to ability and at all ages.



## 2 CREATE ACTIVE ENVIRONMENTS

SPACES AND PLACES

Create and maintain environments that promote and safeguard the rights of all people, of all ages, to have equitable access to safe places and spaces, in their cities and communities, in which to engage in regular physical activity, according to ability.



## 3 CREATE ACTIVE PEOPLE

PROGRAMMES AND OPPORTUNITIES

Create and promote access to opportunities and programmes, across multiple settings, to help people of all ages and abilities to engage in regular physical activity as individuals, families and communities.



## 4 CREATE ACTIVE SYSTEMS

GOVERNANCE AND POLICY ENABLERS

Create and strengthen leadership, governance, multisectoral partnerships, workforce capabilities, advocacy and information systems across sectors to achieve excellence in resource mobilization and implementation of coordinated international, national and subnational action to increase physical activity and reduce sedentary behaviour.



# WHOLE OF GOVERNMENT SOLUTIONS FOR PHYSICAL INACTIVITY

This global action plan provides a "systems-based" roadmap for all countries to enable national and subnational action to increase physical activity and reduce sedentary behaviour.

*Increasing physical activity requires a systems-based approach – there is no single policy solution*

## WHAT IS A 'SYSTEMS-BASED' APPROACH?

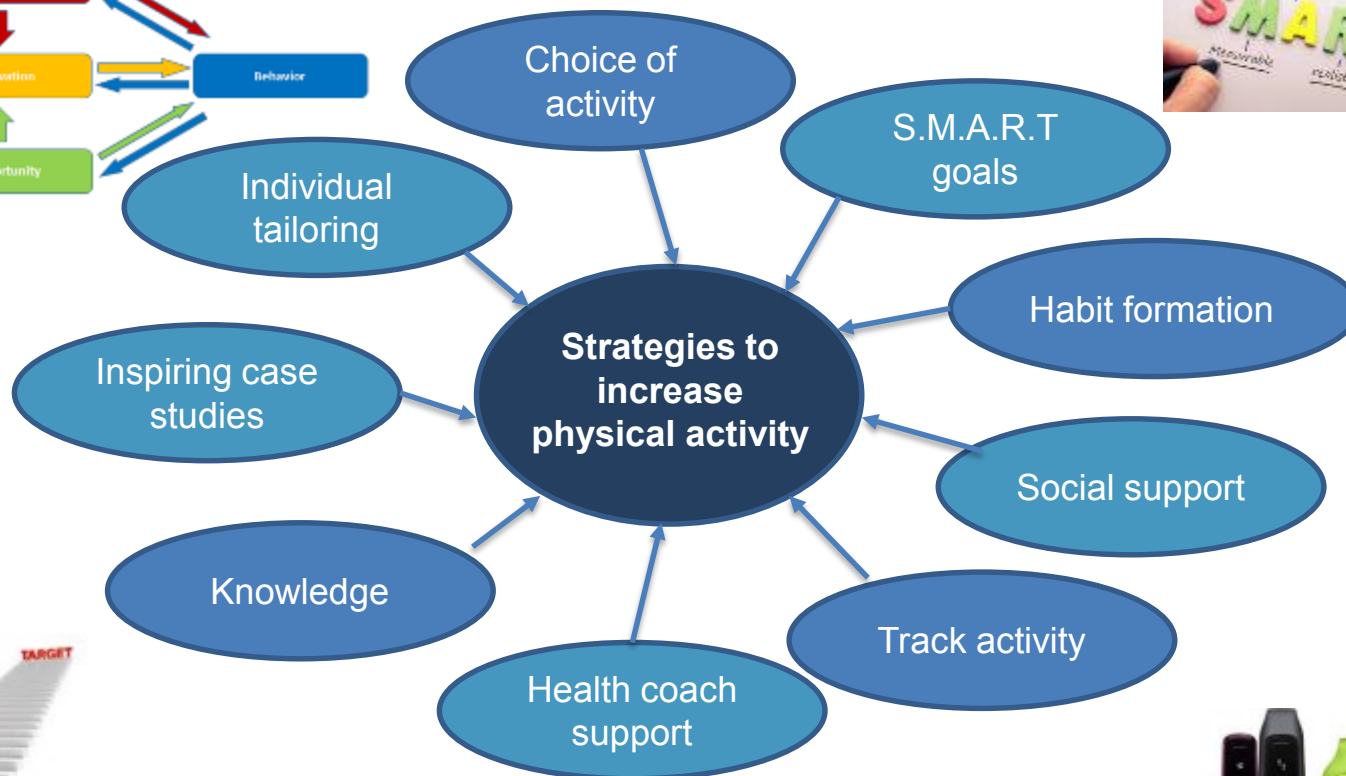
A systems-based approach recognizes the interconnectedness and adaptive interaction of multiple influences on physical activity. It shows the numerous opportunities for policy action by different stakeholders to reverse current trends in inactivity and how they interact on multiple levels.

