

Is Older People's Perception of Neighbourhood Open Space Associated with Patterns of Outdoor Activity?

Takemi Sugiyama
Catharine Ward Thompson
OPENspace Research Centre, Edinburgh College of Art/Heriot-Watt University
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Abstract

Abundant evidence indicates that a physically active lifestyle has substantial health and mental benefits for older people. Recent studies have begun to explore the role of neighbourhood environments in facilitating/hindering people's physical activity. However, little is known about whether neighbourhood open spaces in particular are associated with older people's outdoor activities and what aspects of such spaces might be significant. This study investigates the relationships between older people's outdoor activity pattern and the perceived quality of neighbourhood open spaces. A cross-sectional survey collected data from 280 older people over 65 living in the UK. Logistic regression analysis indicated that the perceived quality of paths to local open spaces was a significant predictor of the time participants spend in walking and other outdoor activities. Pleasantness of open spaces, good facilities and water features were also found to be associated with their walking or outdoor activity time. The findings further reinforce the significance of neighbourhood environments in promoting activity among older people.

Keywords: older people, outdoor activity, walking, neighbourhood open space

Introduction

A growing body of research demonstrates the many positive effects of physical activity in late life. Participation in regular moderate physical activity is known to maintain the independence of older adults and enhance their quality of life by preventing or delaying the onset of common chronic diseases (e.g., Mazzeo et al., 1998; Singh, 2002), improving physical function (e.g., Brach et al., 2003; Keysor & Jette, 2001), decreasing the risk of falling (e.g., Skelton, 2001), enhancing cognitive performance (e.g., Weuve et al., 2004; Yaffe et al., 2001), reducing the risk of depression (e.g., Strawbridge, Delger, Roberts, & Kaplan, 2002), and relieving insomnia symptoms (e.g., Morgan, 2003). Substantial scientific evidence has led to national efforts to promote physically active lifestyles in many countries (e.g., Department of Health, 2004; National Blueprint, 2001; Physical Activity Task Force, 2003). However, despite various intervention efforts to promote activity, the majority of older people in westernised countries are not sufficiently active (Brown, Yore, Ham, & Macera, 2005; Crombie et al., 2004).

Commonly cited reasons for inactivity among older people include lack of interest, physical problems (e.g., fatigue, joint pain), perceived fitness and no activity companion (Crombie et al., 2004; Satariano, Haight, & Tager, 2000). However, the literature has also shown that various aspects of people's neighbourhood environment are relevant to physical activity: aesthetics, access to services, land use mix, street connectivity, pavement and traffic (e.g., Ainsworth et al., 2003; Frank et al., 2005; Giles-Corti & Donovan, 2002; Humpel et al., 2004). Recent research has established that the quality of this wider neighbourhood environment may be associated with older people's activity patterns (e.g., King et al., 2005; Li, Fisher & Brownson, 2005; Schutzer & Graves, 2004). In the light of this, it has been argued that the focus of activity promotion research needs to shift from individual-based approaches to more ecological approaches that involve various dimensions including physical environments (Rikli, 2005). To date, although a few studies have examined the influence of open spaces on health in general (e.g., De Vries, Verheij, Groenewegen, & Spreeuwenberg, 2003; Takano, Nakamura, & Watanabe, 2002), little research has investigated whether and to what extent natural or green local open spaces in particular are associated with older people's outdoor activity. In addition, there is a lack of evidence about what specific physical environmental attributes within open spaces might influence physical activity.

"Activity" in the health promotion literature normally refers to moderate intensity physical activity involving substantial energy expenditure such as brisk walking (Eyler, Brownson, Bacak, & Housemann, 2003; US Department of Health and Human Services, 1996). Neighbourhood open space (NOS) is an important resource for daily recreational activities (e.g., Department for Transport, Local Government and the Regions [DTLR], 2002). However, providing opportunities for physical activity is not the only source of benefit NOS offers. People also visit parks and other natural environments to relax, to meet people or simply to escape from the everyday routine. For instance, research has demonstrated that the contact with natural elements in green spaces can have restorative or stress-reduction effects (e.g., Grahn & Stigdotter, 2003; Hartig et al., 2003). Social interaction and engagement with a social network, which can be developed and maintained through the use of NOS (Kuo, Sullivan, Coley, & Brunson, 1998), are known to promote people's health, function and psychological well-being (e.g., Cohen, 2004; Kawachi & Berkman, 2001). To enjoy such benefits from natural open spaces, it is not necessary to engage in vigorous physical activity.

