

How can older peer leaders best support motivation for walking in physically inactive older adults? A self-determination theory perspective

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DOI:

[10.1080/08870446.2021.1994968](https://doi.org/10.1080/08870446.2021.1994968)

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Document Version

Peer reviewed version

Citation for published version (Harvard):

Kritz, M, Thøgersen-Ntoumani, C, Mullan, B, Stathi, A & Ntoumanis, N 2021, 'How can older peer leaders best support motivation for walking in physically inactive older adults? A self-determination theory perspective', *Psychology and Health*. <https://doi.org/10.1080/08870446.2021.1994968>

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1 **How Can Older Peer Leaders Best Support Motivation for Walking in**
2 **Physically Inactive Older Adults? A Self-Determination Theory**
3 **Perspective**

4

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Abstract

OBJECTIVE: We aimed to determine what older adults perceive to be need-supportive behaviours of peer walk leaders, drawing primarily from Self-Determination Theory (SDT). DESIGN: Experienced peer leaders ($n = 13$; $Mage = 73.23$, $SD = 6.55$) and walkers ($n = 17$; $Mage = 72.88$, $SD = 5.79$) were recruited from existing walking groups. Individuals who expressed an interest in becoming a peer leader ($n = 18$; $Mage = 72.72$, $SD = 4.99$) or walker ($n = 20$; $Mage = 78.90$, $SD = 10.45$) were recruited from retirement villages. MAIN OUTCOME MEASURES: We conducted semi-structured interviews to identify leader behaviours that support autonomy, competence, and relatedness and analyzed the data using framework analysis. RESULTS: We identified eight main themes: eliciting walker interest, acknowledging and adapting to walkers' requirements, ensuring walkers feel comfortable, cared for, and socially integrated, supporting walker confidence, and promoting success experiences. Inexperienced leaders differed from other sub-groups in what they perceived to be supportive behaviours. CONCLUSION: Future peer leaders could use the identified behaviours to help older adults feel motivated during group walks. New peer leaders can be educated about potential differences between what they describe as supportive and what walkers and experienced leaders perceive as need-supportive behaviours.

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2 Walking is popular among older adults and is an effective and safe way to meet
3 physical activity recommendations (Amireault et al., 2019). Older adults who walk
4 regularly have better physical health and more social contact than their physically
5 inactive peers (Bertera, 2003; Diehr & Hirsch, 2010; Ji et al., 2017). However, it is still
6 unclear how older people can be best supported to increase and sustain their physical
7 activity behaviour.

8 Older adults, who are insufficiently active, often lack the interest, social support,
9 or confidence to be physically active (Gellert et al., 2015; Kosteli et al., 2016; Ory et al.,
10 2016). Many older adults prefer doing physical activity in a group setting (Chong et al.,
11 2014) or benefit from an exercise partner (Zubala et al., 2017). Group walks offer a safe
12 environment for older adults to become physically active (Morris et al., 2019), socially
13 integrated (Farrance et al., 2015), and can benefit confidence, walking motivation, and
14 functional fitness (Kritz et al., 2020b). However, many older adults do not join or
15 remain in such programs (Stiggelbout et al., 2006; Thøgersen-Ntoumani et al., 2019).
16 Physical activity behaviour in older adults may be driven by motives that extend beyond
17 health benefits, such as the desire to experience a sense of purpose and feel connected to
18 others (Morgan et al., 2019). However, it is unknown *how* peer leaders can support
19 such motives to promote walking behaviour in older adults. For older volunteer walk
20 leaders, feeling effective at motivating and supporting their peers is crucial for helping
21 these leaders persist in their role (Kritz et al., 2020c). Therefore, it is important to
22 understand how older volunteer leaders can effectively motivate and encourage their
23 peers to participate and maintain involvement in group walks.

24 Self-Determination Theory (SDT; Ryan & Deci, 2017) provides a useful
25 framework to understand adoption and sustained engagement in health-promoting

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1 activities such as group walks (Ntoumanis et al., 2020). According to SDT, human
2 behaviour is determined by the extent to which an individual exhibits self-determined
3 motivation towards the behaviour. Self-determined motivation is defined as engaging in
4 a behaviour because it is fun, useful, or an integral part of one's identity. The theory
5 proposes that self-determined motivation requires the satisfaction of three basic
6 psychological needs for competence, relatedness, and autonomy (Deci & Ryan, 1987;
7 Ryan & Deci, 2017). The need for competence refers to an individual's need to feel
8 capable of achieving the desired outcome. In the context of a walking group, examples
9 include feeling able to keep up with the group and being confident in completing the
10 full walk. The need for relatedness captures an individual's desire to experience a sense
11 of belonging and connectedness with others (Ryan & Deci, 2017). In a walking group,
12 this may involve the desire to feel part of the group and experience meaningful relations
13 with other group members. The need for autonomy pertains to an individual's desire to
14 experience a sense of choice and feel in control of their behavior. For example, an
15 individual may want to walk at their own pace and have the opportunity to stop or take a
16 break when feeling tired. The satisfaction of the basic psychological needs has been
17 linked to self-determined and higher levels of physical activity behavior across the
18 lifespan. (Dacey et al., 2008; Ntoumanis et al., 2020)

19 SDT suggests that by engaging in a need-supportive communication style,
20 individuals in positions of authority (e.g., teachers, exercise professionals) can foster the
21 satisfaction of the three basic psychological needs in an individual, thereby promoting
22 the individual's self-determined motivation (Ntoumanis et al., 2018; Teixeira et al.,
23 2020). Autonomy can be supported by acknowledging the feelings and perspectives of
24 group members, providing them with choice, and minimizing pressure (Reeve et al.,
25 2004). Relatedness can be supported by providing group members with unconditional

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1 positive regard, affection, and warmth (Ng et al., 2012; Ntoumanis et al., 2020).
2 Competence can be supported by the provision of structure, clear guidance, realistic
3 goals, and timely and informative feedback (Reeve, 2002, Hancox et al., 2015). In
4 contrast, a leader who tries to induce behavioral compliance by applying pressure or
5 using extrinsic contingencies (e.g., rewards) is considered to be need-thwarting (Hancox
6 et al., 2015).

7 In the physical activity domain, there is evidence suggesting that exercise
8 instructors can be trained to be need-supportive and that this can be effective in
9 promoting self-determined motivation and behavioral engagement (Ntoumanis et al.,
10 2017; Perez-Gonzalez et al., 2019). Research suggests that volunteer peer leaders-
11 individuals- who share similar age and circumstances and choose to take on a leadership
12 role without formal qualifications- offer a low-cost alternative to professional
13 instructors for delivering such programs (Ginis et al., 2013; Stathi et al., 2021). Two
14 recent intervention studies have trained peer volunteers in need-supportive
15 communication strategies to promote physical activity behavior in older adults (Stathi et
16 al., 2019; Thøgersen-Ntoumani et al., 2019). Peer-led walking programs provide an
17 opportunity to use need-supportive social interaction to increase self-determined
18 motivation, promote physical activity and encourage sustained behavior change in older
19 adults (Thøgersen-Ntoumani et al., 2019).

20 Intervention studies have relied on training volunteers in need-supportive
21 strategies that were largely defined from research conducted with younger adults and
22 professional instructors (e.g., Perez-Gonzales et al., 2019). However, evidence suggests
23 that older adults are likely to differ from younger adults in how they respond to
24 interventions (French et al., 2014). Older adults may, therefore, have age-specific
25 requirements not addressed by previously defined strategies. Only one study has

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1 specifically explored perceptions of an autonomy-supportive environment for older
2 adults (Souesme & Ferrand, 2019). Souesme and colleagues (2019) found that health
3 professionals working in a geriatric setting perceive trust-building, encouraging older
4 adults to express themselves, and supporting their treatment progress as critical to an
5 autonomy-supportive environment. However, these findings did not provide
6 information on the perceptions of older adults and may not generalize to a peer-led
7 physical activity setting.

