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NIHR | Policy Research Unit Older People and Frailty

Increasing uptake and adherence to falls interventions

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No conflicts of interest

Research Funders

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Cochrane Library
Cochrane Database of Systematic Reviews

Exercise for community dwelling
Sherrington et al 2019
108 trials ; 23,407 participants

Good evidence falls can be prevented

Comparison 1. Exercise versus control (rate of falls)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Rate of falls - overall analysis	59	12981	Rate Ratio (Random, 95% CI)	0.77 [0.71, 0.83]
2 Rate of falls - subgrouped by baseline falls risk	59		Rate Ratio (Random, 95% CI)	Subtotals only
2.1 Not selected for high risk of falling	29	6123	Rate Ratio (Random, 95% CI)	[0.65, 0.84]
2.2 Selected for high risk of falls	30	6858	Rate Ratio (Random, 95% CI)	[0.72, 0.88]
Rate of falls - subgrouped by age (threshold 70 years)	59		Rate Ratio (Random, 95% CI)	Subtotals only
3.1 Age < 70	46	9605	Rate Ratio (Random, 95% CI)	0.75 [0.69, 0.82]
3.2 Age ≥ 70	13	3376	Rate Ratio (Random, 95% CI)	0.83 [0.72, 0.97]
4 Rate of falls - subgrouped by participant	59	12981	Rate Ratio (Random, 95% CI)	[0.71, 0.83]
4.1 Health professional delivering intervention	25	4511	Rate Ratio (Random, 95% CI)	0.69 [0.61, 0.79]
4.2 No health professional delivering intervention	34		Rate Ratio (Random, 95% CI)	0.82 [0.75, 0.90]
5 Rate of falls - subgrouped by group or individual exercise	59	12981	Rate Ratio (Random, 95% CI)	0.77 [0.71, 0.83]
5.1 Group exercise	40	8163	Rate Ratio (Random, 95% CI)	0.76 [0.69, 0.85]
5.2 Not group exercise	21	4818	Rate Ratio (Random, 95% CI)	0.79 [0.71, 0.88]
6 Rate of falls - subgrouped by exercise type	59		Rate Ratio (Random, 95% CI)	Subtotals only
6.1 Balance and functional exercises vs control	39	7920	Rate Ratio (Random, 95% CI)	0.76 [0.70, 0.81]
6.2 Balance exercise vs control	5	327	Rate Ratio (Random, 95% CI)	1.14 [0.67, 1.97]
6.3 3D exercise (Tai Chi) vs control	7	2655	Rate Ratio (Random, 95% CI)	0.81 [0.67, 0.99]
6.4 3D exercise (dance) vs control	1	522	Rate Ratio (Random, 95% CI)	1.34 [0.98, 1.83]
6.5 Walking programme vs control	2	441	Rate Ratio (Random, 95% CI)	1.14 [0.66, 1.97]
6.6 Multiple categories of exercise vs control	11	1374	Rate Ratio (Random, 95% CI)	0.66 [0.50, 0.88]
7 Rate of falls - long-term follow-up by exercise type	4		Rate Ratio (Random, 95% CI)	Subtotals only
7.1 Balance and functional exercises vs control	2	858	Rate Ratio (Random, 95% CI)	0.82 [0.66, 1.01]
7.2 Walking programme vs control	1	97	Rate Ratio (Random, 95% CI)	1.27 [0.89, 1.81]

Sherrington et al, Exercise for preventing falls in older people living in the community. Cochrane Database of Systematic Reviews 2019