The present study aims to identify the extent to which the perceived quality of NOS and access to such spaces might account for older people's outdoor activity patterns. In the light of the psychosocial benefits of outdoor open spaces, the study incorporates both moderate intensity physical activity, such as brisk walking, and less intensive activities, such as strolling around and gardening, into the scope of outdoor activity. The NOS in the study refers to local, public, green open spaces, which include parks, community gardens, play and sports areas, village greens, river or canal banks, beaches, etc., all of which come under the category of publicly available open space.

Methods

Data Collection Procedure

Three different methods were taken to collect data from older people over 65 living in the UK. A questionnaire was mailed directly to 1818 people randomly sampled (stratified by gender) from 20 local authorities. These locations were chosen considering population distribution, geographic location, urban/rural areas and types of industry (17 from England, 2 from Scotland and 1 from Wales). Four weeks after the questionnaires were sent out, about half of the non-responders were contacted by telephone to be reminded of the survey. The total number of responses after the follow-ups was 162, excluding 40 invalid cases (deceased, too ill, younger than 65, or wrong address) (9% response rate). The telephone follow-ups indicated that the majority of non-responders did not reply because they were not interested in outdoor activities. To obtain data from this stratum of the older population, people living in sheltered accommodation were approached through local housing associations and city councils in the same 20 locations. Twelve organisations agreed to distribute the questionnaire in their housing schemes, and 96 responses were obtained (42% response rate). The responses in the above data collection included very few people from minority ethnic backgrounds. However, the census shows that 8% of the UK population is from minority ethnic groups (Office of National Statistics, 2003) and it is reported that such groups use parks differently from the majority population (Tinsley, Tinsley, & Croskeys, 2002). To address this gap, two translated sessions were held, facilitated by minority ethnic support organisations and gathered 22 valid responses (15 Asian in London and 7 Chinese in Edinburgh). The total number of responses was 280, and the overall response rate 14%. Data collection was carried out between April and July 2005.

Measures

The outcome variable for the study was the level of outdoor activity. Participants were asked to recall the frequency of four types of outdoor activities (walking to go to places, walking for recreation (including dog walking), gardening, other outdoor activities) in both a typical Summer and a typical Winter month, and the average amount of time they spend outdoors each time, for each activity. From the information, each participant's total time spent outdoors (TT), walking time (WT) and other outdoor activity time including gardening (AT) were calculated ($TT = WT + AT$). Each outdoor activity measure was dichotomised using the cut points of 5 hour/week in TT, 2.5 hour/week in AT, and 1.5 hour/week in AT. Two and half hours per week in the case of WT coincided with the often-used recommendation of sufficient level of activity, i.e., at least 30 minutes a day, 5 days a week (e.g., Department of Health, 2004).

To measure the perceived quality of and access to NOS, a 26-item scale was

constructed, covering statements about different attributes of the environment and elements within it. Participants were asked to rate each item on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree.” The instrument was developed drawing on focus group interviews conducted earlier, similar scales produced by Saelens, Sallis, Black, and Chen (2003) and Humpel et al. (2004), and various relevant design guidelines (e.g., Civic Trust, 2004; DTLR, 2002). In addition to the items about perceived quality, the time taken to get to the most often used NOS and the normal means to get there (by foot, by car or by public transportation) were also asked for.

Demographic variables collected in the questionnaire were the following: age, sex, ethnicity, living arrangement (living in own home or in shelter/care home), living alone or not (living alone or with someone), living in urban or rural area derived from postcode using “All Fields Postcode Directory” (ONS Geography, 2005), education (the age formal education finished) and former occupation.

Analysis

Of those who responded, 8 people were totally home bound (no outdoor activity), thus excluded from analysis, as were a further 12 responses because of a lack of valid information on outdoor activity. The total sample size analysed in the present study was 260. Table 1 shows demographic characteristics of the sample.

Table 1. Demographic characteristics of the participants

	Female <i>n</i> (%)	Male <i>n</i> (%)	Total <i>n</i> (%)
Age			
65-74	83 (57)	42 (43)	125 (51)
75-84	48 (33)	44 (45)	92 (38)
85+	15 (10)	12 (12)	27 (11)
Ethnicity			
White	138 (91)	90 (87)	228 (90)
Others	13 (9)	13 (13)	26 (10)
Living Arrangement			
Own home	96 (64)	72 (71)	168 (66)
Shelter/care home	55 (36)	30 (29)	85 (34)
Living Alone or Not			
Alone	101 (67)	36 (35)	137 (54)
With someone	50 (33)	66 (65)	116 (46)
Education			
Finished 16 or before	114 (76)	75 (74)	189 (75)
Finished after 16	36 (24)	27 (26)	63 (25)
Former Occupation			
Routine	63 (45)	41 (42)	104 (44)
Non-routine	78 (55)	56 (58)	134 (56)
Living in Urban/Rural Area			
Urban	118 (79)	82 (82)	200 (80)
Rural	32 (21)	18 (18)	50 (20)
Total	156	103	259