8 In a recent review, researchers concluded that future studies could advance the
9 delivery and effectiveness of peer-led interventions by identifying salient
10 behaviors/strategies that peer leaders can use to promote behavior change in the specific
11 target population (Hulteen et al., 2019). SDT offers a useful framework for identifying
12 such behaviors as it conceptualizes how different dimensions of support can affect
13 motivation, physical activity, and health behavior. Among the few studies that have
14 applied the concept of autonomy support to an older population, none have explored
15 what older walkers and peer leaders perceive to be autonomy-supportive strategies. One
16 study described the use and efficacy of previously defined strategies to an older walking
17 cohort (Thøgersen-Ntoumani et al., 2019). However, it did not explore additional age-
18 specific strategies that can be provided by peer leaders (Thøgersen-Ntoumani et al.,
19 2019).

20 The present study aimed to identify specific peer leader behaviors that can help
21 older adults feel connected, autonomous, and confident when engaging in group walks.
22 To achieve this, we examined perceptions of need-supportive peer leader behaviors, as
23 reported by a heterogeneous sample of older adults (peer leaders and walkers with
24 varying levels of group walking experience). Examining the views of both leaders and
25 walkers allowed us to obtain comprehensive insight and identify potential discrepancies

1 between these groups in what is perceived as motivationally supportive peer leadership.
2 Our findings can help understand how self-determination theory can be best put into
3 practice in interventions using peer leaders to motivate older adults to adopt and sustain
4 walking.

5 **Methods**

6 *Research Design*

7 Semi-structured interviews were conducted to obtain an in-depth understanding
8 of the behaviors perceived as important for supporting relatedness, competence, and
9 autonomy in an older population. We used framework analysis to analyze the data, as it
10 is comprehensive, flexible, and at the same time, allowed us to explore thematic
11 categories that are shaped by the dimensions of the Self Determination Theory (Gale et
12 al., 2013). Rather than being purely descriptive, the framework approach enables a
13 conceptual explanation of the data (Furber, 2013). Another advantage of this method is
14 that it allowed us to analyze a large, heterogenous (i.e., leaders and walkers) sample and
15 balance breadth with depth (Ritchie & Spencer, 1994).

16 *Participants*

17 Participants were derived from a mixed-methods study on perceptions of ideal
18 older peer leader attributes (Kritz et al., 2020a). Further details are provided in the
19 supplementary file. In brief, 101 participants (walkers, $n = 61$; peer leaders, $n = 40$)
20 aged between 60 and 93 years were purposively recruited from mall walking groups and
21 retirement villages in and around Perth, Western Australia. Participants had to be at
22 least 60 years old and show interest or experience in group walking either as a walker or
23 peer leader. Experienced peer leaders and walkers who had participated in a regular (at
24 least once per week) group walk for a minimum of six months were recruited from mall

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1 walking groups in Perth. Inexperienced group walkers (i.e., retirement village residents
2 who had not participated in a group walk within the last six month) and inexperienced
3 peer walk leaders (i.e., residents who never led a walking group before), who had
4 expressed interest in being part of a walking group, either as a group leader or as a
5 walker were recruited as part of the Residents in Action trial (RiAT). RiAT was a quasi-
6 experimental trial that explored the feasibility and efficacy of a physical activity
7 intervention to promote walking behavior in older adults living in retirement villages
8 (Thøgersen-Ntoumani et al., 2019; Thøgersen-Ntoumani et al., 2017). Participants who
9 agreed to be interviewed were included in the present study ($n = 68$).

10 *Measures and procedure*

11 The study received ethical approval from the Human Research Ethics
12 Committee of an Australian university. All participants were informed about the nature
13 of the study. Written informed consent was obtained before all interviews.

14 The first author conducted semi-structured interviews and made a note of initial
15 reflections after each interview. Interviews lasted 19-28 minutes. Most interviews
16 (60/68) were conducted on an individual, face-to-face basis. Eight participants,
17 inexperienced group walkers residing in retirement villages, preferred to be interviewed
18 in groups. All interviews were audio-recorded using a voice recorder, transcribed
19 verbatim by the first author, and stored using pseudonyms to ensure anonymity.
20 Participants were then provided with a questionnaire measuring demographic
21 characteristics.

22 The interview guide was informed by principles of SDT to identify which
23 specific behaviors were perceived effective in supporting feelings of relatedness,
24 competence, and autonomy (Ryan & Deci, 2017). Each need was first explained to the

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1 participants. For example, relatedness was explained as the “the desire to feel part of the
2 group and connect with other members of the group”. Initial questions asked
3 participants to indicate the perceived importance of each respective need for
4 determining a walker’s motivation to join and remain in a walking group. Participants
5 were then asked about the extent to which they thought a peer leader could support each
6 need. Participants who perceived the role of the peer leader as relevant were then asked
7 to list peer leader behaviors that they perceived important for supporting the relevant
8 need. For example, for relatedness, participants were asked: “Can you provide examples
9 of things that a peer leader could say or do to help group members feel connected or
10 part of the group?”. The complete interview schedule is provided in the supplementary
11 section of the manuscript.

12 *Analysis*

13 Socio-demographic data were analyzed using SPSS for Mac (Version 25) and
14 presented as means and standard deviations (*M*, *SD*). The transcribed text was analyzed
15 using NVivo for Mac (version 11.4.2). Data were extracted and synthesized. We used
16 an abductive analytical approach. SDT was used as a theoretical framework to match
17 the need-supportive behaviours to the psychological needs proposed by SDT. However,
18 the nature of the specific themes and sub-themes were inductively derived.

19 We followed the five stages of framework analysis as outlined in previous
20 papers (Gale et al., 2013). During the familiarization stage, the first author reviewed a
21 subsample (22/68 interviews) of the raw data in detail, read transcripts several times,
22 and took notes of emerging patterns. In the second stage, notes were used to identify
23 key issues, concepts, and themes and develop the pre-existing thematic framework
24 (Ritchie & Spencer, 1994). Some codes were imposed upon the data based on the aims

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1 of the study (and the SDT framework), and some codes were generated based on themes
2 emerging from the data itself. The resulting structure was then assessed, discussed, and
3 agreed upon within the research team. Subsequently, the first author used NVivo to
4 index the remaining data, identifying which sections of the data corresponded to
5 identified themes. After this, the thematic framework was reviewed again, sub-themes
6 were identified, and a hierarchy of themes was established (charting). This was
7 achieved by rearranging summaries of the data according to the thematic framework. To
8 increase the trustworthiness of the findings, identified themes were discussed with the
9 research team and revised as necessary. In the final stage, “mapping and interpretation”,
10 key characteristics as laid out in the chart were analyzed, and a schematic diagram of
11 identified need-supportive behaviors was created (a simplified version is presented as
12 Figure S1 in the supplementary section). This process has been recommended to help
13 guide the interpretation of the data (Srivastava & Thomson, 2009). To maintain
14 analytical transparency, and ensure rigor, the first author, recorded all methodological
15 decisions and their reasons and reflected on potential biases during the interpretation
16 process (Barry et al., 1999). The framework approach allowed us to compare
17 perceptions across different participant groups. The findings from the group interviews
18 were compared with the findings of the individual interviews, and no differences were
19 observed. It has previously been argued that the combination of group interviews and
20 individual interviews can enhance data richness, and enhances trustworthiness of the
21 findings (e.g., Lambert & Loiselle, 2008). We, therefore, decided to include both sets of
22 data.

1 **Results**

2 *Participant characteristics*

3 Thirty-one volunteer peer leaders and 37 walkers were interviewed and included in the
4 overall analysis. Socio-demographic characteristics of the overall sample and across the
5 four different sub-groups are presented in Table 1 [Table 1 near here]. Participants were
6 predominantly white, Australian-born, female, retirees in their 70s (36/68), and almost a
7 quarter (15/68) were aged 80 and above.