Implementation requires a collective and coordinated response across the settings where people live, work and play by all relevant stakeholders, at all levels, to ensure a more active future.



Numbers shown refer to the recommended policy actions. For full details refer to the main report.

# The COM-B system – a framework to understand behavior



# Current research- trials of scalable interventions to promote physical activity



# Health coaching systematic review

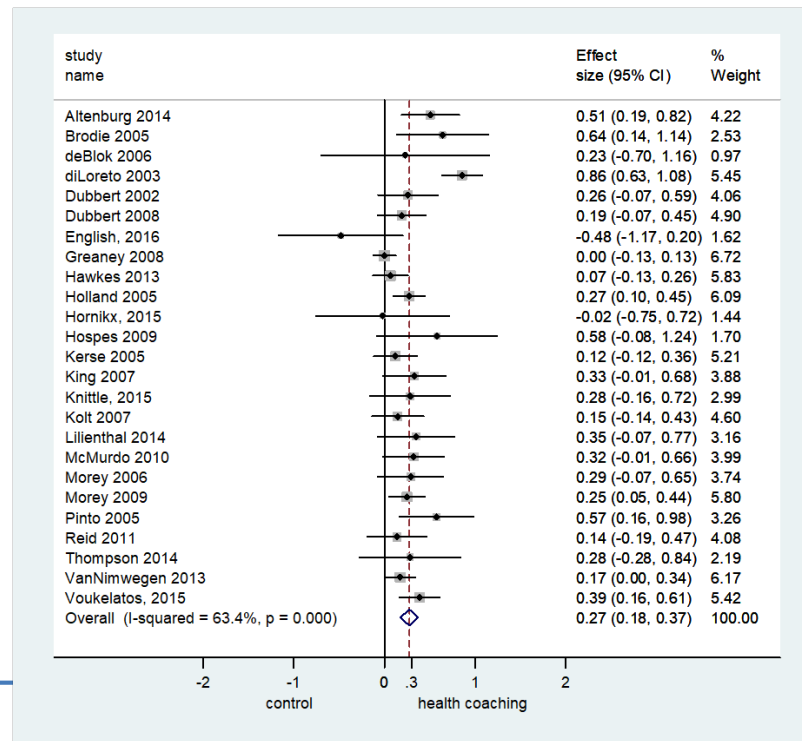
Downloaded from <http://bjsm.bmj.com/> on June 13, 2017 - Published by group.bmj.com  
BJSM Online First, published on March 20, 2017 as 10.1136/bjsports-2016-096943

Review

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,<sup>1</sup> Catherine Sherrington,<sup>1</sup> Anita B Amorim,<sup>2</sup> Amabile B Dario,<sup>2</sup> Anne Tiedemann<sup>1</sup>

