Older people & physical activity: an evidence synthesis

Reminder of research questions
What do we want to know (I)?

1. What are people's experiences and preferences in relation to exercise as they get older (aged 50+)?
2. What factors help older people to be physically active?
3. What factors prevent older people from being physically active?
What do we want to know?

4. What is known about the effectiveness of interventions to encourage older people (aged 50+) to be physically active and what are the impacts on physical and mental health and well-being?

5. Are there groups of older people for whom these interventions work better or less well?

6. What gaps and limitations are there in this information (including about particular physical or outdoor activities, among particular population groups, etc.)?

Systematic review & mapping of systematic reviews
What do we want to know (III)?

7. How well do the evaluated interventions align with the preferences and problems described by older people themselves?

8. What could be done to enhance the ability of all older people to remain physically active, including those who are often marginalised?
1. Review of qualitative research
   a) Identifying relevant papers
   b) Data extraction & QA:
      - Nature of population
      - Intervention characteristics
      - Experiences, influences, and perceptions
      - Preferences for activity
      - Perceived barriers and enablers
      - Quality of research
   c) Data analysis:
      Reading and re-reading papers, identifying nature of findings and best approaches for synthesis (possibilities include separate initial syntheses by age group, life course approach, grouping findings by activity types and preferences, etc)
      If descriptive findings: Coding findings thematically. Building conceptual interpretations.
      If conceptually rich findings: Translation through meta-ethnography.
      Producing narrative account of the findings
   d) Data synthesis
      Producing conceptual model(s) to illustrate findings and their relationships (building on existing conceptual framework)

2. Review and mapping of systematic reviews
   a) Identifying relevant reviews
   b) Data extraction & QA:
      - Nature of population
      - Intervention characteristics
      - Use of theory
      - Outcomes
      - Successes and failures
      - Quality of reviews
   c) Data analysis:
      Exploring and juxtaposing findings to establish the most informative ways to group them (for example by intervention type, mechanisms of action, success, population groups, etc)
   d) Mapping the nature of evidence
   e) Identifying gaps in the reviews (eg in intervention descriptions, age groups studied, etc)

3. Overarching synthesis of reviews 1&2
   - Using the conceptual model developed through Review 1 to explore the fit between people's experiences and the effectiveness evidence base
   - Identifying commonalities and differences between the focus of the two literatures
     o Mapping the fit between people's preferences and expressed concerns and the nature of interventions appraised by quantitative review evidence (activities, outcomes, etc)
     o Identifying where the foci of the review evidence fails to reflect older people's expressed interests, experiences and preferences.
   - Identifying findings that could enhance the acceptability and success of PA interventions for older people – including subgroups and those not currently engaged.
   - Exploring the way in which people's preferences and expressed concerns may help to explain unsuccessful intervention strategies in quantitative review evidence.
What are the factors that influence older adults’ engagement in exercise and physical activity? An evidence synthesis of qualitative research and mapping of quantitative reviews

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Systematic review of qualitative research evidence
Research Questions

• What are the experiences and preferences of older people (aged 50+) about exercise and physical activity?
  – What factors help older people to be physically active?
  – What factors prevent older people from being physically active?
Characteristics of Studies (n = 55)

- 12 studies reported on physical activity programmes/interventions

- 5 large community based physical activity programmes e.g. Silver Sneakers, Enhance Fitness, Physical Activity for a Lifetime of Success (PALS), Community Healthy Activities Model Program for Seniors (CHAMPS), Senior Exercise Self-Efficacy Pilot program (SESEP)

- 9 reported on community exercise/fitness/dance programmes

- UK - 20, US - 16 including one study combined with Canada, Canada - 12 including one study combined with US, Australia – 2, New Zealand - 2, Sweden – 2, Netherlands - 1, Iceland – 1
Population studied

- **Age** – reported as ranges e.g. 65-90yrs; 75-80+yrs; 52-87yrs; 80-91yrs

- **Ethnicity** - 3 South Asian, 1 Chinese immigrant women (Canada), 1 on Chinese immigrants (men and women - UK)

- **Gender** – 14 women only, 3 men only
Results of the Qualitative SR

- Themes
  - Ageing body and ‘embodied’ experiences of physical activity
  - Lifecourse
  - Sociability
  - ‘Walkability’
  - Health Literacy
Ageing Body and Embodied Experiences

• how older people experience their physically active older body (Evans & Sleap, 2012; Grant, 2008; Humberstone & Cutler-Riddick, 2015; Kluge, 2002; Kraenzle Schneider, 1996; O’Brien Cousins, 2001; Nettleton, 2013; Orr & Phoenix, 2015; Paulson, 2005; Phoenix & Orr, 2014; Poole, 2001)
  – bodily changes
  – age related changes and health related changes

• ageing bodies and physical activity
  – bodily sensations (unpleasant)
  – pleasure, joy, ‘feeling alive’
Owen - “as you get older...your strength diminishes and your endurance diminishes... my only really is that I’m getting old and I can’t do what I used to do.”

