

1 Perceptions of Group-Based Walks and Strategies to Inform the Development of an
2 Intervention in Retirement Villages: Perspectives of Residents and Village Managers

3

4 **In Press: Journal of Physical Activity and Health**

5

6 Cecilie Thøgersen-Ntoumani¹, Nikos Ntoumanis¹, Hannah Uren¹, Afroditi Stathi², Catrina
7 Wold¹, & Keith D. Hill³

8

9 ¹Health Psychology & Behavioural Medicine Research Group, School of Psychology and
10 Speech Pathology, Curtin University, Perth, Australia, Tel: +61 8 9266 5171, Fax: +61 8
11 9266 2464, email: c.thogersen@curtin.edu.au

12 ²Department for Health, University of Bath, Bath, United Kingdom

13 ³School of Physiotherapy and Exercise Science, Curtin University, Perth, Australia

14

15

16

17

18

19

20

21

22

Abstract

1
2 The aim of the present study was explore perceptions of group-based walking and gather
3 suggestions to inform the development of a group-based walking intervention among older
4 adults in retirement villages. Twenty-four physically inactive residents (16 female, 8 male;
5 age range: 69-88) and 4 managers from four retirement villages were interviewed. Inductive
6 thematic analysis revealed 6 broad themes: lack of motivation, values versus constraints, fears
7 and confidence, need for structure, creating a sense of belonging, and the physical
8 environment as a double-edged sword. Proposed intervention strategies included using trained
9 walk leaders, using small groups, planning for flexibility, setting attainable goals, creating a
10 routine, creating opportunities for sharing experiences, and planning a variety of walks.
11 Group-based walking programs may be used to promote physical activity but careful planning
12 of such programs is needed in order to make it appealing and feasible to a diverse group of
13 residents.

14

1 Perceptions of Group-Based Walks and Strategies to Inform the Development of an
2 Intervention in Retirement Villages: Perspectives of Residents and Village Managers

3 Worldwide, the aging population is rapidly increasing. In Australia, people aged 65 and over
4 constitute 14% of the total Australian population, with the Perth Metropolitan area in Western
5 Australia showing the fastest growth in Australia (increasing by 17% in 2013; Australian
6 Bureau of Statistics, 2013). Aging is associated with increased risks of chronic disease (both
7 physical and mental), reduced functioning, and dependency. However, regular physical
8 activity (PA) can ameliorate such problems, and has been identified as a critical contributor to
9 healthy and independent living among older adults. For example, regular physical activity
10 lowers the risk of chronic disease and increases life expectancy (Fiatarone Singh, 2002),
11 improves quality of life (Rejeski & Mihalko, 2001), reduces the risk of losing independence
12 (Marques, Baptiste, Santis, Silva Moat, & Sardinia, 2014) and walking may prevent or delay
13 declines in cognitive function among sedentary older adults (Scherer, Scherer, Vanbrugh,
14 Kings, Blom, Kramer, & Eggermont, 2014). However, most older Australians do not engage
15 in sufficient levels of physical activity to accrue these benefits (Baby Boomers and Beyond
16 Report, 2006). For example, a cross-sectional study has found that only 27.1% of older adults
17 in retirement villages in Perth were sufficiently physically active to accrue health benefits
18 (Nathan, Wood, & Giles-Corti, 2014). Equally importantly, even when older adults begin
19 activity programs, for a variety of both external (e.g., financial) and internal (e.g., lack of
20 motivation, perceived lack of time) reasons, participation is often short lived (Stathi,
21 McKenna, & Fox, 2010).

22 It is expected that the number of retirement villages will continue to increase in line
23 with the rapidly expanding aging population. Retirement villages are particularly interesting
24 settings in which to examine the promotion of physical activity, as these facilities provide
25 living arrangements and a philosophy of ‘aging in place’ by fostering the relative

1 independence of each resident, and by encouraging the preservation of functional capacity
2 and well-being for as long as possible. A range of physical activity programs (e.g., lawn
3 bowls, strength programs) are offered within retirement villages and in community settings to
4 promote health and well-being. Further, facilities such as swimming pools and gyms are often
5 present in these villages. However, many physically inactive residents do not partake in such
6 programs nor do they regularly use the facilities (Miller & Buys, 2007). There is, therefore, a
7 demonstrated need to examine the effects of alternative physical activity programs that appeal
8 to those segments of retirement village residents who do not engage regularly with existing
9 programs. In the present study we focus on walking because it is a safe and free mode of
10 physical activity that can be self-sustained and which does not require any specialist skills
11 (Morris & Hardman, 1997). Thus, it is not surprising that it is the physical activity of choice
12 for most older adults, particularly those otherwise unaccustomed to physical activity (Siegel,
13 Brackbill, & Heath, 1995). Evidence suggests that for older adults living with some chronic
14 illness or disability (which however does not prevent them from walking), accumulating 5000
15 steps per day is realistic and associated with clear health benefits (Mutrie et al, 2012; Tudor-
16 Locke, Hart, & Washington, 2009).

17 The overarching aim of the present study is to gather perspectives of one such
18 program, group-led walking, to help inform intervention development. Indeed, according to
19 key health intervention frameworks, in preparing the development of interventions, it is vital
20 to consider perceptions of acceptability, feasibility and usability of a proposed intervention by
21 the target group (Craig, Dieppe, Macintyre, Michie, Nazareth, & Pettigrew, 2008; Moore,
22 Audrey, Barker, Bond, Bonell, Hardeman,...Baird, 2015).

23 **Theories of Behaviour Change Used to Understand Older Adults' Physical Activity**

1 Social Ecological models (e.g., Green, Richard, & Potvin, 1996; Satariani &
2 McAuley, 2003) have been employed to examine factors operating on numerous levels of
3 influence, including the individual, social and environmental. A narrative review of barriers
4 to physical activity found support for the role of individual, social and environmental barriers
5 of participation in physical activities for older adults in long-term care settings (Benjamin,
6 Edwards, Ploeg, & Legault, 2014). Importantly, they also showed that barriers in these
7 populations operate not just independently, but that they also interact. As the development of
8 effective interventions necessitates the consideration of barriers the target group experience,
9 the findings of the review highlight the utility of social ecological models in guiding
10 intervention development. Thus, this framework was adopted in the present study as we
11 explored influences and options for interventions at multiple levels of influence.