8 *Need-supportive behaviors*

9 We identified eight themes and eighteen sub-themes of need-supportive peer leader
10 behaviors. The organization of themes and sub-themes is illustrated in Figure 1. [Figure
11 1 near here]

12 A description and an illustrative quote for each theme is provided in Table 2. Illustrative
13 quotes for each sub-theme are provided in the supplementary section (Tables S1-S3).
14 Further details on the number and percentage of participants mentioning each theme and
15 sub-theme are provided in the supplementary section, Table S4. [Table 2 near here]

16 *Autonomy supportive behaviors*

17 The majority (62/68) of participants said it was important for a peer leader to
18 support autonomy among their group members. Participants suggested that volunteer
19 peer leaders could offer opportunities perceived as meaningful and stimulating
20 (attracting interest from walkers), enquire about individual requirements and
21 preferences (acknowledging preferences and perspectives of walkers), and provide
22 group members with choice and a structure that allows self-initiative (adapting to
23 walker's requirements).

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1 **Autonomy theme 1: Attracting interest from walkers**

2 About a quarter (19/68) of participants mentioned behaviors that attracted an interest
3 from walkers.

4 *Combines walking with fun and positive stimulation.* Twelve participants
5 described it as important for the peer leader to combine the walk with experiences or an
6 environment considered as enjoyable or stimulating. Some participants stated that they
7 perceived walking on its own as “boring” or “painful”, which de-motivated them from
8 taking part in a walk that was only about walking (e.g., “*Once you are our age, you*
9 *choose to do things you enjoy.*” Experienced group walker, male, 75 years old). Several
10 inexperienced group walkers expressed interest in a walk that was not “only about
11 walking”, but that also integrated other aspects. This included doing activities that
12 walkers perceive as enjoyable but cannot do on their own due to a lack of confidence,
13 motivation or resources.

14 Participants differed in what they considered as fun or stimulating. Some people
15 considered social stimulation as fun. Others preferred not to talk while walking and
16 emphasized the importance of being offered a stimulating environment and encouraged
17 to walk mindfully (e.g., “*They (peer leader) can say ‘look at the beautiful birds’*”
18 Inexperienced peer leader, female, 79 years old). Participants also highlighted the
19 importance of experiencing intellectual stimulation (e.g., opportunity to use existing
20 skills such as good orientation) and receiving other forms of entertainment (e.g., making
21 jokes). A peer leader who established what walkers enjoy and then integrated relevant
22 aspects into the walk, was perceived as ideal for supporting walker autonomy.

23 *Emphasizes intrinsic benefits.* Nine participants described behaviors that
24 pertained to the peer leader providing them with a meaningful rationale for walking as
25 part of a group. This included emphasizing the benefits of walking (e.g., mental and

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1 physical health benefits) and the advantages of walking as part of a group (e.g., social
2 interaction, safety). Several inexperienced group walkers expressed concerns about
3 whether they would enjoy a group walk (e.g., due to variations in pace among older
4 people, fear of competition). A peer leader who promoted the walk as an interesting
5 activity by highlighting the enjoyable aspects (rather than the walking per se) was
6 perceived to support people's willingness to *want to* partake.

7 *Provides variety.* Five participants suggested that a peer leader could attract
8 interest by providing opportunities for new experiences. Suggestions included varying
9 walk routes, adding themes (e.g., walking in a specific setting or to a designated
10 destination) to walks, and providing opportunities to learn about new places. For
11 example, a peer leader who explained the history of new places or taught walkers about
12 different bird species could trigger interest.

13 **Autonomy theme 2: Acknowledging requirements and perspectives of** 14 **walkers**

15 Many (31/68) participants described a leader who acknowledged the requirements and
16 perspectives of group members.

17 *Elicits individual input.* Twenty participants emphasized the importance of the
18 peer leader asking individual group members to provide input as some may be
19 embarrassed to express their perspective in the group setting. Other important behaviors
20 included asking participants to notify the peer leaders about any medical conditions that
21 leaders need to be aware of, as well as specifying individual requirements, for example,
22 if they can only walk on flat surfaces due to using a walking aid or if they suffer from
23 high blood pressure. An experienced walk leader explained that older people are often
24 embarrassed or forget to express their medical requirements. A peer leader who

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1 acknowledged requirements was perceived as helping walkers feel in control of the
2 situation.

3 *Consensus driven leadership style.* Twenty participants described behaviors that
4 related to ideal peer leaders following a consensus driven leadership style. This included
5 the leader asking the group to state preferences, providing walkers with an opportunity
6 to make suggestions and contribute to group decisions. Four participants suggested that
7 taking things “to a vote” would work best for them when making group decisions. One
8 volunteer explained that it is important for a leader to have a plan but: “*If I hear from*
9 *the group that they are feeling that my plan is absolutely right-shit, then throw that out*
10 *the door, take up something else. Have a basic plan and have flexibility.*”
11 (Inexperienced peer leader female, 73 years old)

12 **Autonomy theme 3: Adapting to walker’s preferences and requirements**

13 Preserving walker independence was perceived as important. Most participants
14 (51/68) mentioned a leader who adapted to the preferences and requirements of group
15 members.

16 *Provides choice and structure.* Of particular importance was the peer leader providing
17 walkers with choice as opposed to controlling their walking behavior:

18 You cannot have regimentation. They are all at different stages so some of them
19 can’t walk so fast. Have a disability or something. and most of these people have a
20 very high level of education. Some are doctors, retired doctors. You don’t tell
21 people what they must do. (Experienced peer leader, female, 75 years old)

22 This also included flexibility in attendance as often participants cannot commit to a full
23 program due to conflicting appointments (e.g., medical appointments, caring for
24 grandchildren). Several participants mentioned that older adults often find it hard to

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1 adapt to a group setting as they are limited by an underlying health issue, as explained
2 by a participant who expressed interest in volunteering as a peer leader:

3 One of the worst things older people face is loss of autonomy. If I choose to walk
4 in the rain, I can do it, if I want to. but if you have some sort of health issue then
5 you can't do it (Inexperienced peer leader, female, 72 years old).

6 Within a group setting, participants often emphasized the importance of choice:

7 Let them know that you are prepared to do it at their pace or their choice. To me
8 that's important. A lot of older people that aren't as fit are losing choices.
9 (Inexperienced group walker, female, 85 years old)

10

11 However, several inexperienced peer leaders mentioned that they anticipate challenges if
12 too much choice is provided in a diverse group, as explained by a retirement village
13 resident:

14

15 Everybody has got different levels. So, I think if you have got Mr. Brown saying,
16 "Well I don't want to walk up that way, and I want to go down that way" That can
17 create problems. Well, I'd say "How about we go this way or" ...we got two
18 choices. We go this way of we go that way. No more than two choices because you
19 get too many voices and you lose too much time. (Inexperienced peer leader,
20 female, 79 years old)

21 *Supports self-initiative and exploration.* Thirty-three participants described a
22 peer leader who encouraged walkers to be aware of their body and walk within their
23 limitations (e.g., at their own pace and stopping if needed). Several walkers mentioned
24 that being old meant that they needed to be prepared for the "unexpected" and having
25 the choice to stop anytime and listen to their body was important. Several inexperienced
26 leaders emphasized that promoting self-initiative in a group with differing capabilities
27 could be challenging as a peer leader (e.g., *"I think the issue is that whoever is walking*
28 *further ahead doesn't sort of disappear out of view. It's important not to leave anybody*

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1 *behind who may just turn back or may not even wish to come the next time”*

2 inexperienced peer leader, female, 63 years old).

3 An experienced group walker (Female, 68 years old) mentioned how walking in
4 a circle as part of a mall walking group works for her and stated *that “If we (as*
5 *individual walkers) can do a lap and a half, we do a lap and a half. But if we can only*
6 *do one, we do one.”* Further suggestions to deal with different capabilities included the
7 peer leader leading from behind and letting walkers determine the pace, to having more
8 than one leader to cater for the faster and slower walkers or splitting up the group into
9 smaller groups (of different paces) with a common end point.