Tim – “this is due to a loss of my lower body strength, I probably became weaker since I gave up working in the garden. It is rather scary when you fall and nobody else is around.” (Grant, 2008: 822)
Rose (Age 73) – “...I realized that if I don't, my health is going to even deteriorate more. The major problem is my heart right now. And I saw the cardiologist...because my breathing has been sort of laboured the last 18 months, so I knew it was my heart as opposed to my lungs...they eventually said to me, ‘No, you're too much of a risk,’ so I don't do as much walking as I used to. I used to walk a couple of miles, but I don't do it...I'll take the bus more so because I'm more laboured breathing now. I do like walking, I mean, I've walked all my life; but if it exhausts me too much, I just do it a little bit.” (Franke, 2013: 403)
“I felt afraid at first. I was afraid because I am a little bit heavy and I thought I would have a heart attack. I was afraid of shortness of breath. I got a little bit scared when she said drink a lot of water. I felt that something was going to happen to me and my heart beat faster.” (Resnick, 2006: 24)

“Woman – “I had the blood feeling like it was pumping in my feet and legs which I hadn’t had since I was a little kid.” (Kraenzle Schneider, 1996: 256)

“... didn’t get too sweaty or hot during the exercises so I still felt good when I came home.” (Kraenzle Schneider, 1996: 256)
Pleasure

Don – “...it’s my kind of music. I like that sort of music; I can hear the music; I can feel the music; I like to dance; I like the feel of dancing; its great, there’s something about dance which is quite natural, it appears to me. It’s natural to go and want to dance and it’s natural to enjoy the music that one dances to.” (Cooper & Thomas, 2002: 694)
Body under scrutiny

Janice – “Well others would probably not notice you anyway. They would probably only notice the young beautiful woman walking on to the poolside. But I would be embarrassed – I would be worried that they would look at me in a bad way.” Evans & Sleap, 2012: 522)
Lifecourse

- ‘Physical capital’ and exercise identity (Buman et al, 2010; Dumas & Labege, 2005; Kenter et al, 2015)

- Socio-historical context (Kluge, 2002; Rind & Jones, 2015)

- Transitions over the lifecourse (Beck et al, 2010; Kenter et al, 2015; McDonald et al, 2015)

- Triggers to exercise (Kenter et al, 2015; O’Brien Cousins, 2001, 2003)
Mary: Oh I remember it was an instructor with lots of other people. I remember crouching down in the deep end – you started in the deep end to do your length, and he pushed me in, and I remember being fished out by him.

Int: You mean the instructor?

Mary: Yes. I just remember the water going over my head. He had this broom handle thing, and I just remember it hooking under my arms and he fished me out. It stayed with me all my life. I still hate the water being on my face, I can’t even go in the shower with water over my face.

(Mrs Smith (Age 76) – “Yes I grew up with sports. My father and mother were both sport-people. My father was busy with soccer, as is my husband. And my mother was a swimmer. I am into volleyball [...] I have been playing and I have been a referee and coach.” (Kenter at al, 2015: 635, edit in original)
Exercise identity

Courtney (Age 67) “I think that exercise is just not part of who I am. I mean, I know that I should be exercising and I know that it’s good for me. I guess I just wasn’t raised to think that exercise was something you needed to do and other things in my life have always taken a higher priority. I think that affects me now even though I know how important it is.” (Buman et al, 2010: 228)
Socio-historical context

- M3: Oh, Tuesdays used to be enormous. That’s the biggest loss in this village. We had a tennis court. We had a bowling green. We had two football teams and we weren’t any down [short of players].