12 While social ecological models provide a broader framework of influences on
13 behaviour, they reveal limited insight about why and how different level influences may
14 foster health-related behaviour. Two additional theories, Social Cognitive Theory (SCT;
15 Bandura, 1998) and Self-Determination Theory (SDT; Deci & Ryan, 2000), are useful to this
16 end. SCT is useful to intervention design in that it proposes a range of key influences on self-
17 efficacy, which, in turn, is a key individual-level determinant of physical activity in older
18 adults (McAuley, Mullen, Szabo, White, Wójcicki, Mailey, ...Kramer, 2011; Koeneman,
19 Verheijden, Chinapaw, & Hopman-Rock, 2011). Specifically, it proposes that mastery
20 experiences, vicarious (or modelling) experiences, verbal persuasion and
21 physiological/emotional states influence the degree to which individuals develop self-efficacy
22 for a behaviour. These influences can be addressed in interventions to promote physical
23 activity in older adults and may be particularly relevant for group-based programs.

24 To foster sustained participation in volitional physical activity, high quality
25 motivation for the behaviour is of central importance. SDT offers insight into how high

1 quality motivation can be fostered and thus adherence and positive health outcomes can be
2 achieved. The satisfaction of three psychological needs, the needs for autonomy, competence,
3 and relatedness are key predictors of the quality of motivation. These needs can be satisfied
4 via the social contextual environment, for example in the way that exercise leaders
5 communicate with exercise participants. There is some evidence suggesting that satisfaction
6 with the need for relatedness may be particularly important in the early stage of exercise
7 adoption. For example, qualitative research with a group of adults initiating participation in a
8 group-based walking program, who were previously physically inactive, has shown that the
9 feelings of relatedness that developed between participants in a walking program and their
10 walk leaders was central to participation in the adoption phase of the program (Kinnafick,
11 Thøgersen-Ntoumani, & Duda, 2014). This adds to results of other qualitative research
12 showing that the presence of other people is an important facilitator of PA participation
13 (Gallagher, Gretebeck, Robinson, Torres, Murphy, & Martyn, 2010; Stathi, Gilbert, Fox,
14 Coulson, Davis, & Thompson, 2012; Strath, Isaacs, & Greenwald, 2007), and in older adults
15 residing in retirement villages (Nathan, Wood, & Giles-Corti, 2013). In addition, in
16 community-dwelling older adults, a recent large scale survey study involving more than
17 50,000 adults aged 65 and over has shown that the facilitation of social relations between
18 older adults and their neighborhood peers may promote walking for transportation purposes
19 (Van Cauwenberg, De Donder, Clarys, De Bourdeaudhuij, Buffel, De Witte, ...Deforche,
20 2014). SDT suggesting that any effects may be more than ‘doing things’ or being with others,
21 and more about the quality of those relationships and engendering feelings of belongingness.

22 Despite rather extensive work on barriers to physical activity in older adults (see e.g.,
23 Benjamin et al., 2014), suggestions of how specific (group-based walking in the context of
24 the present study) interventions can be designed to make them more appealing to participants,
25 and more feasible, are rarely considered. Thus the main aim of the present study was to

1 explore perceptions of group-led walks and strategies for the future design of such
2 interventions for older adults in retirement villages, taking into account the context of the
3 setting (as perceived by both residents and managers), and the challenges and needs faced by
4 the target group.

5 We aim to contribute to existing qualitative research on the influences on walking in
6 older adults in a number of ways. First, we consider influences on *group*-based walking
7 specifically. Second, we explore this question in retirement village residents, not community-
8 dwelling older adults who have been the focus of most previous research among older adults.
9 Third, we take into account perspectives of retirement village managers to complement, and
10 bring an additional perspective to, residents' views. Adding the perspectives of managers is
11 important as we consider them to be key social actors in this setting who may impact change
12 in the residents through the level of support they provide to the residents on a daily basis.
13 Finally, we explore possible strategies which could be used in future group-based walking
14 programs in the retirement village setting as suggested by residents themselves and the village
15 managers.

16 Method

17 Participants and General Procedure

18 Ethics approval was obtained from an ethics review board at an Australian university before
19 retirement villages were approached. Emails followed by phone calls were made to a broad
20 range of retirement villages within the Perth Metropolitan area. If managers of the villages
21 were interested, they advertised the study to the residents via flyers placed in residents' letter
22 boxes and by placing posters on notice boards. For two (out of four) of the retirement villages
23 who took part, the researchers were invited to provide a 15 minute talk (which was advertised
24 to residents) about the study with a view to recruiting participants. Twenty-four residents

1 (n=8 males; n=16 females; age range: 69-88) and 4 managers (all were female and younger
2 than residents) from 4 different retirement villages in the Perth Metropolitan area, Australia,
3 were individually interviewed in person. All participants resided in independent living units
4 within the retirement villages, which in turn were all lease-for life or resident funded (as
5 opposed to donor funded or subsidised). Thus, participants represented groups of relatively
6 high Socio-Economic Status (SES). The retirement villages were located across different
7 areas of Perth Metropolitan area (north, south and west of Perth), with one located by the
8 coast, and two located close to the main river in Perth. We purposively selected a population
9 with varying degrees of past and present physical activity involvement (including walking).
10 Thus the participants included individuals who were currently engaged in some physical
11 activity (but not necessarily regularly), individuals who described themselves as never having
12 been physically active, and residents identifying themselves as having been physically active
13 in the past but for whom physical activity levels had decreased with age. We aimed for
14 thematic saturation, although, in accordance with Green and Thorogood (2004), we recognise
15 the possibility that themes may be limitless.