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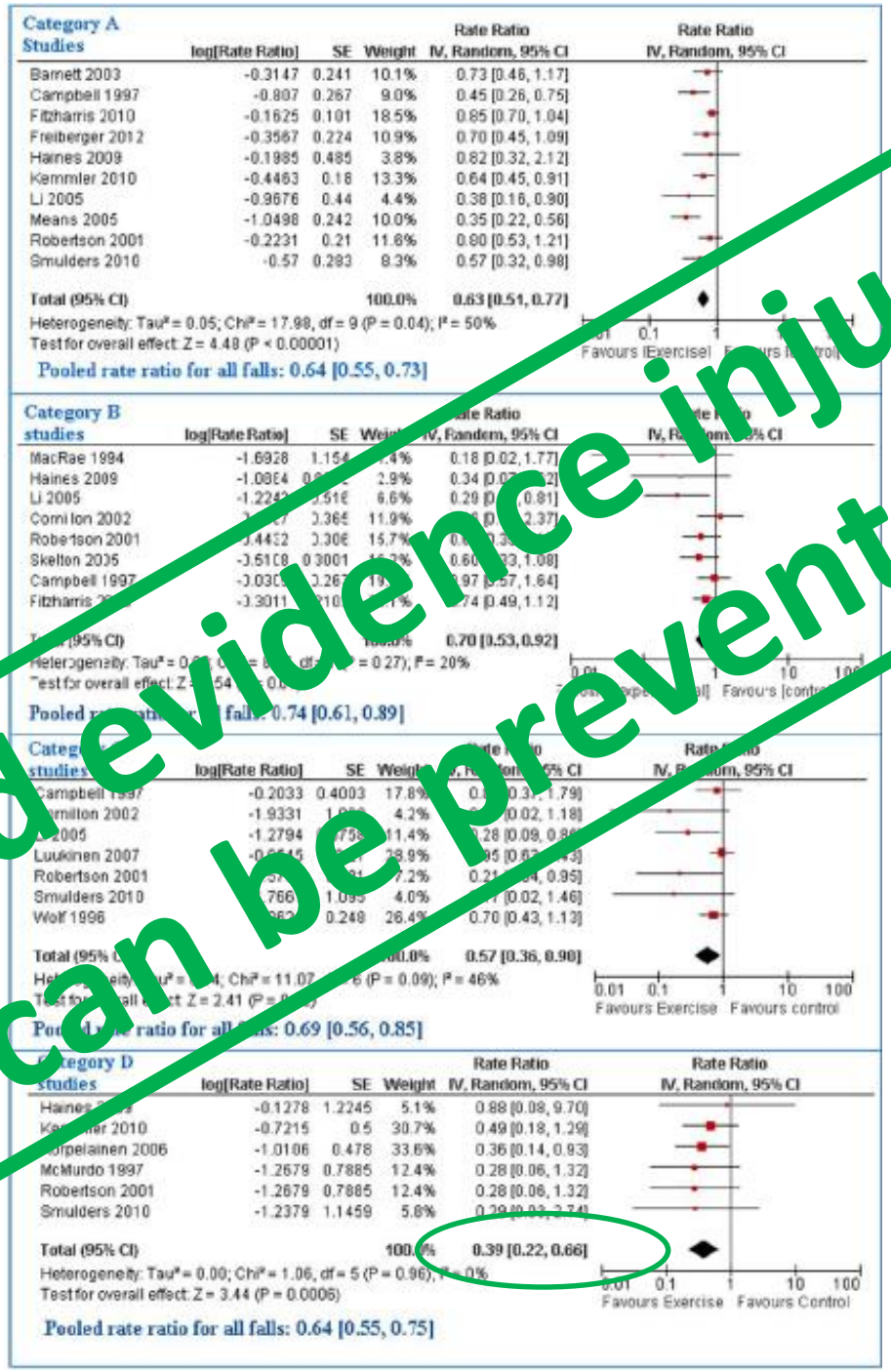
Fall injuries & exercise



Good evidence injuries can be prevented

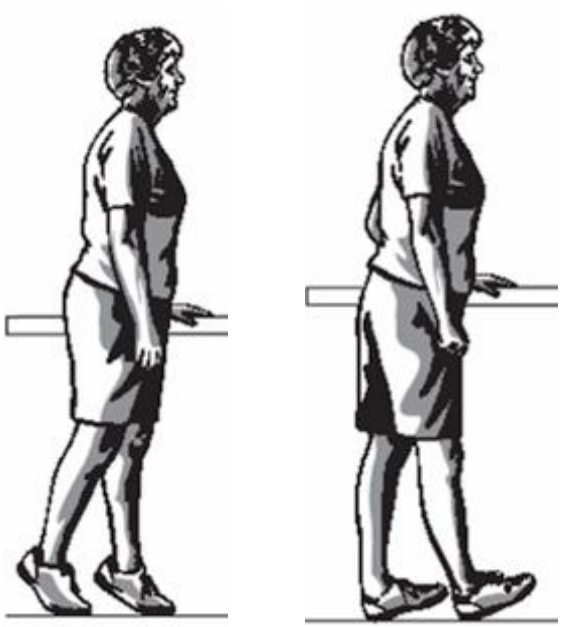
A= all injuries
B= medical care injuries
C= serious injuries
D= fractures