10 ***Autonomy supportive behaviors. - Comparison across sub-groups.***

11 Walkers. Most walkers (31/37) felt it was important for a peer leader to support
12 the autonomy of walkers. Salient themes related to the peer leader adapting to walker
13 limitations and providing options for different levels. Inexperienced walkers (13/20)
14 primarily described a peer leader who provided them with different options (e.g., long
15 walk vs. short walk). The majority (13/17) of experienced walkers additionally
16 recognized the importance of a leader who encouraged them to walk at their own pace.
17 Behaviors pertaining to a consensus driven leadership style (i.e., taking decisions to a
18 vote) were less prominent among walkers. Behaviors relating to a peer leader that
19 attracted the interest (e.g., made a walk fun) of walkers were primarily mentioned by
20 inexperienced group walkers.

21 Leaders. Most leaders (30/31) said it was important for a peer leader to provide
22 autonomy support. Most (16/18) inexperienced peer leaders mentioned behaviors that
23 referred to a consensus driven leadership style. In contrast, experienced leaders (13/13)
24 primarily emphasized that walkers should be encouraged to walk at their own pace.

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1 Promoting self-initiative was less prominent (4/18) among inexperienced leaders with
2 some mentioning the challenge of managing a group with diverse capabilities. However,
3 most (12/18) inexperienced leaders suggested providing walkers with options.

4 ***Relatedness promoting behaviors***

5 The majority (56/68) of participants, in particular group leaders, said that the
6 peer leader could improve a sense of belonging in walkers by engaging in supportive
7 behaviors. The importance of socialization is illustrated by a walk leader in the
8 following quote:

9 A lot of people do prefer to go for a walk and walk on their own, but I think most
10 people like to walk with someone and talk and have a conversation. So, I think in a
11 group it's good. (Inexperienced peer leader, female, 75 years old)

12 Three themes of relatedness-supportive behaviors, labelled as comforting,
13 connecting, and caring, were identified (See Table 2).

14 **Relatedness theme 1: Comforting**

15 More than half (38/68) of the interviewed participants perceived peer leader behaviors
16 pertaining to *comfort* as important to experience a sense of belonging/relatedness.

17 *Welcomes and informs walkers.* Twenty-five participants described behaviors
18 that involved the peer leader ensuring that walkers felt welcome and informed about all
19 aspects of the walk (e.g., “*give them a run down on the what's going to happen, so they*
20 *don't come in cold*” Experienced peer leader, male, 75 years old). Suggestions included
21 smiling at participants and encouraging them to join.

22 *Includes all walkers.* Nineteen participants described a peer leader that
23 proactively made walkers feel part of the group, included, and accepted. Suggestions

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1 pertained to ensuring that everyone is attended to and peer leaders devoting special
2 attention to vulnerable group members (e.g., who are slower or less confident).
3 In contrast, a negative behavior included asking too many personal questions or
4 embarrassing walkers (e.g., *“If you make comments about their look or their weight or
5 something. If they are too heavy or too slim or whatever. We don’t come here to judge
6 anybody.”* Experienced peer leader, female, 66 years old)

7

8 **Relatedness theme 2: Connecting with walkers**

9 A positive social atmosphere where people talked to each other and were
10 sociable was considered important by the majority. Most (41/68) of the participants
11 mentioned behaviors that related to the peer leader proactively connecting with walkers
12 and helping them connect with each other to promote a sense of belonging and group
13 cohesion. A volunteer peer leader describes the importance of experiencing meaningful
14 connection when walking as part of a group:

15 It’s silly to be in a group where you are on your own you know. You have to mix
16 and match and find a compatible person to walk with or sit and rest with if you
17 need to rest... or just get along with. (Inexperienced peer leader, female, 70 years
18 old)

19 *Socializes with walkers.* Twenty-two participants described a leader who
20 socialized with walkers by showing interest in them and proactively initiating
21 conversation during and after the walk. Social encouragement, for example encouraging
22 walkers to return for a future walk (e.g., *“Say to them “I look forward to seeing you next
23 week.”* Experienced peer leader, female, 75 years old) or reminding them of the walk,
24 was frequently mentioned to induce a sense of belonging and social purpose. A few

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1 participants added it was particular important for the peer leader to talk loud and clear to
2 be understood by walkers with hearing problems.

3 *Promotes connection between group members.* Twenty-eight participants
4 described a peer leader who supported socialization among group members. For
5 example, introducing people to each other, creating opportunities for socialization (e.g.,
6 going for a coffee with group members after the walks) and providing help to those
7 struggling to feel connected (e.g., *“They can try and start a conversation between*
8 *different people in the group by telling them things maybe, one about the other like*
9 *“Did you know that so and so...”*. You know things they think they might have in
10 *common.*” Inexperienced group walker, female, 60 years old). However, some walkers
11 preferred to walk by themselves or disliked talking while they walked but enjoyed
12 socializing after the walks.

13 A new volunteer suggested that a group leader could promote communication
14 between group members by taking breaks during the walk and explained that: *“It’s nice*
15 *to stop and have a chat. So, you are communicating, not just walking.”* (Inexperienced
16 peer leader, female, 79 years old). Several participants mentioned the importance of the
17 peer leader organizing a social event after each walk (e.g., going for coffee after the
18 walk). Additional suggestions included a peer leader who assigned tasks to individual
19 members of the group to support group cohesion despite different walking speeds
20 within the group (e.g., *“If you have got someone or a couple of people who are really*
21 *slow. Maybe ones who are more active could sort of just stay alongside them and make*
22 *sure they are ok.”* Inexperienced peer leader, female, 75 years old).

23 **Relatedness theme 3: Caring**

24 Almost a third (21/68) of participants described behaviors that illustrated the

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1 peer leader expressing genuine care during the walks.

2 *Checks on walkers' wellbeing.* Fifteen participants suggested routinely checking
3 on group members and ensuring that no one feels left behind. This included checking on
4 their well-being (e.g., *"I like when people come and say, 'Are you ok?'"*) Experienced
5 group walker, female, 79 years old)

6 *Listens and shows compassion.* Ten participants emphasized the importance of a
7 peer leader ensuring that walkers felt cared for by showing compassion, and listening to
8 walkers, and proactively approaching walkers. Behaviors relating to care were most
9 frequently mentioned by walkers who reported living alone.

10 ***Relatedness-supportive behaviors- Comparison across sub-groups***

11 Leaders. All leaders perceived relatedness-supportive peer leader behaviors as
12 important. Frequently mentioned behaviors pertained to the peer leader being inclusive
13 and welcoming (mentioned by 23/31) and promoting socialization among group
14 members (mentioned by 22/31). Eleven leaders described caring behaviors, of which
15 most related to the leader ensuring that walkers felt good during the walk. Experienced
16 peer leaders primarily described a leader who promoted connection between group
17 members and made walkers feel welcome, cared for, and included. Inexperienced
18 leaders primarily mentioned a leader who socializes with walkers.

19 Walkers. About two thirds of the interviewed walkers (25/37) perceived it
20 important for the leader to engage in relatedness supportive behaviors. Similar to
21 leaders, many walkers mentioned behaviors relating to comfort (15/37) and connection
22 (19/37). Among walkers who mentioned connecting behaviors most (15/19) described a
23 peer leader who provided group members with an opportunity to socialize after the

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1 walk. Caring behaviors were mentioned by ten walkers of whom most (n = 8) were
2 experienced group walkers.

3 **Competence promoting behaviors**

4 The majority (48/68) of participants, described how a peer leader could support
5 walkers in feeling mentally and physically more competent at walking. Table 2
6 illustrates themes and sub-themes that were identified as competence supportive.

7 **Competence theme 1: Supporting walker confidence**

8 Several participants mentioned confidence-related barriers to participating in a
9 group walk, such as the fear of falling, being worried about not being able to keep up
10 and being left behind, and dependence on walking aids. The majority of participants
11 (42/68) mentioned behaviors relating to the theme “supporting walker confidence”.
12 Sub-themes describe how a peer leader can help walkers have a safe walking
13 experience, overcome confidence-related barriers, and feel secure at walking in a group
14 setting.