16 **Interview Method and Analytical Procedure**

17 A semi-structured interview schedule was used. All interviews were pre-arranged and
18 conducted on an individual basis with interviews taking place in quiet locations chosen by
19 participants, with minimal risk of interruption. All the participants chose their own homes as
20 their preferred interview venue. Interviews lasted an average of 30 minutes each (range: 20-
21 53 minutes). Broad open-ended interview questions were used in the study. Questions were
22 guided by the theoretical frameworks. For example, we were careful to include questions
23 spanning individual, social and environmental factors in line with Social Ecological
24 Frameworks. For the residents, the questions included “How do you feel about walking?”,
25 “What prevents you from walking as much as you would like?”, “What could help you to

1 programs as it was not part of their jobs. One manager highlighted that “it is independent
2 living so it is up to them to do what they want”, and there was a clear sense amongst all the
3 managers that there was a delicate balance between advocating the value of physical activity
4 and respecting the residents’ choice to decide how to live their own lives.

5 Six broad themes were identified from the interviews: ‘lack of motivation’, ‘values
6 versus constraints, ‘fears and confidence’, ‘need for structure’, ‘creating a sense of belonging’
7 and ‘the physical environment as a double-edged sword’. While these themes overlapped to
8 some extent, each of these was associated with proposed specific intervention strategies. The
9 themes and the relevant intervention strategies are illustrated in Table 1, and presented in
10 more detail in the following.

11 **Lack of motivation.** The notion of time availability was mentioned frequently by
12 participants and (one of) the managers. Most participants indicated that time was a resource,
13 noting that they had plenty of time to engage in activities since retiring. For example, an 87-
14 year old female resident said “I can’t say I don’t have enough time because I have plenty of
15 time”, with similar accounts being narrated by other residents. Lack of motivation seemed to
16 be a reason why many residents did not partake in physical activities despite reporting having
17 the time to do so. Some participants described loss of motivation to walk following the death
18 of their spouse. Some noted that they did not particularly enjoy walking, that lack of
19 motivation or willpower would prevent them from taking part in group-based walking
20 programs, or that they already had enough opportunities for social activities.

21 Other participants mentioned that they had a very busy life and would struggle to fit in
22 any further activities, which was confirmed by one of the managers. Their accounts revealed
23 that this perceived lack of time was more about other activities taking priority over walking,

1 which could be an expression of lack of motivation. This was aptly described by one of the
2 male residents (aged 76): "I think if something is really interesting, you make your time".

3 Walk leaders were identified by both managers and residents as being key drivers of
4 motivation to participate. For example, one manager, advocating for more walkways in the
5 village who was involved in some facilitation of physical activities among residents, and who
6 reported being physically active herself, noted: "I think someone to drive it. Having someone
7 who's committed and can coordinate things is really important, and someone that can give
8 people a gentle reminder if they haven't been for a while. It's someone that really is a
9 personable person, but can kind of get people off their backsides". She continued to
10 emphasise the importance of having residents themselves actively involved in leading walks
11 "So having someone, one of our residents, probably a little bit younger, and then maybe
12 training people up so that they can alternate or have someone there as a point of contact or
13 reference. But someone that's quite dynamic". A different manager described how the social
14 dynamics in the villages could be a great motivator for some residents: "I think group's the
15 best way. I mean, most of our residents when they're participating in stuff, you'll see them,
16 they're walking off in pairs to go and they play bridge or whatever it might be. So it's good to
17 have – particularly when you're talking about a physical activity, because sometimes they
18 can't be bothered. If you got someone coming to pick you up, if your neighbour's walking
19 past to collect you as you go off, it's a little bit harder to say, no. <laughs>".

20 **Values versus constraints.** All residents and managers emphasised the value of
21 walking for health and well-being. Benefits were described in terms of physical health and
22 psychological well-being. For example, some mentioned that walking was essential to
23 preserve physical function. An 82-year old female resident noted "I think it's [walking] most
24 essential. I see people here who don't do any and they get to the stage their joints and muscles
25 won't work". Mood-related factors were mentioned in relation to the fact that walking could

1 help participants feel better after a walk: “It makes me feel good in myself. Makes me...I feel
2 like I can relate my body to my life” (Female resident, aged 71). Several participants were
3 worried about Alzheimer’s disease, and believed walking might help to prevent this. Indeed,
4 some noted that walking could improve memory “Because you need to keep your, I suppose,
5 your brain ticking over all the time” (Male resident, aged 80). Other residents believed that
6 walking as an activity could delay aging, and could keep diseases and chronic health
7 conditions under control. Several participants, and two of the managers, used the phrase “use
8 it or lose it” when describing the importance of exercise.

9 However, there was an apparent tension between recognising the numerous health
10 benefits of walking and the (perceived) inability to do it because of poor physical or
11 psychological health. Thus, although group-based walking was generally valued as an
12 important means of promoting health and well-being, residents’ and managers’ expectancies
13 ran counter to those values as they perceived themselves (or the residents) often unable to do
14 it. For example, a 69-year old female experiencing a lot of pain due to a neurologic condition
15 exemplified this well. She had been physically active in the past, and valued the effects of
16 walking, yet her level of pain could often disrupt her positive intentions “I like walking and
17 I’d like to do any – every day would be good for me to do it because it gets – it’s physical and
18 emotional and stimulation to go look at different things...The increase in pain and my
19 balance ...it controls how much activity I can do and my pain changes from day to day...I
20 never know what it’s gonna be when I wake up”. A different male resident, who had been
21 physically active in the past yet not regularly since moving to the retirement village,
22 articulated clearly the tension between the value of activity and his physical capabilities in
23 terms of an important behavioural choice he had to make: “I mean I’ve been battling now for
24 about three years whether to get one of these electric scooter things. And I’ve deliberately not

1 got one cause I think the moment I do that I've succumb – I'll have to bare the pain and try to
2 keep moving...”.

3 One of the managers described physical limitations as the greatest influence on
4 walking and commented on the wide range of physical capabilities of residents which would
5 make it challenging to design group-based walking programs. “The biggest one is physical
6 limitations. So, we have residents that would probably love to be doing regular exercise but
7 can't. Sometimes it's permanent; sometimes it's just a condition depending on whether
8 they've got a particular medical issue at that point in time, but that is a big issue”. A different
9 manager (who endorsed the importance of walking for health but who was less actively
10 involved than other managers in directly promoting activity among the residents) took a
11 somewhat different stance when she described the value of walking, implying that it could
12 help the residents take away the focus from pain “[group-based walking]. I think it would be
13 good for them, stop them complaining about their aches and pains maybe”.