El-Khoury F. et al **The effect of fall prevention exercise programmes on fall induced injuries in community dwelling older adults: systematic review and meta-analysis of randomised controlled trials** *BMJ* 2013; 347:f6234

Training needs to be:
to dose
challenging
progressive
regular
aimed at strength and balance

www.laterlifetraining.co.uk

FAME/PSI exercises



Otago exercises

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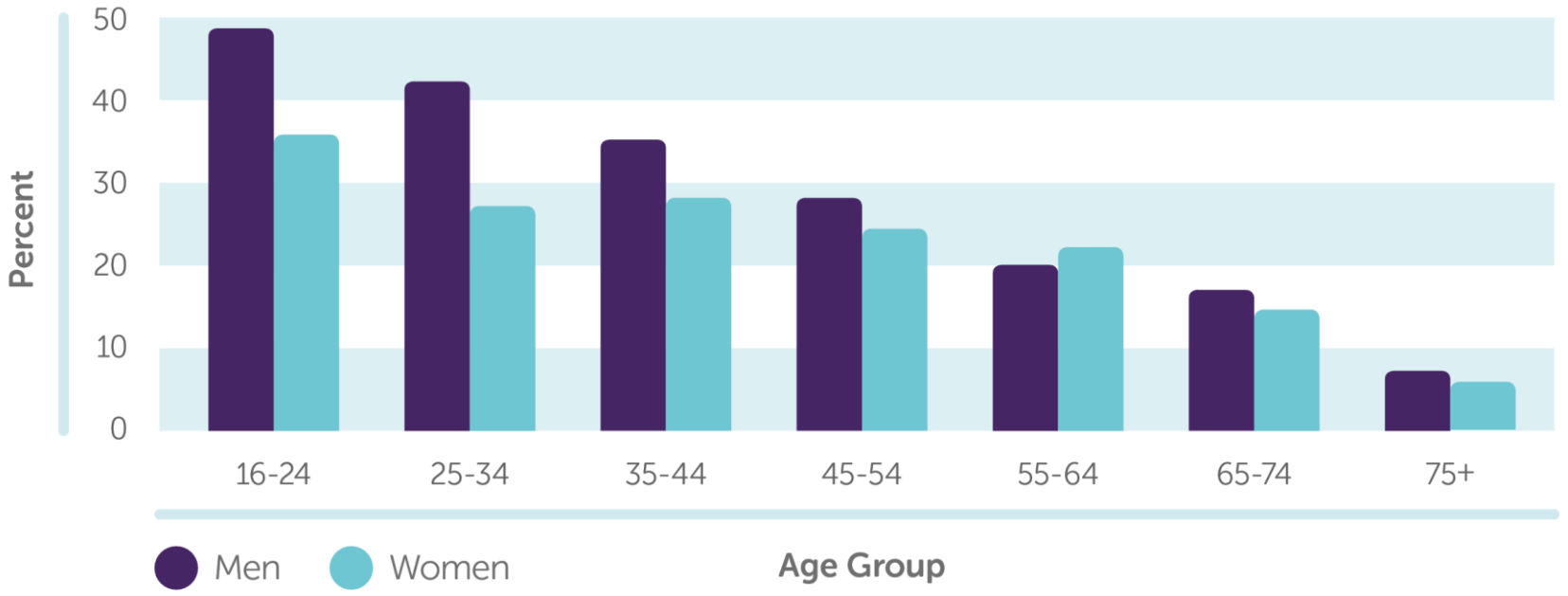
CMOs' Activity Guidelines 2019

https://www.gov.uk/government/publications/physical-activity-guidelines-infographics

Proportion meeting aerobic & muscle-strengthening guidelines, by age & sex



Source: Health Survey England (NHS Digital 2016)

The Challenge: Refusal, drop out & non-adherence

- High refusal
  - 50% common
- Low adherence
    - 18% dropout average (15 weeks)
    - 44% dropout
- Long term adherence poor
- Refusal and non-adherence 50% - 90% thus prevention not *effective*

- *Too busy no time*
- *Not relevant – other older people*
- *No motivation*
- *Barriers*
  - *No transport*
  - *The weather*
- *Not sure what to do*

Yardley L, Donovan-Hall M, Francis K, Todd C. *Health Education Research.* 2006.