15 *Safeguards walkers.* Twenty-nine participants suggested that a peer leader
16 would need to ensure that walkers remained safe during the walk. For example, a
17 volunteer explaining the importance of safety precautions to prevent falls, stated that:
18 *“Falls are the last thing aged people need. They are too dangerous. Many people don’t*
19 *recover from falls when they are old”* (Inexperienced peer leader, female, 79 years old).
20 Suggestions included a peer leader that ensured walkers are prepared for the walk, use
21 appropriate aids (e.g., informing walkers of safety precautions, and ensuring they take
22 their medication and stay hydrated). Further suggestions described a peer leader who
23 made walkers aware of hazards, and who ensured that the walk takes place in a safe
24 environment and suited the walking requirements of group members. For example, if

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1 walkers used walking frames, flatter surfaces needed to be chosen. It also included the
2 peer leader ensuring that walks take place in good weather, during suitable hours, and in
3 a safe area (e.g., *“Safe from attacks from the people outside and from magpies.”*)
4 Inexperienced peer leader, female, 77 years old).

5 *Helps walkers overcome psychological barriers.* Twenty-three participants
6 mentioned that the peer leader could help walkers overcome psychological barriers
7 (e.g., fear of falling). Suggestions included using positive encouragement and
8 distraction. For example, a participant recommended that a peer leader could use
9 positive encouragement by saying *“do what you can and, if you can’t or are tired just*
10 *sit down.”* (Experienced group walker, female, 71 years old). It was also suggested that
11 the peer leader could proactively distract walkers from negative thoughts and anxieties
12 (e.g., boredom, fear of experiencing pain) by for example using social interaction and
13 humor (See Supplementary Section, Table S2 for an illustrative quote).

14 *Provides help and a sense of security.* Eleven participants emphasized that a
15 peer leader could promote walking confidence by being observant and proactively
16 supportive. An experienced group walker explained how an observant peer leader can
17 convey confidence:

18 There is always a risk. You fall over or something like that. And of course, they
19 (peer leaders) keep their eye on you while we are here, that makes me feel more
20 confident and more secure. (Experienced group walker, female, 70 years old)

21 Being supportive primarily entailed the peer leader being helpful when they
22 notice a walker is struggling, and ensuring they stick to their limitations. Walking close
23 to fearful walkers was another common strategy mentioned.

24 Several walkers emphasized that any form of pressure can reduce perceptions of
25 confidence, as it can be dangerous (e.g., lead to falls) and de-motivating (e.g., being

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1 discouraged because of over-exhaustion). For example, one resident who expressed
2 interest in joining a walking group emphasized that *“It has to be established from the*
3 *start- it’s a not a competition. If you complete the walk you are as good as the person*
4 *who has done it in 20 minutes earlier than me”* Inexperienced group walker, female, 71
5 years old.

6 **Competence theme 2.- Success promoting**

7 Just over a third (36/68) of the interviewed participants explained that
8 competence could be supported by a peer leader who helped walkers have a successful
9 experience.

10 *Provides guidance and opportunities for success.* Twenty-four participants
11 described a leader who provided guidance and opportunities for experiencing success.
12 Helping walkers set realistic goals/length of walks, included setting a slow pace, and
13 discouraging scenarios that were perceived as being over exhausting and overwhelming
14 (e.g., walking beyond limitations, not taking breaks). It also involved providing
15 guidance and direction (e.g., *“If you are struggling, the leader might suggest doing*
16 *something differently. Slow down a bit.”* Experienced group walker, female, 71 years
17 old).

18 *Provides specific and non-conditional praise.* Seven participants mentioned a
19 leader who provided participants with specific and non-conditional praise.
20 Congratulating walkers for achieving mini goals, including attending the walk, was
21 encouraged. On the other hand, providing praise for speed or walking performance was
22 discouraged (e.g., *“You are not setting out who comes first. Too bad if a person comes*
23 *first. You don’t reward them for coming first.* “Inexperienced group walker, female, 71
24 years old.)

1 ***Competence-supportive behaviors- Comparison across subgroups.***

2 Leaders. Most leaders (27/31) perceived it important to engage in competence-
3 promoting behaviors. Themes relating to promoting success experiences in walkers (in
4 particular positive encouragement) were mentioned by several leaders (19/31). Themes
5 relating to providing a sense of security 3/31) and safeguarding walkers (13/31) were
6 less salient among leaders. Inexperienced peer leaders primarily mentioned success-
7 promoting behaviors (13/18) and placed less emphasis on supporting walker confidence
8 (8/18). About half (7/13) of experienced peer leaders mentioned confidence and
9 success promoting behaviors.

10 Walkers. More than half of the walkers (21/37) described competence promoting
11 behaviors and mentioned behaviors supporting walker confidence. Walkers frequently
12 described a leader who prioritized preparedness, walker safety, discouraged
13 competition, and who provided positive encouragement throughout the walk. Themes
14 relating to success-promoting behaviors (7/37) were less salient in this group.
15 Competence promoting behaviors were frequently described by inexperienced walkers
16 (14/20), but were less prevalent among experienced walkers (mentioned by only 7/17).

17 **Discussion**

18 Our study explored peer leader behaviors that support the psychological needs that
19 foster self-determined motivation in older adults who walk as part of a group. We
20 identified eight sets of behaviors, which a peer leader could utilize to support autonomy,
21 competence, and relatedness in older walkers. Please see Table S5 in the supplementary
22 file for an overview of all behaviors. We further advance past research by considering
23 the divergence in the perspectives of potential providers and receivers of need-support
24 in terms of what need-support should entail. Overall, our findings extend research by
25 Hancox and colleagues (2015), who provided suggestions on how fitness instructors can

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1 support or thwart individuals' basic psychological needs. In the context of an older
2 walking group, we add the importance of a leader who ensures walkers feel welcome,
3 safeguards walkers, helps walkers overcome psychological barriers, acknowledges
4 medical requirements, discourages competition, and encourages walkers to stick to their
5 physical limitations to promote perceptions of relatedness, competence, and autonomy.
6 A walk leader who uses pressure (e.g., tells walkers that they *must* walk at a specific
7 pace), who embarrasses walkers (e.g., commenting on their appearance), or who is
8 dismissive of a group members preference was regarded as thwarting their
9 psychological needs and consequently undermining their motivation to participate
10 (Hancox et al. 2015; Edmunds et al., 2008).

11 Autonomy-enhancing behaviors such as the leader acknowledging perspectives,
12 providing walkers with options, and highlighting intrinsic goals, align with previous
13 SDT research (Edmunds et al., 2008; Hancox et al., 2015). Suggestions on providing
14 older adults with an opportunity for feedback align with research in geriatric settings
15 emphasizing that autonomy support includes recognizing and respecting older adults as
16 an individual (Souesme & Ferrand, 2019). Our findings align with research emphasizing
17 the importance of fun and intrinsic motivation for motivating older adults to participate
18 in physical activity interventions (Dacey et al., 2008; Devereux-Fitzgerald et al., 2016).
19 We extend past research by providing guidance on *how* a peer leader could make a walk
20 fun for older adults (Perkins et al., 2008) by, for example, integrating variety and adding
21 stimulating components. We also add the significance of acknowledging and adapting
22 to the medical requirements of walkers.

23 Our findings confirm the importance of a leader who promotes relatedness by
24 listening to participants, showing care, and using inclusive language (Hancox et al.,
25 2015). We further emphasize the importance of a peer leader who makes participants

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1 feel *welcome*, which aligns with research emphasizing the relevance of trust and a
2 positive “first contact” in new settings among the older population (Brooks et al., 2017;
3 Souesme & Ferrand, 2019). Socialization behaviors were primarily described by
4 leaders, which is consistent with previous findings (Chong et al., 2014; Kritz et al.,
5 2020a). However, all sub-groups described a peer leader who provides opportunities for
6 walkers to connect with each other.