14 The size of the walking groups was identified by many residents and managers as a
15 key consideration in the design of group-based walking interventions. This consideration
16 mainly stemmed from a recognition that people needed to be matched based on physical
17 capability. This was expressed in the following way by a male resident (aged 76) “...if you
18 get with a group, you're either trying to keep up with the fastest person or the strongest or the
19 best or whatever, or you're restricted to the least fit or the slowest”. One of the managers also
20 highlighted the importance of using small groups as a means of motivating older adults to be
21 active as different physical illnesses and conditions could impact the level and quality of
22 interaction residents could have on the walks: “for a lot people, macular degeneration is a big
23 thing that will stop people from going out because they can't see anything. Deafness, you
24 know, those obstacles really impinge on interaction. Mental impairment – so that's dementia.
25 Alzheimer's is a huge, huge, huge factor. You know, no two blades of grass are alike. And

1 so, I try to have small clusters of groups formed... But small groups is the key to getting
2 people enthused enough to become active... So probably a group of six – groups of six,
3 yeah”. With regard to other intervention strategies that could be implemented to address
4 issues related to differential levels of capabilities, only the managers came up with
5 suggestions. One manager proposed the use of a café stop mid-way through the walk (as one
6 was located on the premises), and that those residents who felt unable to walk back could take
7 an electric buggy for transportation back to the starting place. Another suggestion made by a
8 different manager pertained to having two walk leaders per walk (one at the front and one at
9 the back).

10 **Fears and confidence.** Fear and confidence served as additional influences on
11 decisions to walk. Fear of falling was described as an important consideration by one of the
12 managers: “A lot of residents worry that if they walk one place and that they may not be able
13 to do the walk back, whether it be too far or uphill for the return trip...fears and anxiety only
14 gets larger as they get older”. Residents themselves described more specific fears; namely the
15 fear of falling or losing balance. For example, one female resident aged 83 described how she
16 had lost confidence due to poor balance. Setting attainable goals was suggested by one of the
17 managers as one way of enhancing residents’ confidence “...would be the really important
18 thing is that, you know, for elderly, they’re attainable goals. They’re not gonna be “Right,
19 you have to do 15,000 steps today,” ‘cause that’s not gonna happen. Some might but as long
20 as they’re achievable goals, I think it would be useful”.

21 The walk group format appealed to many residents due to the enhanced perceptions of
22 safety, which was intimately tied to increased confidence. In relation to this, one factor that
23 could help build confidence in the residents was the knowledge that others were there to help
24 them in unforeseen circumstances during walks. One female resident aged 69 expressed how

1 taking a wheelie frame could help with her balance, and as long as there was someone helping
2 her lift it over obstacles on walking routes, she would be happy to walk.

3 Strategies perceived by residents to be important for participation included using
4 trained walk leaders who could verbally encourage participants and help participants feel
5 accountable. When prompted about the use of pedometers, a 75 year-old female resident
6 explained: “[logging steps does help]...particularly if you’re answerable to someone to report
7 back”. Another important factor identified was building up difficulty of walks (such as
8 duration) gradually.

9 **Need for structure.** Several participants mentioned that the relocation into retirement
10 villages, where they no longer needed to look after a big house and garden and the associated
11 energy expended on cleaning and looking after these, necessitated other ways of keeping
12 active: “I used to be so...more active because I lived in a house with stairs and up and down
13 the stairs; a garden to attend to. And here, I’m finding that I’ve got to re-establish a new
14 routine to get a little more involved” (Female resident, aged 78). She described this change in
15 activity patterns from ‘forced’ to ‘chosen’ (i.e., planned) activity. The need to set up a new
16 routine was also emphasized by other participants who had recently relocated to the villages.
17 Walking was welcomed as part of establishing that routine. A male resident (aged 79) spoke
18 of his desire to increase levels of planned structured walking, as the move into the retirement
19 village meant that the opportunities to engage in incidental lifestyle activities had diminished:
20 “hip permitting, I’m gonna walk more here to get it back to where it used to be because
21 there’s no lawn to cut, there’s no garden to weed, and there’s no swimming pool to clean so
22 yes, health permitting of course”. While these residents appeared to be acutely aware of the
23 need to establish new routines or habits, one of the managers implied that many residents
24 were passive victims of ‘cultural’ circumstance: “... when you downsize... You come into a
25 community where things are a little bit more easily accessible for you. And it's very easy to

1 fall into a habit sometimes, a cultural habit that you won't be aware of, whereas you expect
2 things done for you. And so, there's a little bit of that dynamic at play”.

3 Although one resident mentioned that it would be difficult for some to change their
4 habits, many residents and three of the managers believed that committing to a group and a
5 program where they felt accountable and were expected to attend at a certain time would help
6 them increase the frequency and distance walked. Setting fixed days and times for group-
7 based walks were perceived to facilitate the incorporation of walking into the residents’
8 routine according to both managers and residents, with residents indicating also that setting
9 fixed days and times provided structure: “It’s something to look forward to. That’s what
10 people like; something to know they’re going to do something...something planned” (Female
11 resident, aged 71).

12 **Creating a sense of belonging.** The social environment was perceived to be
13 important for facilitating walking participation. Sometimes this was described as merely
14 having company, while several other residents emphasized that it was the act of sharing
15 interesting and stimulating experiences as part of a walk which was central: “If I saw a
16 beautiful bird I’d love to say, ‘Oh look at that gorgeous bird’. It’s a sharing thing” (Female
17 resident, aged 77). An 87-year old female resident noted how time passed more quickly and
18 the walking distance seemed shorter when walking with others. Another female resident, aged
19 77, had experienced that having company on her walks helped her walk further than she
20 would have done on her own. This perspective, however, was not universal as some residents
21 did not feel a need to belong, even though they did not dislike company when walking. One
22 of these residents, however, noted that walking with others in a group may be beneficial for
23 people who did not walk regularly.