Principal component analysis with Varimax rotation was performed on 23 items with regard to the perceived quality of NOS. Three items that did not exhibit significant association with the outdoor activity measures were excluded from the analysis. Six components, which accounted for 57% of the total variance, were extracted. Table 2 shows component loading. Items with loading smaller than 0.6 were omitted from the table. These dimensions can be interpreted as “pleasant NOS,” “good paths to NOS,” “safety,” “water features nearby,” “nuisance in NOS” and “good facilities in NOS.” An arithmetic mean of the items in each component was calculated and used as the component score.

Table 2. Loading for perceptual dimensions of a neighbourhood open space (NOS) and larger neighbourhood area

Item	1	2	3	4	5	6
NOS is clean and well maintained.	.77					
Trees and plants in NOS are attractive.	.77					
NOS is good for children to play in.	.69					
NOS is good for chatting with people.	.61					
The paths to NOS are easy to walk on.		.77				
The paths to NOS are enjoyable to walk through.		.75				
There are no obstacles to get into NOS.		.62				
NOS is safe to walk after dark.			.90			
The paths to NOS are safe to walk after dark.			.90			
There is a river, canal or beach where I can walk along near my home.				.74		
NOS has an attractive water feature.				.71		
Youngsters hanging around in NOS are a problem in my neighbourhood.					.80	
Dog and dog fouling make NOS unpleasant.					.75	
There are enough seats to rest on in NOS.						.73
There are good facilities (toilets, shelters) in NOS.						.67
% Variance explained	22.3	9.3	7.4	6.4	6.3	5.3

A series of logistic regression analysis were performed using SPSS version 13.0. Three outdoor activity measures (TT, WT, AT) were analysed separately. In each regression analysis, the demographic variables of age, sex, living arrangement, living alone or not, education and former occupation were entered in step 1 to adjust for their effects. Ethnicity and living in urban or rural area were not included because chi-square analysis found no significant associations between them and the outdoor activity measures. The distance to NOS, which was dichotomised using 10-minute walk as a threshold, was entered in step 2. Six dimensions of the perceived quality of neighbourhood environments were added stepwise (forward, likelihood ratio) in step 3. Significance was accepted at an alpha level of 0.05.

Results

Table 3 shows the results of logistic regression analysis predicting the likelihood

of high-level outdoor users (TT > 5 hour/week). On the first step of the analysis, it was found that people living in their own home are almost 3 times (1/0.34) more likely than people living in shelter/care home to attain the high level of total outdoor time. The second step indicated that the distance to NOS was not a significant predictor of the amount of time the participants spend outdoors. Stepwise addition of the perceived environmental variables revealed that, after adjusting for the identified sociodemographic variables, “good paths to NOS” (odds ratio [OR] = 1.57, 95% confidence interval [CI]: 1.13-2.19) and “good facilities in NOS” (OR = 1.57, 95% CI: 1.14-2.15) were associated with a participant’s total outdoor time.

Table 3. Odds ratios (95% confidence interval) for associations of demographic and environmental variables with high-level total outdoor time (TT > 5 hour/week)

	Step 1 ^a	Step 2 ^b	Step 3 ^c
Age			
65-74	1.00	1.00	1.00
75+	0.68 (0.35-1.31)	0.69 (0.35-1.34)	0.71 (0.35-1.43)
Sex			
Female	1.00	1.00	1.00
Male	1.11 (0.54-2.25)	1.12 (0.55-2.29)	1.07 (0.50-2.29)
Living Arrangement			
Own home	1.00	1.00	1.00
Shelter/care home	0.34 (0.17-0.68)**	0.36 (0.18-0.72)**	0.45 (0.20-1.00)
Living Alone or Not			
Alone	1.00	1.00	1.00
With someone	1.27 (0.63-2.53)	1.23 (0.61-2.46)	1.36 (0.65-2.85)
Education			
Finished 16 or before	1.00	1.00	1.00
Finished after 16	2.00 (0.89-4.50)	2.11 (0.93-4.78)	2.14 (0.90-5.11)
Former Occupation			
Routine	1.00	1.00	1.00
Non-routine	1.18 (0.58-2.37)	1.11 (0.55-2.25)	1.04 (0.49-2.20)
Distance to NOS			
Within 10 min walk		1.00	1.00
Beyond 10 min walk		0.55 (0.28-1.06)	0.77 (0.37-1.60)
Perceived Environment			
• Good paths to NOS			1.57 (1.13-2.19)**
• Good facilities in NOS			1.57 (1.14-2.15)**