7 Perkins et al. found that low self-efficacy often prevents older adults from engaging
8 in physical activity and group activities. For a younger population, confidence-related
9 barriers such as fear of falling or experiencing pain are unlikely to be relevant. Our
10 findings highlight the importance of a peer leader who helps older adults overcome such
11 barriers and distracts them from negative thoughts for supporting competence. Findings
12 by Chong and colleagues (2014) further suggest that vulnerable cohorts, such as older
13 adults who are cognitively impaired, prefer walking in a safe environment and with a
14 walking partner. Our findings add to this by highlighting the significance of
15 safeguarding behaviors among inexperienced walkers (Perkins et al., 2008). Older
16 adults who feel physically vulnerable may rely on a safe environment, including a peer
17 leader who helps them feel secure (Perkins et al., 2008).

18 The relevance of the peer leader for providing active guidance and to promote
19 positive success experiences, aligns with previous SDT research on need-supportive
20 behaviors in geriatric settings (Souesme & Ferrand, 2019). Our findings emphasize the
21 need for a leader who discourages competition and encourages walkers to stick to their
22 physical limitations to promote perceptions of competence. The importance of
23 encouraging adults to set realistic, flexible goals but focus on their own success is
24 consistent with research showing that older adults benefit from goal-setting and self-
25 monitoring (Rosenberg et al., 2015) but not evaluation (Nathan et al., 2014).

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1 We found some discrepancies in what walkers and leaders with different levels of
2 group walking experience, perceived to be motivationally supportive behaviors.
3 (Further details are provided in Table S4). Experienced leaders often shared the views
4 of walkers. For example, the provision of safety, choice and support were mentioned by
5 both group walkers and experienced leaders, however, success-promoting behaviors
6 were mainly described by inexperienced leaders. Most inexperienced leaders also
7 suggested a consensus-driven leadership style (i.e., the majority determines group
8 decisions). In contrast, experienced leaders emphasized the importance of adapting to
9 individual requirements and encouraging self-initiative. The importance of adapting to
10 individual walkers is supported by a recent longitudinal- mixed methods study which
11 found that older walk leaders who succeed and persist in their volunteering role
12 prioritize helping behaviors and adapt to the most vulnerable walkers (Kritz et al.,
13 2020c).

14 ***Strength and Weaknesses***

15 We conducted a review of the literature and could not find any prior study that
16 identified behaviors perceived as need-supportive by an older population in a physical
17 activity setting. The main strength of the present study is that it adds to the SDT
18 literature on need-supportive strategies by facilitating understanding of how
19 psychological needs can be supported in an older population. We were able to obtain a
20 diverse understanding of effective leadership behaviors by ensuring that the sample
21 represented volunteer peer leaders and walkers who varied in leadership and group
22 walking experience. Another strength is that our findings provide some building blocks
23 to train older volunteer peer leaders to be more need-supportive in future physical
24 activity interventions. Our study focused on self-determination theory and, hence, it

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1 only provides insights from one theoretical perspective. Other conceptual inputs, such
2 as the framework proposed by Morgan et al., (2019), could be used to identify how peer
3 leaders can support additional motives, such as experiencing a sense of purpose.
4 Another limitation may be that while interviews were numerous, they were relatively
5 short. Future qualitative research can provide more in-depth exploration.

6 The identified behaviors can be used in the context of an SDT-based physical
7 activity intervention to train older peer walk leaders to be motivationally supportive.
8 However, our findings may not be generalizable beyond older, white females and those
9 who are interested in group walking, providing a further avenue for future research.
10 Furthermore, our findings are limited by proposing strategies that have not yet been
11 tested for their effectiveness in such settings.

12 *Implications for practice and future research*

13 We describe specific peer leader behaviors that can support older adults to adopt and
14 maintain group walking. Our findings provide an understanding of need-supportive
15 behaviors and emphasize the importance of a walk leader who provides autonomy,
16 relatedness, and competence support. It would be useful to train older volunteer leaders
17 in the behaviors identified in this study and then examine the effects on need
18 satisfaction, self-determined motivation, and behavior maintenance in older adults.

19 The differences between inexperienced leaders and walkers suggest that future
20 peer leaders may need to be made aware of and taught skills to address this potential
21 tension. New peer leaders could be taught behaviors perceived to be supportive by
22 walkers and experienced leaders to help them succeed and persist in their role (Kritz et
23 al., 2020). For example, they should prioritize helping walkers feel safe, refrain from
24 pressurizing language, promote self-initiative, focus on being welcoming and provide

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1 socialization opportunities after the walk. Leaders could also learn to deal with potential
2 differences in relatedness, autonomy, and competence-supportive leader behaviors
3 expected by walkers.

4 Future research can quantitatively evaluate the extent to which the described
5 strategies can be taught to older peer leaders and are effective at promoting need
6 satisfaction and self-determined motivation in the context of a peer-led walking
7 intervention.

8

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23 **Conflicts of Interest:** None to declare.

24 **Data availability statement:**

25 The authors confirm that the data supporting the findings of this study are available
26 within the article and its supplementary materials.

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NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

1 **Tables**

Table 1

Participant Characteristics by Sub-group

Characteristics	All (N = 68)	Inexperienced group walker (N = 20)	Experienced group walker (N = 17)	Inexperienced peer leader (N = 18)	Experienced peer leader (N = 13)	
MAge (SD, range) in years	74.68 (7.78, 60-93)	78.90 (10.44, 60-93)	72.88 (5.79, 64-85)	72.72 (4.99, 63-80)	73.23 (6.55, 65-88)	
Gender (Female, %)	84	90	78	94	69	
Ethnicity (White, %)	93	100	71	100	100	
Australian born (%)	46	45	53	44	54	
Living alone (%)	68	80	59	72	54	
Marital Status (%)	Married	32	20	41	28	46
	Widowed	34	45	29	22	39
	Separated/ Divorced	25	30	6	44	15
	Never married	9	5	24	6	0
Highest level of education (%)	Secondary education	52	70	41	44	46
	Vocational training	22	5	29	17	46
	College or university	26	25	30	39	8
Employment (%)	Employed	10	20	0	6	15
	Retired	90	80	100	94	85
Health (%)	Using an assistive device	19	40	12	11	8
	Current health issue	38	40	47	33	31
	Had a major life event in the last 6 months	41	45	59	22	39

2 *Note.* M = mean, SD = standard deviation

3 There was no statistical difference in demographics of leaders vs. walkers, and inexperienced vs.
 4 experienced peer leaders. Experienced walkers were more likely to be married ($p > 0.01$) than
 5 inexperienced walkers but did not differ on any other demographic variables.

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NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

Table 2

Themes, Sub-themes and Illustrative Quotes

Themes and description	Subthemes	Illustrative quote
Autonomy theme 1: Attracting interest from walkers Provides walkers with a meaningful reason to walk as part of a group. Combines walking with fun, variety and positive stimulation	Combines walking with fun and positive stimulation Emphasizes intrinsic benefits Provides Variety	To want to come again, they have to feel good after they have done their walk. Say “This was a good...what a great half an hour have we done”. And laugh. It needs to be fun, not just all hard work. (IGW)
Autonomy theme 2: Acknowledging requirements and perspectives of walkers Recognizing the needs, preferences and requirements of every group member	Elicits individual input Consensus driven leadership style	You need to get them to voice what they want. "Out of this group where is it that you want to go? How long do you want to go? (IPL)
Autonomy theme 3: Adapting to walkers’ preferences and requirements Accommodates walker’s needs	Provides choice and structure Supports self-initiative and exploration	Let them know, that you are prepared to do it at their pace or their choice. To me that’s important. A lot of older people that aren’t as fit are losing choices. (IGW)
Relatedness theme 1: Comforting Shows warmth and ensures walkers feel comfortable and accepted	Welcomes and informs walkers Includes all walkers	Keep saying “You are welcome. You are welcome to join any time you want. You are not excluded if you don’t come to one class. (IGW)
Relatedness theme 2: Connecting Helps walkers experience meaningful connection	Socializes with walkers Promotes connection between group members	If we see somebody alone, we say “ok, talk to her, talk to her”. We match-make. Because it’s nice to talk to somebody. (EPL)
Relatedness theme 3: Caring Ensures walkers feel understood and cared for	Checks on walker’s wellbeing Listens and shows compassion	If I get breathless, I just stop, or I sit down. Sometimes I didn’t feel good or my knee hurt, or my foot hurt or my back hurt. And then I can just sit down. And then I like when people come and say, “Are you ok?” (EGW)
Competence theme 1: Supporting walker confidence Ensures that walkers remain safe and feel secure	Safeguards walkers Helps walkers overcome psychological barriers Provides help and a sense of security	You need to explain to them “Watch where you are walking”. Constantly saying “Watch where you place your feet, so you don’t fall. (IPL) If someone was very fearful, I tend to walk near them. So sometimes if you are with a more confident person, it gives you confidence. (EPL)
Competence theme 2: Success promoting. Helps walkers feel effective and successful	Provides guidance and opportunities for success Provides specific and non-conditional praise	Walking with them and saying, “Oh you did well this week”. And say, “Today you are doing a lot better than you did last week”. “I think just mainly praise and making them positive at their pace. (EPL)