1 Planning social events following each walk (e.g., having coffee together) could
2 enhance feelings of belonging among participants which was cited as an important motive for
3 partaking in the walks for many residents. In relation to this theme, several managers spoke of
4 the importance of inclusivity of residents which could also be achieved via group-based
5 walking programs by having mobile residents volunteer to assist more fragile residents so
6 they felt able to take part in the program. Including as many residents as possible in a future
7 program was particularly important to one of the managers, who perceived herself as a
8 ‘facilitator’ of physical activity: “Everything I introduced here was to keep people away from
9 isolation”.

10 **The physical environment as a double-edged sword.** One particularly dominant
11 environmental factor impacting walking for this population was heat, particularly during the
12 summer months: “I used to love the summer once, but as I’ve got older and the body changes,
13 in the summer you go, ‘Ah!’” (Female resident, aged 74). It was therefore often suggested
14 that a group walk would be best early in the morning, before it became too hot, yet not too
15 early as it would be too cold and dark. Choosing the times of walk is important in a city like
16 Perth, where the research took place, where, in the summer, the temperatures can rise to 45
17 degree Celsius during the day.

18 A pleasant natural environment in which to walk was seen as imperative to many
19 participants. For example, some noted how nature and peaceful river settings added to the
20 experience of walking. In relation to this, many emphasized the need to experience
21 stimulation (‘seeing something going on’) as part of group-based walks, which was often tied
22 to natural phenomena (such as seeing interesting birds), although developing building sites
23 were also mentioned. One manager suggested adding conversations about nature as part of
24 group walks, and making it ‘more than a walk’. Adding walk maps to accompany the walks

1 facilitate a greater sense of belonging between residents and address concerns about fear.
2 Intervention research, and a meta-analysis, guided by SDT in the health setting has shown
3 that the social context, such as a walk leader, can have a powerful effect on the quality of an
4 individual's motivation (e.g., Kinnafick et al., 2014; Kinnafick, Thøgersen-Ntoumani, Duda,
5 & Taylor, 2014; Ng, Ntoumanis, Thøgersen-Ntoumani, Deci, Ryan, Duda, & Williams,
6 2012). This research suggests that individuals can internalise (i.e., improve the quality of)
7 their motivation if the leader uses strategies that support the individual's psychological needs
8 for autonomy, competence and relatedness. Involving the residents themselves as
9 coordinators or leaders was proposed by one of the managers in the study as a potentially
10 useful means of motivating participants to take part in group walks, but SDT research
11 suggests that some training in autonomy-supportive strategies may be required to facilitate
12 not just adoption, but sustained participation among the residents (Ng et al., 2012).

13 Residents and managers all acknowledged that important constraints (sometimes)
14 impacted on the residents' ability to perform the walks. These perceptions align with previous
15 research showing that physical health problems, illnesses, disease and pain have been
16 consistently reported as barriers to participation in physical activity among community-
17 dwelling older adults (Koeneman et al., 2011; Stathi et al., 2012), and, recently, also in older
18 adults in long-term care (Benjamin et al., 2014). The findings from this study add to extant
19 literature by suggesting that group-based formats can be designed to take into account these
20 difficulties, for example by planning breaks and flexibility (e.g., buggies used to transport
21 residents for part of the walk back), by using small groups (maximum 6 people per group)
22 and through the mere physical support other (more mobile) residents can provide for
23 participants using assistive devices.

24 A prominent psychological factor included fear (often of falling) which sometimes
25 translated into lack or loss of confidence. Indeed, self-efficacy (a specific type of confidence)

1 has been consistently identified as an important facilitator of physical activity in community-
2 dwelling older adults (Koeneman et al., 2011), and is a key determinant of adherence to
3 physical activity in older adults (McAuley et al., 2011; Koeneman et al., 2011). McAuley and
4 colleagues (Hall & McAuley, 2011; McAuley, Konopack, Morris, Motl, Hu., Doerksen, &
5 Rosengren, 2006) have demonstrated that self-efficacy for balance and levels of physical
6 activity are closely associated in older adults residing in independent and assisted living
7 settings. McAuley and Blissmer (2000) have suggested that group-based exercise may
8 enhance self-efficacy via social support and encouragement provided via group members.
9 Further, it is possible that self-efficacy could also be increased in group-based walking
10 programs via modelling influences as postulated by Social Cognitive Theory (Bandura,
11 1998), i.e., by observing others similar to themselves successfully engaging in physical
12 activity. Thus, group-based walking may be an effective means by which residents with
13 otherwise low levels of self-efficacy may improve their confidence to be physically active.
14 The addition of a walk leader trained in appropriate motivation techniques could further
15 increase self-efficacy through verbal persuasion.

16 Having a daily structure in place and creating a routine were important considerations
17 regarding the perceived appeal of group-based waking programs. These findings are
18 commensurate with themes identified by Biedenweg, Meischke, Bohl, Hammerback,
19 Williams, Poe, and Phelan (2014; i.e., ‘desiring a routine that promotes accountability’) in
20 older adults who chose to take part in organized physical activity programs. Incorporating
21 physical activity into one’s daily routine was also identified as a strategy facilitating physical
22 activity in another study with older adults residing in long-term care facilities in the US
23 (Phillips & Flesner, 2013). The findings from the present study suggested that one way to
24 accomplish this was by setting fixed days and times for group-based walks. Several
25 participants interviewed in the present study had recently relocated into the villages from their

1 previous homes, and they spoke of the need to establish a ‘routine’ and welcomed the idea of
2 participating in a group-based walking program both as a means of establishing a
3 routine/structuring the day, and as a way of integrating themselves into the new community
4 (via the development of new friendships). Research on establishing habitual behaviour
5 suggests that life transitions represent times when prior habits are disrupted, and the scope to
6 effect behaviour change may be greater as conscious decision-making processes largely drive
7 behaviour change (Evenson, Rosamund, Cai, Diez-Roux, & Brancati, 2002). Thus, the
8 relocation to retirement villages may represent a unique opportunity to promote group-based
9 walking among new residents. Creating a daily structure in this way could also be an effective
10 way of enhancing a sense of belonging among residents early on, which was identified in this
11 study as another important theme. A useful direction for future research would be to
12 implement group-based walking programs targeted to individuals transitioning into retirement
13 villages and explore its effects on sustained physical activity, health, well-being, and
14 loneliness.