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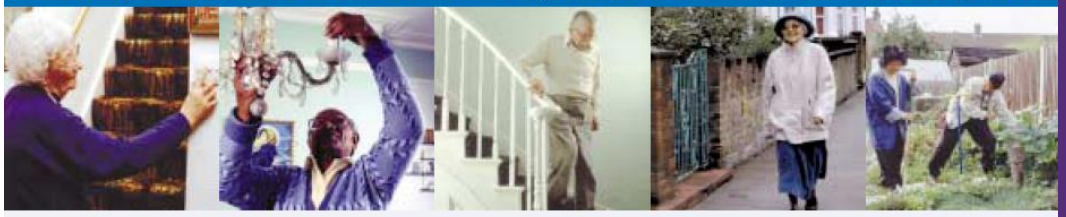
preventing falls... preventing falls... preventing falls... preventing falls... preventing falls...

Preventing *Falls*

Don't mention the f-word!

Help the Aged

Advice to practitioners on communicating falls prevention messages to older people



age UK
Improving later life

DON'T MENTION THE F-WORD

Advice to practitioners on communicating falls prevention messages to older people

Otago Home Exercise Booklets

Chair Based (Frailer older people)

Postural Stability Home Exercise Booklet

Giving out leaflets not enough

ProFouND provides free of charge resources in multiple languages
http://profound.eu.com/resources/

The problem

- Uptake
  - Starting exercise or ACTIVITY
- Adherence
  - Continuing once started

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1 Raising awareness

- Fund and develop marketing campaigns
- Tailor messages for target audiences
- Make sessions appealing
- Develop peer champions
- Work across stakeholder groups

2 Encouraging uptake

- Challenge negative beliefs
- Person-centred goals to increase motivation
- Build relationships across organisations
- Exercise sessions – something for everyone
- Address barriers and provide solutions

3 Exercise referral pathways that work

- Develop referral pathways collaboratively
- Share pathways throughout local networks
- Provide good assessments for appropriate referrals
- A recommendation is not the same as a referral
- Succesful exercise referral pathways across England

4 Sticking to the evidence

- Provide person-centred assessment
- Supplementary home exercise for success
- Tailor programmes for individual progress
- Moving on to other programmes/activities
- Support instructors to deliver the evidence

5 Monitoring for outcomes and improvement

- Create a monitoring framework
- What to include to capture success
- Identify tools for assesment and monitoring progression
- Digital tools for monitoring progress and recording outcomes
- Make the most of data

Raising the Bar on Strength and Balance
https://www.ageing-better.org.uk/publications/raising-bar-strength-balance

CENTRE FOR AGEING BETTER

Encouraging uptake

Challenge negative beliefs

- The myth of ageing and narratives that reinforce this

Person-centred goals to increase motivation

- pre-assessments allow for goal setting/asset based

Build relationships across pathways

- Physio, OTs, Community link worker, Instructors

Exercise sessions – something for everyone

- Choice to meet preferences and suit capacity and functional mobility

Addressing barriers and providing solutions

- Transport, Money, Venues, Too busy, Family Barriers/Ageist beliefs

Raising the Bar on Strength and Balance Report
https://www.ageing-better.org.uk/publications/raising-bar-strength-balance