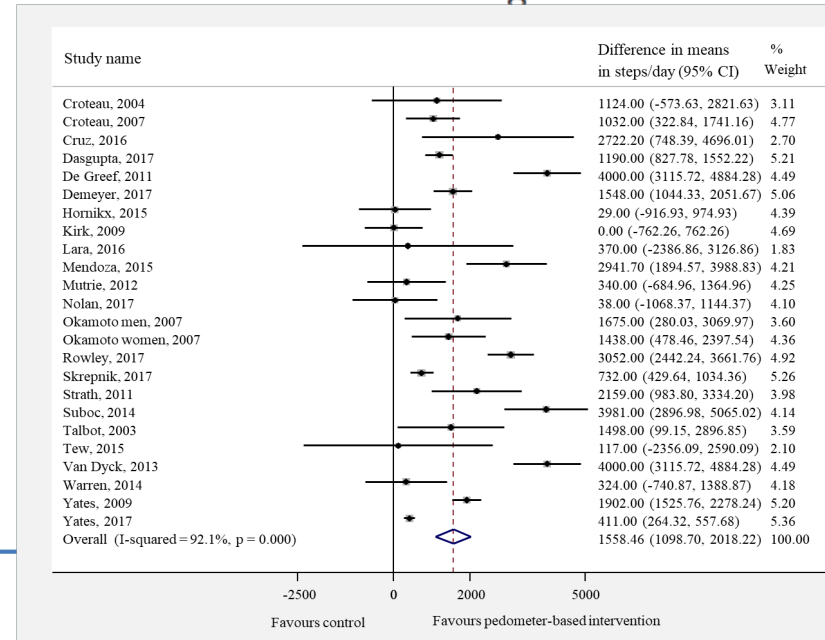
- 27 RCTs included (5803 participants)
- Health coaching had a small, statistically significant effect on physical activity
- Equally effective in general community dwellers and clinical groups



# Effect of interventions using physical activity trackers on physical activity in people aged 60 years and over: a systematic review and meta-analysis

Juliana S Oliveira,<sup>1</sup> Cathie Sherrington,<sup>1</sup> Elizabeth R Y Zheng,<sup>1</sup>  
Marcia Rodrigues Franco,<sup>2</sup> Anne Tiedemann<sup>1</sup>

- 23 RCTs included (2766 participants)
- Physical activity tracker interventions were associated with a statistically significant and clinically important increase of 1558 steps/ day





**Background:** Structured exercise that challenges balance is proven to prevent falls (*Sherrington et al, 2019*)

**BUT** encouraging older people to be more generally active may also increase risk of falling! (*Ebrahim et al, 1997, Lawton et al, 2008*)

Should physical activity programs for older adults include fall prevention components?

**Aim:** To establish the impact of a physical activity and fall prevention programme compared with a healthy eating programme on **physical activity** and **falls** among people aged 60+ years.

Open Access

Protocol

**BMJ Open** Health coaching and pedometers to enhance physical activity and prevent falls in community-dwelling people aged 60 years and over: study protocol for the Coaching for Healthy AGEing (CHAnGE) cluster randomised controlled trial

Anne Tiedemann,<sup>1</sup> Chris Rissel,<sup>2</sup> Kirsten Howard,<sup>2</sup> Allison Tong,<sup>2</sup> Dafna Merom,<sup>3</sup> Stuart Smith,<sup>4</sup> James Wickham,<sup>5</sup> Adrian Bauman,<sup>2</sup> Stephen R Lord,<sup>6</sup> Constance Vogler,<sup>7,8</sup> Richard I Lindley,<sup>1</sup> Judy M Simpson,<sup>2</sup> Margaret Allman-Farinelli,<sup>9</sup> Catherine Sherrington<sup>1</sup>

Community-based groups such as Probus, Rotary, Men's Sheds etc.



Enrolment



**Invite** participation by community-based groups of older people through newsletter articles and researcher presentations

Identify and screen potential participants

**Eligible and provided consent**

Baseline Assessment:  
questionnaire, objective PA measurement and setting of health-related goals

Randomised (60 groups)

Allocation

**Physical activity/ fall prevention intervention** (30 groups, average size 10):

**Month 3:**  
follow-up questionnaires

**Month 6:**  
questionnaires, PA, goals

**Month 12:**  
questionnaires, PA, goals

Follow-Up

**Nutrition intervention** (30 groups, average size 10):

**Month 3:**  
follow-up questionnaires

**Month 6:**  
questionnaires, PA, goals

**Month 12:**  
questionnaires, PA, goals

## Methods

### Participants:

- Aged 60+ years;
- Regularly attend meetings/ activities at the participating community-based group;
- Live at home;
- Leave the house regularly;
- Able to take part in physical activity;
- Cognitively intact;
- Sufficient English;
- Not meeting PA guidelines and not had fall risk assessment/ plan in past year