15 A central appeal of group-based walking for residents was the interaction with other
16 residents, both during and after walks. This finding is consistent with findings from other
17 qualitative studies with community-dwelling older adults related to organized exercise
18 programs (Biedenweg et al., 2014), walking (Gallagher et al., 2010) and general physical
19 activity participation (Strath et al., 2007), and in adults in retirement villages (Nathan et al.,
20 2013). The present study adds to this literature by suggesting that social benefits do not
21 merely include ‘being’ together, but also ‘sharing experiences’ (e.g., tied to natural
22 phenomena). It thus seems critical that group-based walking programs provide opportunities
23 for sharing. Moreover, group-based walks provided an opportunity for mobile residents to
24 assist less mobile residents on walk, further fostering inclusion. By getting together and

1 sharing experiences, some key constraints related to fears and confidence, as well as other
2 themes highlighted in the results, could be tackled.

3 Supporting suppositions of social ecological models of behaviour change that physical
4 environment needs to be considered in addition to individual and social factors, the weather,
5 the aesthetics of the environment (pleasant peaceful nature settings), and safety were most
6 prominent. These findings are largely commensurate with Moran, Van Cauwenberg, Hercky-
7 Linnewial, Cerin, Deforche, and Plaut's (2014) review of qualitative studies. Findings from
8 the current study suggest that several of these determinants can be addressed in the design of
9 group-based walking programs. Specifically, walks can be scheduled early and/or late in the
10 day, scenic routes can be planned, and safety concerns are alleviated to some extent via the
11 presence of both walk leaders and other residents. Variety in walk routes also appeared
12 important to incorporate and this could be capitalised on when people walk in groups given
13 safety concerns expressed by someone with regard to exploring new routes on one's own. A
14 recent study informed by SDT, using community-based adults, has demonstrated that
15 perceptions of variety in exercise are important to take into consideration in the prediction of
16 exercise-related well-being in addition to fostering satisfaction with autonomy, competence
17 and relatedness in participants (Sylvester, Standage, Dowd, Martin, Sweet, & Beauchamp,
18 2014). This suggestion needs to be further explored in groups of older adults.

19 Residents and managers had broadly similar perceptions of group-based walks as
20 reflected in the description of the themes. Both groups were acutely aware of the health
21 benefits of walking. This may be partly a reflection of the residents generally being of
22 relatively high SES, and more likely therefore to be health literate. However, subtle
23 differences emerged between residents' accounts and those of (some of) the managers. For
24 example, one of the managers noted that group-based walks might help distract residents
25 from their aches and pains, while the lived experience of many of the residents was one

1 characterised by daily struggle to function physically which had a real impact on their daily
2 decisions to walk. The fact that the managers were younger and had not experienced similar
3 struggles with health could at least partly account for this discrepancy. As managers have
4 some influence over the physical activity programs that are initiated in the retirement villages,
5 it is possible that what (some) professionals think are needed to help residents become more
6 physically active may not improve practice because it is not a reflection of the residents'
7 reality.

8 Another difference between the accounts of residents and managers was that managers
9 provided more specific suggestions about strategies that could be used to inform future
10 programs. This may be a reflection of inactive residents not having had the experience of
11 knowing what may help drive their participation, which in turn could (at least partly) explain
12 their lack of involvement. Although several of the managers considered themselves as
13 'facilitators', they all agreed that it was not their job to 'motivate' residents. Therefore,
14 although the managers had potentially useful suggestions, these suggestions were not
15 translated into practice. This demonstrates the need to explore the perspectives of both
16 professionals and service users in the development of physical activity interventions.

17 Although the results of the present study may inform future intervention development,
18 some limitations of the study should be considered. As discussed by Patton (2015), it is
19 important to consider the depth and breadth of qualitative studies. In the present study we
20 chose to explore the perceptions of individuals with a range of experiences, which might have
21 limited the depth of our inquiry. Another limitation was that men constituted only one third of
22 the participants. Indeed, over-recruitment of women to walking interventions is common
23 (Ogilvie, Foster, Rothnie, Cavill, Hamilton, Fitzsimons, & Mutrie, 2007). Further, although
24 based in different locations in the Perth Metropolitan area, the retirement villages were all

1 located in relatively pleasant physical environments, and all participants lived in resident-
2 funded villages characterised by relatively high SES.

3 **Conclusion**

4 Retirement village residents may constitute a captive target group when implementing group-
5 based walking programs as a means to promoting health and well-being. The present study
6 illustrates that group-based walking may be an attractive option for relatively physically
7 inactive residents as a means to improve or manage physical, psychological *and* social health.
8 However, careful planning of such programs is needed in order to make them appealing and
9 feasible for residents with a range of different needs and capabilities. It might be important to
10 intervene as early as possible after people move into the retirement villages, to prevent
11 residents forming inactive habits. Specific recommendations include involving trained walk
12 leaders, using small groups, planning for flexibility, setting attainable goals, creating a
13 routine, creating opportunities for sharing experiences, and planning a variety of walk routes.

References

- 1
- 2 Australian Bureau of Statistics (2013). *3235 Population by age and sex, regions of Australia*.
- 3 Retrieved 26 January, 2015, from:
- 4 <http://www.abs.gov.au/Ausstats/abs@.nsf/mf/3235.0#PARALINK2>.
- 5 Baby Boomers and Beyond report (2006). *Physical activity levels of older Western*
- 6 *Australians*. Retrieved 26 January 2015, from:
- 7 [http://www.beactive.wa.gov.au/assets/files/Research/Baby%20Boomers%20and%20Be](http://www.beactive.wa.gov.au/assets/files/Research/Baby%20Boomers%20and%20Beyond%202006.pdf)
- 8 [yond%202006.pdf](http://www.beactive.wa.gov.au/assets/files/Research/Baby%20Boomers%20and%20Beyond%202006.pdf).
- 9 Bandura, A. (1998). Health promotion from the perspective of social cognitive
- 10 theory. *Psychology and Health, 13*, 623–649. doi: 10.1080/08870449808407422.
- 11 Benjamin, K., Edwards, N., Ploeg, J., & Legault, F. (2014). Barriers to physical activity and
- 12 restorative care for residents in long-term care: A review of the literature. *Journal of*
- 13 *Aging and Physical Activity, 22*, 154-165.
- 14 Biedenweg, K., Meischke, H., Bohl, A., Hammerback, K., Williams, B., Poe, P., & Phelan, E.
- 15 A. (2014). Understanding older adults' motivators and barriers to participating in
- 16 organized programs supporting exercise behaviors. *Journal of Primary Prevention, 35*,
- 17 1-11. DOI: 10.1007/s10935-013-0331-2.
- 18 Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research*
- 19 *in Psychology, 3*, 77-101. <http://dx.doi.org/10.1191/1478088706qp063oa>.
- 20 Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I., & Petticrew, M. (2008).
- 21 Developing and evaluating complex interventions: the new Medical Research Council
- 22 guidance. *British Medical Journal, 337*, a1655. Doi:
- 23 <http://dx.doi.org/10.1136/bmj.a1655>.