CENTRE FOR AGEING BETTER

The problem

- Adherence
  - Continuing once started

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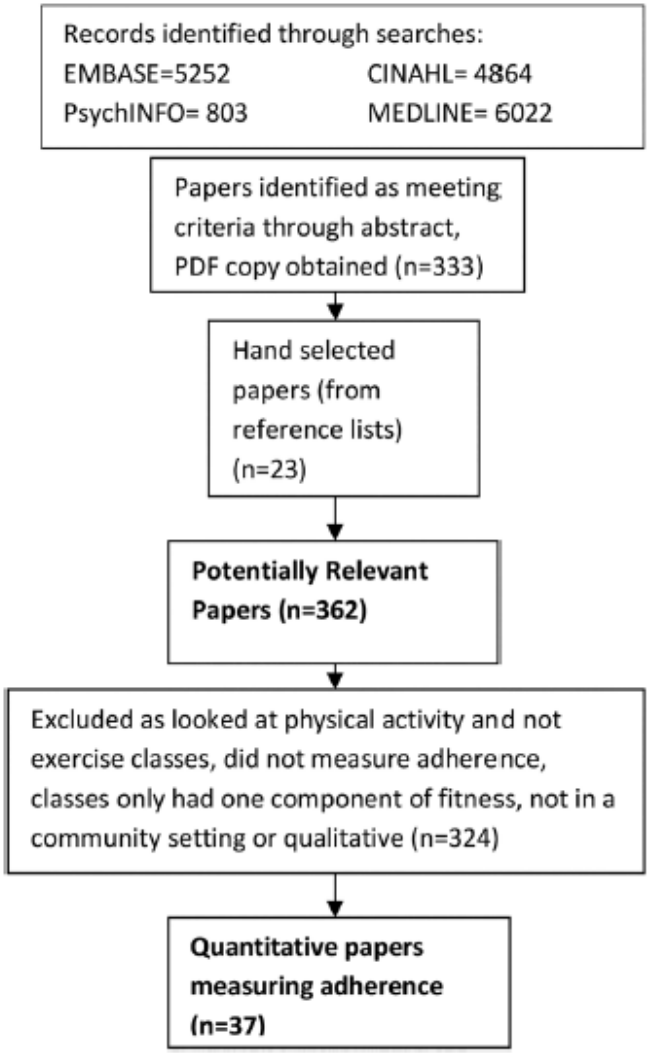
PRISMA diagram
Systematic review of adherence



Hawley-Hague H, Horne M, Skelton D, Todd C. *BMJOpen*, 2016

Types of adherence in trials

1. Completion
   - Retention
2. Attendance
   - Number of sessions attended over follow-up
3. Duration adherence
   - How long participants exercise at each session
4. Intensity adherence
   - Physical exertion

Visek A, Olson E, DiPietro L. *Phys Act Health* 2011

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37 papers : 34 studies
Definitions of adherence

7 papers (7 studies) = completion (retention)

30 papers (27 studies) = attendance records

12 papers (11 studies) = duration of exercise

5 papers (4 studies) = intensity participants should exercise

Several used multiple methods

Hawley-Hague H, Horne M, Skelton D, Todd C. *BMJOpen*, 2016

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Recommendations how to measure adherence

Completion (retention):

- Those still attending at follow-up
- Non-completion = withdrawal or if no formal withdrawal measured as not attending at follow-up (without reason given)

Attendance:

- Percentage classes attended out of actual number of sessions offered.

Duration:

- Adherence to predefined minutes, (e.g.) 30 min, 3 times per week.

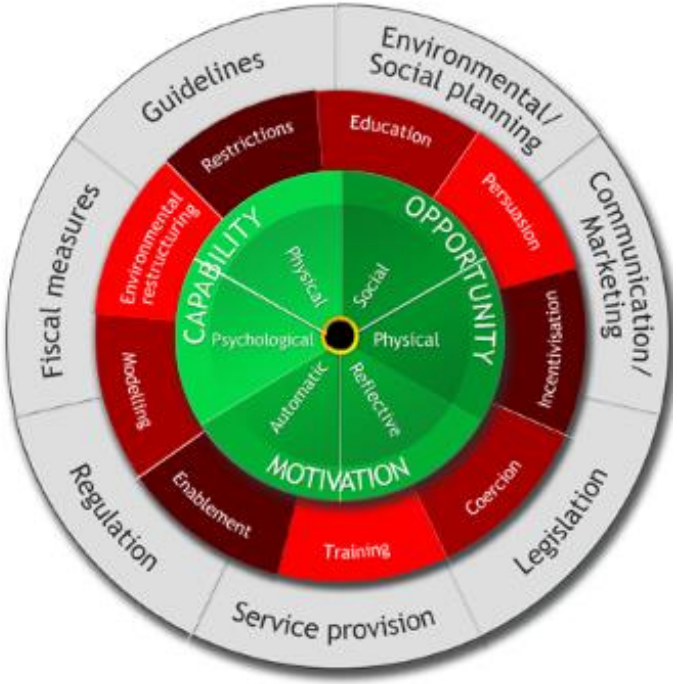
Intensity:

- ‘Moderate intensity’ as per prescribed exercise regime.
  - Moderate intensity may differ dependent on type of programme (eg, strength and balance or aerobic), but ACSM guidelines should be taken into consideration