**Funding:** NHMRC Project Grant

**Primary Outcomes:** measured at 12 months post-randomisation



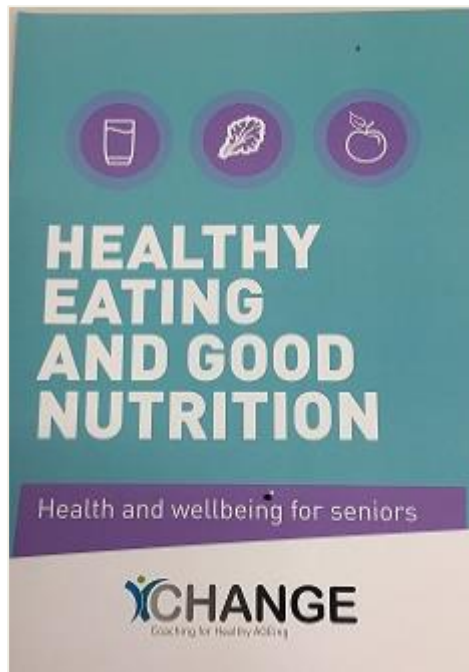
Objectively-measured  
physical activity using  
an *Actigraph*



Falls, measured  
monthly with  
postal calendars

# Physical activity/ fall prevention intervention







- Data collection complete- 606 participants recruited (mean age 72 (SD 7.3), 426 (70%) females) from 72 community groups.
- Data cleaning underway.
- Preliminary data suggest a high degree of intervention uptake, acceptability and adherence.
- Participants appreciated the support gained from regular contact with a health coach and feedback provided by the activity tracker.
- Full results expected by end of 2020.



## Background:

- Many women in this age group struggle to be active due to competing demands: work, caring responsibilities, declining health, etc.
- Crucial life stage for developing habits- higher PA in middle age associated with delay in functional decline in older age by up to 15 years (Peeters et al, 2013)
- Waiting until retirement to increase PA may be too late.
- Supported and tailored approach likely to be needed.

**Aim:** Assess the feasibility, acceptability and impact on physical activity of an online physical activity information and support program

**Funding:** USyd CPC Active Ageing node seed grant

**Participants:** 60 women aged 50+ years

**Design:** Pilot RCT with 3 months follow-up

**Intervention group (n=30):** Access to *Active Women over 50* website plus one telephone health coaching call and up to 24 SMS or 8 email-based motivational messages