- M4: There is no sport and activity since the colliery ceased. (Rind & Jones, 2015: 114)
Ben – “I see far too many men with large stomachs walking in parks with their grandkids, but cannot run or play because of their physical stature, which is too bad because they are missing out so much. I asked my three granddaughters…why they always want to play with me, and they said that I was lots of fun because I would run and chase them...this in itself was and is a big motivator for me.” (Liechty et al, 2014: 32, edit in original)

Woman (Age 61 retired, 13 months since retirement) – “At the weekends when I had time I was too tired really to do [PA], so since I have retired its changed enormously and I’m now doing things that I used to do probably three or four years ago.” (McDonald et al 2015: 29)
Triggers

Woman (Age 76) “He [the doctor] gave me 5 years. But it was almost a frightening thing. I had to do something. I had to have some kind of exercise. I could only walk for a block and a half and I was getting very depressed about this situation. But because I like the water, that’s why I started. And I found that I was so much better, and my outlook was so much better.” (O’Brien Cousins, 2001: 355)

Woman (Age 73) “I don’t do very much. I had a heart attack and I’m suppose to be walking, but I am in no regular routine. I am as active as I was when I was 40, which is in all my organisations and my home and my flower garden. I am continuously helping other people. It’s the same activity level as I had to work at 40.” (O’Brien Cousins, 2001: 356)
Sociability

• **Being part of a group**
  – Role models  (Bethancourt et al, 2014; Dye & Wilcox, 2006)

• **Being part of a social world**  (Cooper & Thomas, 2003)
  – ‘togetherness’ and ‘belonging’  (Bidonde et al, 2009; Paulson, 2005)
As this practice evolved, a tradition emerged whereby members celebrating a birthday bought the rest of the group cinnamon buns. Approximately half of the members interviewed recognized that this practice had come to reaffirm belongingness within the group while also providing a channel to express gratitude toward other members. (Author quote)

"You know I’ve seen guys when they’ve had a birthday and they’d had to buy the cinnamon buns, we give them the raspberries, and he has to get up and give a little talk. I’ve seen guys with tears rolling down their cheek because they feel so good about the group.” (Dunlop & Beauchamp, 2006: 228)

Midge - “It was so – when you get old, I mean, as you get older, people die. We lose a load down there...and we’re so pleased to see anybody we know that is still alive! I will run up to them and kiss them...it’s just something that older people do, I think. I mean we like to be liked and wanted, and we like to be a part of a dancing society. I mean a lot of these ladies live on their own...and they’ve lost their partners, you see, there is a family there where you belong. You belong in a dance hall, you see. People know you if you’re on the circuit.” (Cooper & Thomas, 2002: 699, edits in original)
Togetherness

- E.g. dance exercise group (Paulson, 2005)

- “The ethnographic notes include many examples of how the group members constructed ‘togetherness’, by changing together in the corridor, a public space, and by comparing clothes and make-up and sharing jokes…there was no shyness about displaying wrinkled flesh or feet webbed with varicose veins. The physical ‘togetherness’ of undressing in close proximity was echoed by the psychological ‘togetherness’ of rehearsing the ‘dance exercise’. (Paulson, 2005: 238, author quote, reviewer edit)
Woman – “I found it quite difficult to break in to the group...I guess...because people do come and go...so it’s almost an expectation that, you know, it sounds awful ‘we won’t bother to get to know you unless you’re gonna stay’. I found that very hard...but because I wanted to do it...I kind of thought that was very off putting I didn’t like it at all, but I though ‘I’m gonna break through this’ “ (Beck et al, 2010: 668, edits in original)
Walkability

• physical activity – walking indoors and outdoors
  – ‘getting around’ (Grant et al, 2010)
  – ‘staying active’ (Phillips & Flesner, 2013)

• physical environment and social environment (Bjoornsdottir et al, 2012; Chaudhury et al, 2012; Franke et al, 2013; Grant et al, 2010; Phillips & Flesner, 2013)
‘Getting around’

Woman - “I didn’t know how long [the crossing signal] had been green so I was hurrying up…but then I tripped on [the uneven pavement]…blood was on my face. My knee was bleeding too.” (Grant et al, 2010: 302, edits in original)

Jack (Age 86) - “Walking then is a good thing because it’s good for your own personal health; the thing is you also see another aspect of life other than the envelope that you live in. I live in a small apartment here, and it’s just good to get out of here and see the rest of the world. Also you meet people and other people, you see how they live, and it’s good to be sociable and meet other people.” (Franke et al, 2013: 404)
Everyday walking experiences and meanings

Woman - “I like to see what everybody is doing. When you are walking, you can see landscaping in progress or things. It is very interesting because you pick up something every day. It is also for the mind, not just the body.” (Grant et al, 2010: 302)
Retirement community