Note. IGW = Inexperienced group walker, IPL = Inexperienced peer walk leader, EPL = Experienced peer walk leader, EGW = Experienced group walker

NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

1 **Figure 1: Schematic Diagram Illustrating Themes and Sub-themes**



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2 **Supplementary Section**

Table S1

Examples of Autonomy-supportive Behaviors

Themes and Sub-themes	Illustrative quote
Autonomy theme 1: Attracting interest from walkers	
<p>Combines walking with fun and positive stimulation</p> <p>Provides social, physical, environmental and intellectual stimulation, use of humor and fun</p>	<p>To want to come again, they have to feel good after they have done their walk. Say “This was a good...what a great half an hour have we done”. And laugh. It needs to be fun, not just all hard work. (IPL)</p>
<p>Emphasizes intrinsic benefits</p> <p>Emphasizes health benefits, security, social aspects, and other enjoyable aspects of walking in a group</p>	<p>You could point out that it’s not something they got to do. It’s something they want to do. It will help them- help their circulation. (IPL)</p>
<p>Provides variety</p> <p>Varies the route, provides walkers with the opportunity to see new places</p>	<p>You can’t be doing the same thing over and over. I think, if you are walking, you need to go in different areas. (IGW)</p>
Autonomy theme 2: Acknowledging requirements and perspectives of walkers	
<p>Elicits individual input</p> <p>Asks individual walkers to state their requirements and perspective</p> <p>Is receptive to suggestions and feedback</p>	<p>Every few weeks have a little group discussion and just get feedback on how they are managing it. As an ambassador that’s your responsibility that everybody has input. (IPL)</p>
<p>Consensus driven leadership style</p> <p>Asks for group input before making decisions</p> <p>Is receptive to suggestions and feedback</p>	<p>You need to get them to voice what they want. Say "Out of this group where is it that you want to go? How long do you want to go?" (IPL)</p>
Autonomy theme 3: Adapting to walker’s preferences and requirements	
<p>Provides choice and structure</p> <p>Accommodates different and changing abilities and preferences, provides opportunities for breaks, to stop early, start late and attend without commitment</p>	<p>You could say "Ok we will do the short walk on a Monday; we will do the longer walk on a Wednesday". (IGW)</p>
<p>Supports self-initiative and exploration</p> <p>Encourages walkers to become aware and respond to their individual needs, leads from behind. Allows walkers to determine their own pace, intensity and frequency</p>	<p>Let’s just take it slowly", "See how we go". "If you don’t like it, it doesn’t matter". Don’t put any pressure. If you give people an out, they’ll often come in." (IPL)</p>

Note. IGW = Inexperienced group walker, IPL = Inexperienced peer walk leader EPL = Experienced peer walk leader, EGW = Experienced group walker

NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

Table S2

Examples of Relatedness-supportive Behaviors

Themes and sub-themes	Illustrative quotes
Relatedness theme 1: Comforting	
<p>Welcomes and informs walkers</p> <p>Welcomes walkers when they arrive. Informs walkers of the rules, meet-up times Is approachable and answers questions</p>	<p>You welcome them at the door and then when you are going around you say "Hello, how are you?" This makes them feel good. (EPL)</p> <p>I give a hug to everybody because sometimes this is the only hug they have during the day. Because if you live alone you don't have anybody to kiss you and say something. I think it's a warm thing to do. (EPL)</p>
<p>Includes all walkers</p> <p>Accepts and includes walkers regardless of their capability, age and background Respects privacy, individual preferences Is non-judgmental, understanding and avoids embarrassing walkers</p>	<p>If they don't feel part of it, they won't come back. So, you to make them feel welcome and make them feel part of the group, right from the beginning" (EPL)</p> <p>Come to their level so that everyone is included, and you know nobody feels that they are inferior or "I can't do this" or "Look how far ahead they are. (IPL)</p> <p>Try and make them feel comfortable. Say "You are allowed to be frightened. There is nothing wrong with that. Don't beat yourself up about that. But just look this person. She had a friend who was like that. She is ok now. (IPL)</p>
Relatedness theme 2: Connecting	
<p>Socializes with walkers</p> <p>Initiates conversation with walkers Shows genuine interest in walkers (e.g., social encouragement- reminds them of walk, remembers names, encourages them to come back)</p>	<p>Some residents here, I know, are very shy. But just introduce yourself, say "Hello". And draw them out. (IPL)</p> <p>I think they have got to be motivated. Somebody to say 'Come on, you are alright today. Lovely sunny day let's go' sort of thing. (IPL)</p>
<p>Promotes connection between group members</p> <p>Introduces walkers to each other Organizes social events</p>	<p>If we see somebody alone, we say "ok, talk to her, talk to her". We match-make. I oversee, those walking alone. Because it's nice to talk to somebody. (EPL)</p>
Relatedness theme 3: Caring	
<p>Checks on walker's well-being</p> <p>Approaches walkers during and after the walk and checks that they are ok and feeling comfortable</p>	<p>It's good maybe just to check in with people, like you know. "Are you ok walking on the ground". Just check in with people. (IGW)</p> <p>If I get breathless, I just stop, or I sit down. Sometimes I didn't feel good or my knee hurts, or my foot hurts or my back hurts. And then I can just sit down. And then I like when people come and say, "Are you ok?" (EGW)</p>
<p>Listens and shows compassion</p> <p>Listens to walkers' problems Ensures walkers feel good Empathizes (e.g., cares about their well-being-is happy with walkers when they succeed,)</p>	<p>Some can walk further than others. So, you would really need to say "Do you want someone to stop with you while you sit here. You might not feel as if you want to be alone. (IPL)</p>
<p><i>Note.</i> IGW = Inexperienced group walker, IPL = Inexperienced peer walk leader EPL = Experienced peer walk leader, EGW = Experienced group walker</p>	

NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

Table S3

Examples of Competence-supportive Behaviors

Themes and Sub-themes	Illustrative quote
Competence theme 1: Supporting walker confidence	
Safeguards walkers	
Checks walkers are prepared for the walk	
Is aware of health conditions and emergency contacts	The walk leaders must know what people’s medical problems are...say “I am sorry, I am being very personal, but do you have any medical problems that we are not aware of...is there something we should be watching out for? (EPL)
Informs walkers of safety rules	
Plans ahead a safe route (e.g., ensures opportunities for rest and safe walking paths	You need to explain to them “Watch where you are walking” and “Be careful, we have the honkey nuts from the trees. They can break your ankle if you twist it. Constantly saying “Watch where you place your feet, so you don’t fall”. (IPL)
Warns walkers of hazards during the walk	
Helps walkers overcome psychological barriers	
Provides positive encouragement	For me walking in a group is all about distraction. It’s nice for them (peer leaders) to talk to us. When you are talking, you don’t know how much you walk, because you are distracted. (IGW)
Distracts walkers from negative thoughts (e.g., makes jokes or walks and talks with walkers)	
Provides help and a sense of security	
Ensures walkers feel safe and stick to limitations (e.g., offers help, walks beside fearful walkers, encourages struggling walkers to take a break, discourages competition)	If anyone says, “Oh look I am not feeling ...My legs are hurting” say “Please go and sit down, the couch is up further. (EPL)
Competence theme 2: Success-promoting	
Provides guidance and opportunities for success	
Guides walkers towards setting individual, achievable and specific mini goals	It’s matter of finding out, how far people could walk and don’t do too much, so they are motivated to come back again. (IPL)
Repeats instruction and guidance if necessary	
Provides specific and non-conditional praise	
Praises achievements using specific, non-conditional feedback	Walking with them and saying, “Oh you did well this week”. And “Today you are doing a lot better than you did last week”. I think just mainly praise and making them positive at their pace. (IPL)
Focuses on individual success	