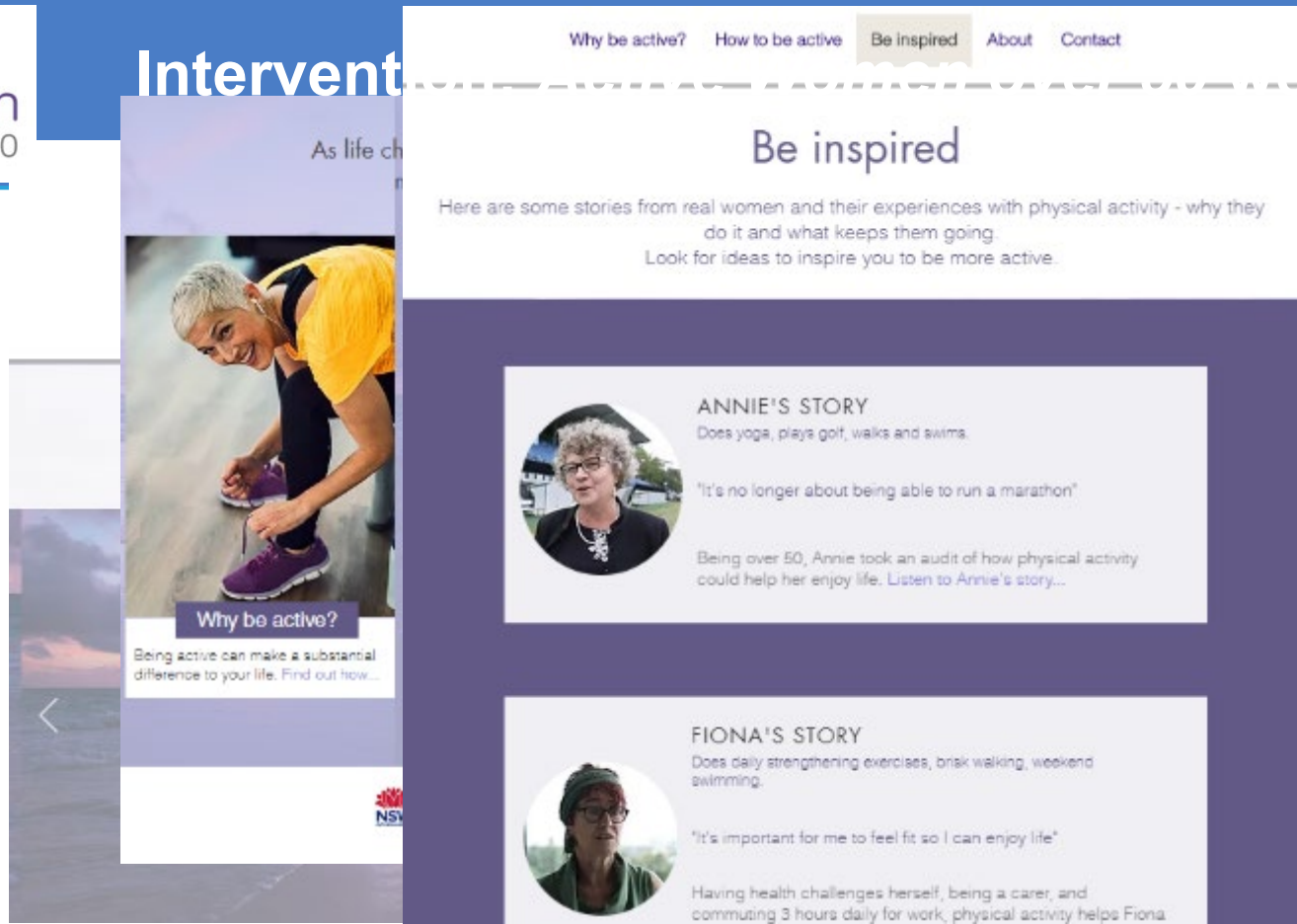
**Control group (n=30):** Wait list control

## Primary outcome

Participant acceptability of the intervention and study methods.

“Would you recommend participation in the *Active Women over 50* study to another person such as yourself?”

“yes” or “no/unsure”; 3 months post-randomisation



# Intervention: Telephone health coaching

1 session, telephone-based

2 weeks post-randomisation

Provided by physiotherapist:

- Trained in motivational interviewing and behavioural intervention techniques
- With research experience delivering telephone-based health coaching



# Intervention: motivational messaging

Choice of 8 emails or 24 SMS messages over 3 months

*How do others keep motivated to be active? Many find making a plan with firm goals helps. Have a look at [www.\[study website\]/tools-to-keep-going](http://www.[study website]/tools-to-keep-going).*

*Is something blocking your activity plans? Think of likely solutions. Perhaps break down goals into easier steps. Or ask an exercise professional for advice.*

*Things can get in the way of you keeping up your activity. What strategies have you learnt to deal with difficult situations? Do you want to share these? [www.\[study website\]/contact](http://www.[study website]/contact).*