Hawley-Hague H, Horne M, Skelton D, Todd C. *BMJOpen*, 2016

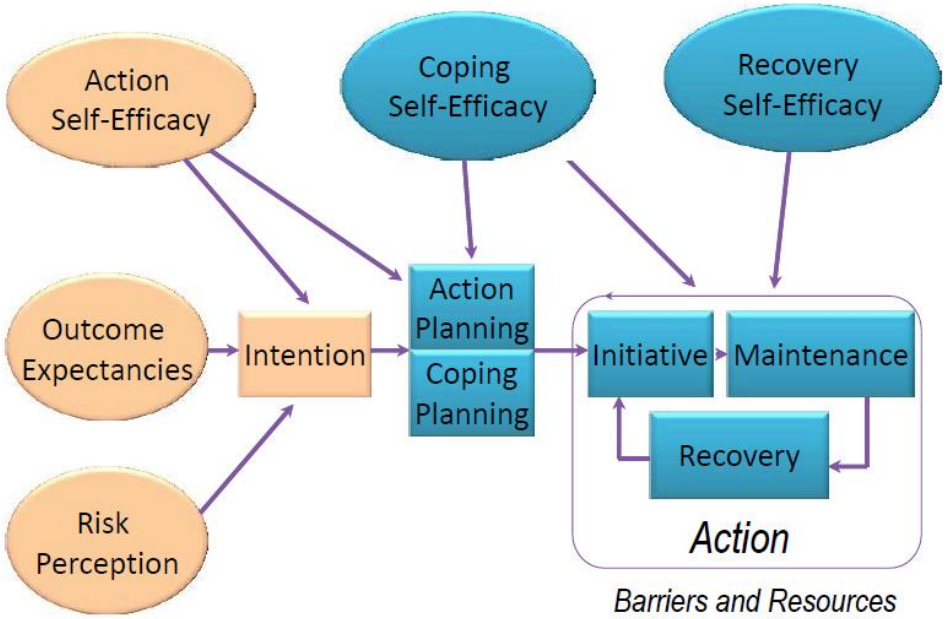
Have a theory!

- Psychological theories of behaviour change
- 83 theories of behaviour change!
- ABC of behaviour change theories
  - Michie S et al
- Behaviour change wheel
  - http://www.behaviourchangewheel.com
  - https://www.bct-taxonomy.com/about



Health Action Process Approach

Regular physical activity reduces the risk of many diseases developing. Keep moving and keep well!



It's normal to have times when you are not so active, you can get back to where you were before!

Motivational Phase

If you are going on holiday, take your walking shoes with you so you can still be active.

Volitional Phase

Boulton E *et al Progress in Cardiovascular Diseases* 2019

Don't mention the F-word

Do not present initially in terms of falling prevention (falling risk denied anyway)

Talk in terms of **A**ctivity

Emphasise/maximise immediate wider **B**enefits: looking and feeling good; remaining active and independent; taking part in an enjoyable and interesting **C**ommunal/social activity

Personal invitation from health professional explaining benefits.

Illness, evidence of increasing **D**isability provides good opportunity

Exercise in terms of everyday activities

F word

FUN!

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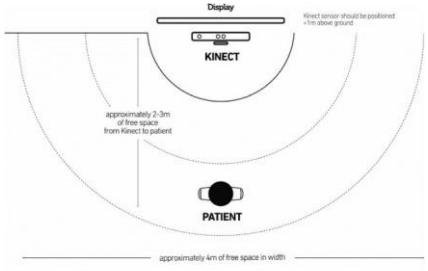
Cluster RCT of Exergame in 18 sheltered housing facilities



Improvement in Exergame group
Falls incident rate ratio **0.31 (95% CI 0.16 to 0.62)**

Balance 6.2 (95% CI 2.4 to 10.0)
Short FES-I −2.7 (95% CI −4.5 to −0.8)
VAS pain scale −12.1 (95% CI −22.3 to −1.8)

Adherence at 12 weeks 87%

Stanmore et al. BMC Medicine (2019) 17:49
https://doi.org/10.1186/s12916-019-1278-9

BMC Medicine

RESEARCH ARTICLE Open Access

The effectiveness and cost-effectiveness of strength and balance Exergames to reduce falls risk for people aged 55 years and older in UK assisted living facilities: a multi-centre, cluster randomised controlled trial