- 1 Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and
2 the self-determination of behavior. *Psychological Inquiry*, *11*, 227–268.
3 doi:10.1207/S15327965PLI1104_01.
- 4 Evenson, K. R., Rosamond, W. D., Cai, J., Diez-Roux, A. V., & Brancati, F. L. (2002).
5 Influence of retirement on leisure-time physical activity: The atherosclerosis risk in
6 communities study. *American Journal of Epidemiology*, *155*, 692–699. Doi:
7 10.1093/aje/155.8.692.
- 8 Fiatarone Singh, M. A. (2002). Exercise to prevent and treat functional disability. *Clinics in*
9 *Geriatric Medicine*, *18*, 431-462. Doi: 10.1016/S0749-0690(02)00016-2.
- 10 Gallagher, N. A., Gretebeck, K. A., Robinson, J. C., Torres, E. R., Murphy, S. L., & Martyn,
11 K. K. (2010). Neighborhood factors relevant for walking in older, urban, African
12 American adults. *Journal of Aging and Physical Activity*, *18*, 99-115.
- 13 Green, L.W., Richard, L., & Potvin, L. (1996). Ecological foundations of health promotion.
14 *American Journal of Health Promotion*, *10*(4), 270–281.
- 15 Green, J., & Thorogood, N. (2004) *Qualitative Methods for Health Research*. London: Sage.
- 16 Hall, K.S., & McAuley, E. (2011). Examining indirect associations between physical activity,
17 function, and disability in independent- and assisted-living residents. *Journal of*
18 *Physical Activity and Health*, *8*, 716–723.
- 19 Kinnafick, F.– E., Thøgersen-Ntoumani, C., & Duda, J. L. (2014). Physical activity adoption
20 to adherence, lapse and drop-out: A Self-Determination Theory perspective. *Qualitative*
21 *Health Research*, *24*, 706-718. DOI: 10.1177/1049732314528811.
- 22 Kinnafick, F.– E., Thøgersen-Ntoumani, C., & Duda, J. L., & Taylor, I. (2014). Sources of
23 autonomy support, subjective vitality and physical activity behaviour associated with
24 participation in a lunchtime walking intervention for physically inactive adults.

- 1 *Psychology of Sport and Exercise*, 15, 190-197.
- 2 <http://dx.doi.org/10.1016/j.psychsport.2013.10.009>
- 3 Koeneman, M. A., Verheijden, M. W., Chinapaw, M. J. M., & Hopman-Rock, M. (2011).
4 Determinants of physical activity and exercise in healthy older adults: A systematic
5 review. *International Journal of Behavioral Nutrition and Physical Activity*, 8, 142.
6 Doi: 10.1186/1479-5868-8-142.
- 7 Marques, E. A., Baptista, F., Santis, D. A., Silva, A. M., Mota, J., & Sardinha, L. B. (2014)
8 Risk for losing physical independence in older adults: The role of sedentary time, light,
9 and moderate to vigorous physical activity. *Maturitas*, 79, 91-95. Doi:
10 10.1016/j.maturitas.2014.06.012.
- 11 McAuley, E., & Blissmer, B. (2000). Self-efficacy determinants and consequences of
12 physical activity. *Exercise and Sport Sciences Reviews*, 28, 85–88. Doi: 0091-
13 6631/2802/85-88.
- 14 McAuley, E., Konopack, J.F., Morris, K.S., Motl, R.W., Hu, L., Doerksen, S.E., &
15 Rosengren, K. (2006). Physical activity and functional limitations in older women:
16 Influence of self-efficacy. *The Journals of Gerontology. Series B*, 61, P270–P277.
- 17 McAuley, E., Mullen, S. P., Szabo, A. N., White, S. M., Wójcicki, T. R., Mailey, E. L.,
18 Gothe, N. P., Olson, E. A., Voss, M., Erickson, K., Prakash, R., & Kramer, A. F.
19 (2011). Self-regulatory processes and exercise adherence in older adults: Executive
20 function and self-efficacy effects. *American Journal of Preventive Medicine*, 41, 284-
21 290. doi:10.1016/j.amepre.2011.04.014.
- 22 Miller, E., & Buys, L. (2007). Predicting older Australians' leisure time physical activity.
23 *Activities, Adaptation and Aging*, 31, 13-30. DOI: 10.1300/J016v31n03_02.
- 24 Moore, G. F., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L.,
25 O’Cathain, A., Tinati, T., Wight, D., & Baird, J. (2015). Process evaluation of complex