Note. IGW = Inexperienced group walker, IPL = Inexperienced peer walk leader

EPL = Experienced peer walk leader, EGW = Experienced group walker

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NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

Table S4

Number and Percentage of Participants Mentioning Themes and Sub-themes Within each Sub-group

Themes and sub-themes	Walkers			Leaders	
	Overall <i>N</i> = 68	IGW <i>N</i> = 20	EGW <i>N</i> = 17	IPL <i>N</i> = 18	EPL <i>N</i> = 13
Autonomy, <i>n</i> (%)^a	62 (91%)	18 (91%)	13 (90%)	18 (77%)	13 (100%)
Theme 1: Attracting, <i>n</i>	19	8	3	7	1
Combines walking with fun and positive stimulation, <i>n</i>	12	7	0	5	0
Emphasizes intrinsic benefits, <i>n</i>	9	1	3	4	1
Provides variety, <i>n</i>	5	1	2	2	0
Theme 2: Acknowledging, <i>n</i> (%)	31	9	2	17	3
Elicits individual input, <i>n</i>	20	6	1	10	3
Consensus driven leadership style, <i>n</i>	20	3	1	16	0
Theme 3: Adapting, <i>n</i>	51	13	13	12	13
Provides choice and structure, <i>n</i>	51	13	13	12	13
Promotes self-initiative and exploration, <i>n</i>	33	3	13	4	13
Relatedness, <i>n</i> (%)^a	56 (83%)	12 (60%)	13 (77%)	18 (100%)	13 (100%)
Theme 4: Comforting, <i>n</i>	38	5	10	11	12
Welcomes and informs, <i>n</i>	25	3	6	4	12
Includes all walkers, <i>n</i>	19	2	5	7	5
Theme 5: Connecting, <i>n</i>	41	10	9	13	9
Socializes with walkers, <i>n</i>	22	3	4	10	5
Promotes connection between group members, <i>n</i>	28	7	6	7	8
Theme 6: Caring, <i>n</i>	21	2	8	4	7
Checks on walkers wellbeing, <i>n</i>	15	1	7	1	6
Listens and shows compassion, <i>n</i>	10	1	3	3	3
Competence, <i>n</i> (%)^a	48 (71%)	14 (70%)	7 (41%)	18 (100%)	9 (69%)
Theme 7: Supporting, <i>n</i>	42	14	7	14	7
Safeguards walkers, <i>n</i>	29	11	5	8	5
Helps walkers overcome psychological barriers, <i>n</i>	23	6	4	8	5
Provides help and a sense of security, <i>n</i>	11	3	5	1	2
Theme 8: Success-promoting, <i>n</i> (%)	26	4	3	13	6
Provides guidance and opportunities for success, <i>n</i>	24	4	3	13	4
Provides specific and non-conditional praise, <i>n</i>	7	1	0	2	4

Note. IGW = Inexperienced group walker, EGW = Experienced group walker, IPL = Inexperienced peer leader, EPL = Experienced peer leader

^a = (n)% = the number and percentage of participants who stated that a peer leader is important for supporting the respective need.

NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

Table S5

Practical Overview of Key Strategies for Supporting the Three Psychological Needs

Need	Goal	Key Strategies
Autonomy	<p>Attracting</p> <p>Helps walkers recognize reasons that make them <i>want</i> to take part in the group walk</p>	<p>Describes aspects about the group walk that are perceived as enjoyable, interesting and beneficial (e.g., socialization, health benefits, fun experience, safe setting).</p> <p>Combines the walk with interesting and fun experiences (e.g., narrating the environment, humor, group socials).</p> <p>Varies the walking route (e.g., walking to a different destination each time).</p>
	<p>Acknowledging</p> <p>Ensures that all group members express their requirements and preferences</p>	<p>Asks individual walkers about their requirements, preferences and ideas. Is open to feedback.</p> <p>Asks the walkers to vote for or against presented options when making decisions as a group.</p>
	<p>Adapting</p> <p>Ensures that requirements and preferences of all group members are met</p>	<p>Provides individual walkers with a choice (e.g., walking intensity, length of the walk, and level of commitment).</p> <p>Encourages walkers to stick to their limitations, adapts to their level and refrains from pressure.</p>
Relatedness	<p>Comforting</p> <p>Ensures that all participants feel comfortable and accepted as a group member</p>	<p>Welcomes walkers, is approachable, smiles at them, greets them, informs them of all aspects of the walk, answers questions and introduces them to the group.</p> <p>Accepts and includes walkers regardless of their capability, age and background. Leads from behind. Is non-judgmental and tactful (e.g., does not comment on appearance).</p>
	<p>Connecting</p> <p>Ensures that all group members feel socially integrated</p>	<p>Proactively approaches walkers and engages in conversation with them, remembers their name and shows interest in their life.</p> <p>Introduces walkers to each other, matches up walkers with a walking a similar pace, encourages walkers to watch out for each other, delegates tasks to individual walkers, organizes social events after the walk.</p>
	<p>Caring</p> <p>Listens to and cares for walkers</p>	<p>Checks on the well-being of walkers during and after the walk and ensures that they feel good.</p> <p>Actively listens to walkers, empathizes with walkers, shows compassion.</p>
Competence	<p>Supporting</p> <p>Helps walkers overcome barriers and build confidence for group walking</p>	<p>Safeguards walkers by ensuring they are prepared, planning a safe route and warning them of hazards during the walk.</p> <p>Provides positive encouragement and distracts walkers from negative thoughts and anxieties.</p> <p>Provides help and a sense of security (e.g., walks next to fearful walkers, ensures walkers stick to limitations).</p>
	<p>Success-promoting</p> <p>Helps walkers experience success and meet individual goals</p>	<p>Helps walkers formulate achievable and individual goals.</p> <p>Provides non-conditional and specific praise focused on effort instead of achievement.</p>

NEED-SUPPORTIVE OLDER PEER WALK LEADER BEHAVIORS.

1 Figures

2 Figure S1

3 Schematic Diagram Illustrating Summaries of Themes, Sub-themes and Codes



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1 **Additional information on study participants and recruitment procedures**

2 Participants for this study were derived from a larger mixed-methods study on
3 perceptions of ideal older peer leader attributes (Kritz et al., 2020a). Kritz et al. (2020a)
4 used snowball sampling to purposefully recruit 101 participants, aged between 60 and
5 93 years, from mall walking groups and retirement villages in and around Perth,
6 Western Australia. The sample of the study by Kritz et al. consisted of walkers (n = 61)
7 and peer leaders (n = 40), aged 60 or older. Experienced peer leaders (n =15) and
8 experienced group walkers (n =18) had been recruited from existing mall walking
9 groups in Perth and included participants who had participated in regular group walks
10 (at least once per week) for a minimum of six months. Inexperienced group walkers (n
11 =43) and inexperienced peer walk leaders (n = 25) had been recruited from retirement
12 villages in and around Perth. Inexperienced group walkers were physically inactive
13 retirement village residents who expressed interest in joining a group as a walker.
14 Inexperienced peer walk leaders (n = 25) were residents who had never led a walking
15 group before and expressed interest in volunteering as a group walk leader in their
16 retirement village. Retirement village residents were recruited as part of the Residents in
17 Action trial (RiAT). RiAT was a quasi-experimental trial that explored the feasibility
18 and efficacy of a physical activity intervention to promote walking behavior in older
19 adults living in retirement villages (Thøgersen-Ntoumani et al., 2019; Thøgersen-
20 Ntoumani et al., 2017).