• walking outdoors was the priority exercise for the women

• organised walks in the neighbourhood
  – “We have organized ourselves, and we always go when the weather is nice” (Bjornsdottir et al, 2012: 557)

• being familiar with the surroundings, living in a familiar neighbourhood facilitated physical activity
Woman – “My husband is now doing poorly and can’t go out for walks...When you are used to doing everything together, you’re lazier about getting out on your own...I am, of course, a bit bound because of this, [I] think about not being gone too long...of course, something can always happen, he is so unstable you see, could fall...If he had an emergency or something...it would be terrible not to be available...It’s just guilt [for leaving him alone], isn’t it? It is quite possible [to go out for walks] if you are decisive enough about it. Maybe I’m too complacent. You just let others decide for you.” (Bjornsdottir et al, 2012: 558, edits in original)
‘Staying active’

“I like to exercise, I love to walk” (Phillips & Flesner, 2013: 41)

“well, I walk the hall several times a day” (Phillips & Flesner, 2013: 40-1)

“I like to walk outside too. I can walk fairly well, although I have a balance problem and that requires me to take my walker” (Phillips & Flesner, 2013: 41)
“As with community-dwelling adults, walking was the most preferred type of PA for participants...walking for many of the participants represented a lifetime of habit; whether performed for the purpose of transportation or recreation, being able to walk was nearly synonymous with staying active” (Phillips & Flesner, 2013: 44) (author quote, reviewer edit)
Health Literacy

White Woman (Age 62; less active) “Well, I think it [physical activity] probably would be better for my health, I’m sure the more you can do the better for your heart and everything like that, and I’ve got slight blood pressure, so I’m sure it would help that as well’ (Horne, 2010: 101).”
Belinda - “sometimes you feel whatever you do, it is not good enough. There is always an expert with another bright idea about how to remain healthy and live forever [laugh].” (Grant, 2008:821)

I think sometimes the medical profession are too quick to look at you’ve got to this age”, there is a certain amount of luck in it and him up there is playing a part, but I think sometimes they are too quick to jump in and say, “oh well it’s deterioration” and that de-motivates people [to exercise] and I was de-motivated then...’ ()

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Systematic review and mapping of quantitative systematic reviews
Review of review questions

4. What is known about the effectiveness of interventions to encourage older people (aged ≥50y) to be physically active?

5. Are there groups of older people for whom different interventions work better or less well? i.e. what works for who?

6. What gaps and limitations are there (including about particular activities, among particular groups etc.)?
Reviews included

- **Population:** Older adults aged ≥50y (or mean age ≥50y) from general population
- **Interventions:** Home, community or institutional based interventions to increase physical activity (excluding rehabilitation, falls prevention)
- **Comparators:** No intervention or usual care (*in reality any, as little information on comparators*)
- **Outcomes:** Measures of physical activity
- **Study design:** Systematic reviews
Quality & equity assessment

Dual independent assessment using:

• **AMSTAR**: 11 items assessed quality, including inclusion criteria, duplication of screening / extraction etc.

• Ranked as:
  – High quality: score of 7+
  – Medium quality: score of 4-6
  – Low quality: score of 0-3

• **PROGRESS Plus**: Assessed reporting/consideration of 23 key determinants of health inequalities (e.g. gender, race, SES, religion)

• Also documented design of included studies, other limitations
12,179 articles identified via 7 database searches, citation searches, author contacts, update searches

6215 titles & abstracts screened

5914 duplicates removed

359 full texts assessed for eligibility

5856 articles excluded

339 articles excluded:
- 35 wrong population
- 115 not reporting ages
- 94 wrong intervention
- 42 wrong outcome
- 4 focused on falls
- 17 not systematic reviews
- 28 abstracts only
- 4 not in English

20 articles reporting on 18 reviews included

13 in older adults only

5 in all ages with subgroup analyses in older people

5 meta-analyses

8 narrative syntheses

3 meta-analyses

2 narrative syntheses
## General characteristics of 13 reviews focussed on older adults

### Population
- Including “younger” old - >55 to 65
- Including “older” old only >65 - 75

### Interventions
- Any to increase physical activity (majority)
- Walking
- Primary care-based
- Remotely-delivered

### Comparator
- Not reported (2 reviews)
- Usual care, minimal/no intervention
- Any/including other active intervention

### Outcomes
- Not clearly reported (2 reviews)
- Combined self-report & objective
- Objective separate
Review quality

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<th>Quality of 13 reviews focussed on older adults</th>
<th>Meta-analyses (n=5)</th>
<th>Narrative syntheses (n=8)</th>
<th>Total</th>
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<td>High (AMSTAR 7+)</td>
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<td>Medium (AMSTAR 6-8)</td>
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<td>Low (AMSTAR 0-3)</td>
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What do we want to know from this evidence base?