- 1 interventions: Medical Research Council guidance. *BMJ*, 350, h1258. doi:
2 10.1136/bmj.h1258.
- 3 Moran, M., Van Cauwenberg, J., Hercky-Linnewiel, R., Cerin, E., Deforche, B., & Plaut, P.
4 (2014). Understanding the relationships between the physical environment and physical
5 activity in older adults: A systematic review of qualitative studies. *International*
6 *Journal of Behavioral Nutrition and Physical Activity*, 11, 79. Doi: 10.1186/1479-5868-
7 11-79.
- 8 Morris, J. N., & Hardman, A. E. (1997). Walking to health. *Sports Medicine*, 23, 306-333.
9 Doi: 0112-1642/97/0006-0306/\$13.50/0.
- 10 Mutrie, N., Doolin, O., Fitzsimons, C. F., Grant, P. M., Granat, M., Greal, M., Macdonald,
11 H., MacMillan, F., McConnachie, A., Rowe, D. A., Shaw, R., & Skelton, D. A. (2012).
12 Increasing older adults' walking through primary care: results of a pilot randomized
13 controlled trial. *Family Practice*, 29, 633-642. Doi: 10.1093/fampra/cms038.
- 14 Nathan, A., Wood, L., & Giles-Corti, B. (2013). Environmental factors associated with active
15 living in retirement village residents: Findings from an explorative qualitative enquiry.
16 *Research on Aging*, 35, 459-480. Doi: 10.1177/0164027512454886.
- 17 Nathan, A., Wood, L., & Giles-Corti, B. (2014). Examining correlates of self-reported and
18 objectively measured physical activity among retirement village residents. *Australasian*
19 *Journal on Ageing*, 33, 250-256. DOI: 10.1111/ajag.12055.
- 20 Ng, J. Y. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L.,
21 & Williams, G. C. (2012). Self-Determination Theory applied to health contexts: A
22 meta-analysis. *Perspectives on Psychological Science*, 7, 325-340. DOI:
23 10.1177/1745691612447309.

- 1 Ogilvie, D., Foster, C. E., Rothnie, H., Cavill, N., Hamilton, V., Fitzsimons, C. F., & Mutrie,
2 N. (2007). Interventions to promote walking: Systematic review. *British Medical*
3 *Journal*, 334, 1204. doi:10.1136/bmj.39198.722720.BE.
- 4 Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and*
5 *practice* (4th ed). Thousand Oaks, CA: Sage.
- 6 Phillips, L. J., & Flesner, M. (2013). Perspectives and experiences related to physical activity
7 of elders in long-term care settings. *Journal of Aging and Physical Activity*, 21, 33-50.
- 8 Rejeski, W.J., & Mihalko, S. L. (2001). Physical activity and quality of life in older adults.
9 *Journals of Gerontology Series A*, 56, 23-35. Doi: 10.1093/Gerona/56.suppl_2.23.
- 10 Satariano, W. A., & McAuley, E. (2003). Promoting physical activity among older adults:
11 From ecology to the individual. *American Journal of Preventive Medicine*, 25, 184-192.
12 doi:10.1016/S0749-3797(03)00183-1.
- 13 Scherder, E., Scherder, R., Verburch, L., Königs, M., Blom, M., Kramer, A. F., &
14 Eggermont, L. (2014). Executive functions of sedentary elderly may benefit from
15 walking: A systematic review and meta-analysis. *The American Journal of Geriatric*
16 *Psychiatry*, 22, 782-791. Doi: 10.1016/j.jagp.2012.12.026.
- 17 Siegel, P. R., Brackbill, R., & Heath, G. (1995). The epidemiology of walking for exercise:
18 implications for promoting activity among sedentary groups. *American Journal of*
19 *Public Health*, 85, 706-710. Doi: 10.2105/AJPH.85.5.706.
- 20 Stathi, A., Gilbert, H., Fox, K. R., Coulson, J., David, M., & Thompson, J. L. (2012).
21 Determinants of neighborhood activity of adults age 70 and over: A mixed-methods
22 study. *Journal of Aging and Physical Activity*, 20, 148-170.
- 23 Stathi, A., McKenna, J., & Fox, K. R. (2010). Processes associated with participation and
24 adherence to a 12-month exercise programme for adults aged 70 and older. *Journal of*
25 *Health Psychology*, 15, 838-847.

- 1 Strath, S., Isaacs, R., & Greenwald, M. (2007). Operationalizing environmental indicators for
2 physical activity in older adults. *Journal of Aging and Physical Activity*, *15*, 412-
3 424.
- 4 Sylvester, B. D., Standage, M., Dowd, A. J., Martin, L. J., Sweet, S. N., & Beauchamp, M. R.
5 (2014). Perceived variety, psychological needs satisfaction and exercise-related well-
6 being. *Psychology and Health*, *29*, 1044-1061. DOI: 10.1080/08870446.2014.907900.
- 7 Tuckett, A. G. (2005). Applying thematic analysis theory to practice: A researcher's
8 experience. *Contemporary Nurse*, *19*, 75-87. DOI: 10.5172/conu.19.1-2.75.
- 9 Tudor-Locke, C., Hart, T. L., & Washington, T. L. (2009). Expected values for pedometer
10 determined physical activity in older populations. *International Journal of Behavioral*
11 *Nutrition and Physical Activity*, *6*, 59. Doi: 10.1186/1479-5868-6-59.
- 12 Van Cauwenberg, J., De Donder, L., Clarys, P., De Bourdeaudhuij, I., Buffel, T., De Witte,
13 N., Dury, S., Verté, D., & Deforche, B. (2014). Relationships between the perceived
14 neighbourhood social environment and walking for transportation among older adults.
15 *Social Science and Medicine*, *104*, 23-30. DOI: 10.1016/j.socscimed.2013.12.016.
- 16

1 Table 1

2 *Themes and Suggested Intervention Strategies*

Themes	Intervention strategies
1. Lack of motivation	Use committed dynamic personable walk leaders Involve residents themselves as coordinators/leaders Take advantage of the social dynamics
2. Values versus constraints	Use small groups (max 6 people) Plan for flexibility (e.g., use of electric buggies for parts of walk) Use two walk leaders per walk (one at the front and one at the back)
3. Fears and confidence	Set attainable goals Use trained walk leaders Verbal encouragement by walk leaders Build up difficulty (e.g., duration) of walks gradually
4. Need for structure	Create a routine: schedule walks at fixed days and times Enhance sense of ‘accountability’
5. Creating a sense of belonging	Create opportunities for sharing experiences Plan social events (e.g. coffee) following walks Have mobile residents assist less mobile residents
6. The physical environment as a double-edged sword	Plan walks for early mornings or late afternoons Plan for scenic, pleasant, and a variety of walk routes Add value to walks (e.g., walk maps, conversations about nature)