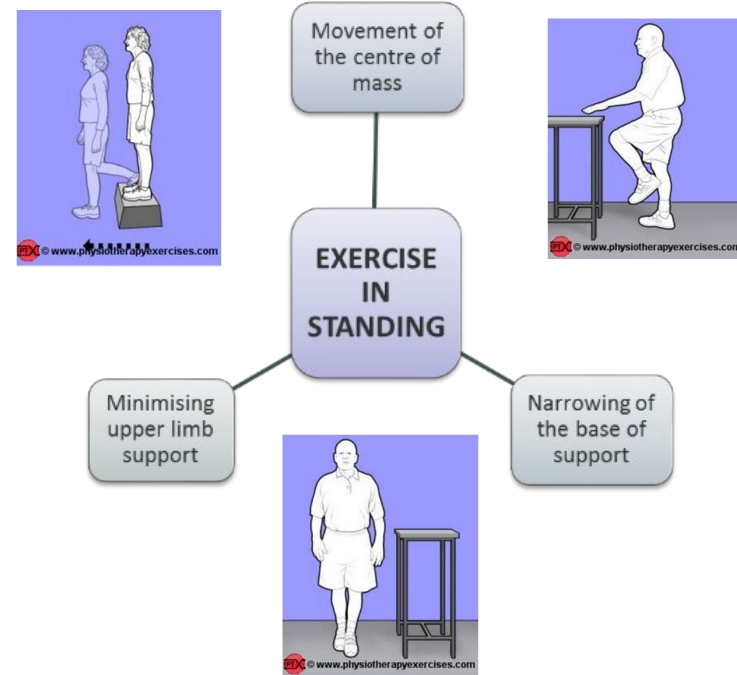
# Progress

- Data collection complete, 62 participants recruited (Mean age 59, SD 7.1, range 50-77 years)
- Data cleaning and analysis underway
- Preliminary results show 82% of participants would recommend participation to other people
- Full results expected before end of 2020
  
- Planning to run a large RCT with physical activity as primary outcome

# Fall prevention in older age: could yoga be relevant?



- 108 randomised trials (23,407 participants)
- Exercise associated with a 23% reduction in the rate of falls compared to control
- Balance-challenging exercise is key



# Yoga-based research program

To investigate the role of yoga for promoting health and reducing falls in people aged 60+



publichealth  
research&practice

June 2018; Vol. 28(2):e28011801  
<https://doi.org/10.17061/phrp28011801>  
[www.phrp.com.au](http://www.phrp.com.au)

Research

Is a yoga-based program with potential to decrease falls perceived to be acceptable to community-dwelling people older than 60?

Anne Tiedemann<sup>a,b</sup>, Sandra O'Rourke<sup>a</sup> and Catherine Sherrington<sup>a</sup>

A Pilot Randomized Controlled Trial

Systematic reviews

Self-report survey

Anne Tiedemann,<sup>1,2</sup> Sandra O'Rourke,<sup>1</sup> Romina Sesto,<sup>3</sup> and Catherine Sherrington<sup>1,2</sup>



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## Aim:

- To measure the effect of a **group-based yoga exercise program** on **falls** over 12 months, compared to a seated home-based yoga relaxation program in community-dwellers aged 60+ years



## Intervention group:

- 12-month Iyengar-based yoga, twice weekly, focus on standing postures

## Progress:

- Recruitment started Sept 2019, 120/560 participants randomised so far
- Recruiting from all over Sydney- for more information contact: [sph.sagetrial@sydney.edu.au](mailto:sph.sagetrial@sydney.edu.au)




# New website to assist older people to be active during COVID-19

safeexerciseathome.org.au

## Safe exercise at home




*Information on physical activity and exercise for older people*

HOME FOR OLDER PEOPLE FOR HEALTH PROFESSIONALS SUCCESS STORIES RESOURCES ABOUT US CONTACT US



14,000 visitors in the first week!


Information for older people Information for health professionals Resources



About Us

This website is endorsed by

The Safe Exercise at Home website has been developed by physiotherapists



# Summary

- Physical activity is the “best buy” in public health  
(Morris, epidemiologist, 1994)
- Growing evidence of effective interventions but an overall failure to scale-  
more effort needed to implement effective strategies
- Multiple strategies needed to impact the global pandemic of physical inactivity-  
behaviour change is just one of them
- Any interaction with an older person could be used to promote physical activity  
and exercise
- Exercise really is medicine, and if it was in a pill we would all be taking it daily





# Acknowledgements and thanks

- Co-investigators
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