• What works for who?
Do interventions increase PA in older adults?

• **Yes!** Best evidence from a high quality MA of 19 RCTs (＞10,000 participants):
  
  – Significant but **small effect** at 12m+
  
  – Effect on PA slightly reduced when removed higher quality RCTs but still significant
  
  – Subgroup analysis using pedometers showed a large effect (SMD 1.08, CI 0.16-1.99) on step counts at 12m, ~2,197 additional steps/day

  *Hobbs et al, 2013; O’Brien et al, 2015*
Do other reviews support these findings?

- Small improvement on general PA in low to medium quality reviews
- No MA looked at primary care or remote delivery of interventions
- Some evidence to support their effectiveness;
  - Primary care interventions (50-70% of included studies)
  - Remote delivery 88-100% of included studies
  - Low-medium quality
Characteristics of participants in studies included in 13 reviews on older adults

- Included studies were large (mean 397 participants), but varied (5-1977)
- **Average age – 66 years**
- Mainly women participants (54-76%)
- 8 reviews included healthy participants including only (7 narrative)
- No reviews reported on housing, deprivation, mental health, living alone or social isolation etc.
- 2 reviews provided some information about education, social support, income & SES
Characteristics of interventions in studies included in 13 reviews on older adults

- General PA only (most commonly walking)
- Delivery by health professionals was most commonly used (others included other experts & peers etc.)
- Interventions with a home-based component was common, followed by or healthcare based
- Delivery format varied
  - Majority of had a face-to-face component
  - Others were group-based
  - Used of written materials
  - Telephone and other technology
Characteristics of interventions in studies included in 13 reviews on older adults

- Inconsistent reporting on intervention duration & intensity
- 8 reviews used behavioural change (e.g. SCT, TTM)
- Most common content:
  - Education
  - Self-monitoring
  - Problem solving
  - Goal setting
  - Feedback
- 8 reviews looked at some form of tailoring in interventions
Which aspects of interventions work?

• No effect of
  • Setting
  • Intensity
  • Provider
• Mixed findings
  • Remote delivery
• Some evidence of effectiveness
  • Group delivery
  • Behavioural change (SCT & TTM most used)
Which behavioural change techniques work?

- Positive effect – problem solving
- Mixed findings – self-monitoring, feedback
- No effect – modelling, social support, prompts, instruction, goal review, follow-up
- Negative effect – education, specific recommendation/prescription
Conclusions: What we know

- Interventions can have small effects on PA in older adults
- Group-based and remotely delivered/supported interventions targeting specific behaviours (e.g. walking) and theory may hold most promise
- Setting, intensity, provider may not be important
- Content of PA interventions may need to be adapted for older adults
- Problem solving may be important
- Focus on health/personal consequences and specific advice may be counter-productive
Conclusions: What we don’t know

- No high quality review evidence on:
  - oldest age groups (≥60y)
  - specific PA behaviours
  - types of interventions
- Little evidence on
  - Use of objective measures
  - what works for men or low SES groups
  - Health inequalities
What works? Headline news:

- Interventions work
- Walking interventions
- Pedometers
- Remotely supported interventions (e.g., texting)
Overarching synthesis
Overarching synthesis

- Lack of fit between expressed views of older people and interventions
- Quantitative evidence base reflects linear thinking about how interventions lead to behavioural change
- Qualitative evidence highlights important of social, community, family and individual factors
- Highlights motivations to change PA may be deferent in older people – need for tailoring?
Overarching synthesis

• Walking emerges as important in both reviews, but the focus is different
• Walking as a way of getting around and being active
• Highlight need for maintaining independence and staying active
• A focus on how to facilitate activity (e.g. walkability) should inform future research
Thank you!

Our overarching synthesis supports the conclusion that: [quantitative] “research funding, research activity, and the published evidence base are all heavily skewed towards studies that attempt to identify simple, often short term, individual-level health outcomes, rather than complex, multiple, upstream, population-level actions and outcomes.” (Rutter et al 2017)

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