Emma K. Stanmore[1,2,3*], Alexandra Mavroeidi[1,2], Lex D. de Jong[4,5], Dawn A. Skelton[1,2], Chris J. Sutton[3,6], Valerio Benedetto[7], Luke A. Munford[8], Wytske Meekes[9], Vicky Bell[1] and Chris Todd[1,2,3]

https://doi.org/10.1186/s12916-019-1278-9

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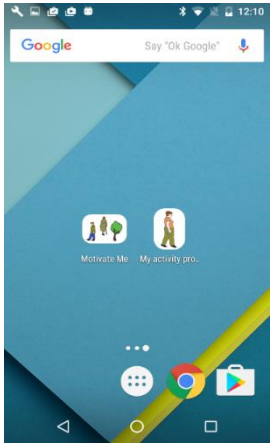
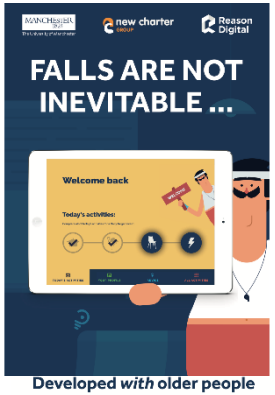
If activity was on a tablet/smartphone would more people do it?

NIHR **TOGETHER** feasibility RCT
App for physio & App for patient



NHSA/NMHRC **Standing Tall** implementation study

Keep On Keep Up App



Developed *with* older people *for* older people

Made possible with funding from:

PreventIT

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PRU Briefing for DHSC

- **Delivery of strength and balance exercises for falls prevention amongst older people using digital technologies to replace face-to-face contact during COVID-19 home isolation and physical distancing.**
- https://www.opfpru.nihr.ac.uk/covid-19-research/rr7-covid-19-technology-for-strength-and-balance/

- McGarrigle L, Todd C (2020) Promotion of physical activity in older people using mHealth and eHealth technologies: Review of reviews *(Journal of Medical Internet Research accepted)*
- McGarrigle L, Boulton E, Todd C (2020) Map the Apps: a rapid review of digital approaches to support the engagement of older adults in strength and balance exercises *(BMC Geriatrics submitted)*

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General evidence for digital exercise promotion to older people.

- Mobile/smartphone apps **acceptable** to older people.
- Older people appear to **adhere** to apps (in short term).
- Apps may be **effective** in decreasing sedentary time, increasing physical activity and physical fitness (over 3 or so months).
- Apps that are **theory-based**, include behaviour change techniques, clear instructions, and social and professional support may be more effective than those that do not.
- Apps should provide exercise/activity interventions that fit in with older people's **lifestyles** and **expectations** and offer **tailored** interventions taking account of individual preferences and capabilities.
- **Positive messages** are crucial.
- Older people need to understand and **appreciate the benefits** they will gain from using an app, and those benefits need to be in accord with older people's own lifestyle and aspirations.
- Emphasising **staying independent-** important to many older people.
- When introducing apps to older people the **steep learning curve** they may experience must be recognised and support supplied to help them.

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Apps

- Currently available*
  - Otago Exercise Programme
  - Nymbl Balance[1]
  - Keep On Keep Up
- Under development
  - Standing Tall

* Assessed using underlying evidence base, MARS & use of BCTs. **No** RCTs or evidence of effectiveness

[1] USA only

Websites

- Currently available**
  - csp.org.uk
  - fallsassistant.org.uk
  - go4life.nia.nih.gov
  - nhs.uk/live-well
  - profound.eu.com
  - betterhealthwhileaging.net
  - caringseniorservice.com
- For resources see also
  - Later Life Training

** Assessed using underlying evidence base, HoNCode & use of BCTs. **No** RCTs or evidence of effectiveness

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Conclusions

- Digital delivery better than no delivery
- Rapidly changing area
- In longer term digital could (will) become common, but needs carefully phased roll out
  1. Those already familiar with S&B, assessed and previously receiving face-to-face delivery, and stable health
  2. Relatively healthy and digitally literate capable of remote set-up
  3. Rehabilitation following hospital discharge with set-up done face-to-face in hospital

- NB Digital exclusion and exacerbation of health inequalities

  older, female, deprived, BaME, marginalised

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Fabulous postdocs!

HEALTHY AGEING RESEARCH GROUP

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