* $p < .05$, ** $p < .01$

^a Step 1: Age, sex, living arrangement, living alone or not, education and occupation forced enter

^b Step 2: Distance to NOS forced enter

^c Step 3: Six perceived environmental scores added stepwise (forward, likelihood ratio)

The results of the second logistic regression, where the dependent variable was total walking time (WT > 2.5 hour/week) were shown in Table 4. In this model, participant’s age was found to be a significant predictor of high-level walking time. Participants over 75 years old were approximately 50% less likely to do a sufficient

amount of walking in comparison to those between 65 and 74 years old. The distance to NOS was also significantly associated with walking time. The odds of people living within a 10-minute walk distance from NOS achieving 2.5 hour/week of walking were twice of those of people living beyond a 10-minute walk distance. Perceived environmental variables that made a significant contribution to the prediction of walking time were “pleasant NOS” (OR = 1.58, 95% CI: 1.10-2.26) and “good paths to NOS” (OR = 1.37, 95% CI: 1.00-1.86).

Table 4. Odds ratios (95% confidence interval) for associations of demographic and environmental variables with high-level walking time (WT > 2.5 hour/week)

	Step 1 ^a	Step 2 ^b	Step 3 ^c
Age			
65-74	1.00	1.00	1.00
75+	0.48 (0.25-0.91)*	0.48 (0.25-0.92)*	0.47 (0.24-0.93)*
Sex			
Female	1.00	1.00	1.00
Male	1.19 (0.60-2.37)	1.21 (0.60-2.45)	1.24 (0.60-2.57)
Living Arrangement			
Own home	1.00	1.00	1.00
Shelter/care home	0.54 (0.27-1.08)	0.58 (0.29-1.16)	0.77 (0.36-1.65)
Living Alone or Not			
Alone	1.00	1.00	1.00
With someone	1.02 (0.52-2.00)	0.96 (0.48-1.91)	1.03 (0.50-2.11)
Education			
Finished 16 or before	1.00	1.00	1.00
Finished after 16	1.00 (0.47-2.13)	1.05 (0.49-2.26)	1.01 (0.45-2.26)
Former Occupation			
Routine	1.00	1.00	1.00
Non-routine	1.79 (0.90-3.53)	1.66 (0.83-3.33)	1.70 (0.82-3.51)
Distance to NOS			
Within 10 min walk		1.00	1.00
Beyond 10 min walk		0.46 (0.24-0.88)*	0.58 (0.29-1.17)
Perceived Environment			
• Pleasant NOS			1.58 (1.10-2.26)*
• Good paths to NOS			1.37 (1.00-1.86)*

* $p < .05$, ** $p < .01$

^a Step 1: Age, sex, living arrangement, living alone or not, education and occupation forced enter

^b Step 2: Distance to NOS forced enter

^c Step 3: Six perceived environmental scores added stepwise (forward, likelihood ratio)

Table 5 summarises the results of the third logistic regression analysis for attaining high-level of other outdoor activity time (AT > 1.5 hour/week). In this case, respondent’s living conditions were found to be associated with the dependent variable. People living in shelter/care home were 69% less likely than people living in their own home to achieve 1.5 hour/week of outdoor activity, and people living with someone were 2.17 times more likely to do so in comparison to those living alone. The second step of the analysis showed that the distance to NOS was not relevant to

outdoor activity time. Two perceived environmental variables contributed significantly to the prediction of high-level outdoor activity time. One was “good paths to NOS” (OR = 1.51, 95% CI: 1.08-2.11), and the other was “water features nearby” (OR = 1.37, 95% CI: 1.05-1.79).

Table 5. Odds ratios (95% confidence interval) for associations of demographic and environmental variables with high-level other outdoor activity time (AT > 1.5 hour/week)

	Step 1 ^a	Step 2 ^b	Step 3 ^c
Age			
65-74	1.00	1.00	1.00
75+	0.64 (0.32-1.28)	0.64 (0.32-1.28)	0.71 (0.35-1.45)
Sex			
Female	1.00	1.00	1.00
Male	1.47 (0.71-3.04)	1.48 (0.71-3.05)	1.74 (0.81-3.75)
Living Arrangement			
Own home	1.00	1.00	1.00
Shelter/care home	0.31 (0.15-0.64)**	0.31 (0.15-0.65)**	0.50 (0.23-1.11)
Living Alone or Not			
Alone	1.00	1.00	1.00
With someone	2.17 (1.07-4.39)*	2.16 (1.06-4.37)*	1.91 (0.91-4.02)
Education			
Finished 16 or before	1.00	1.00	1.00
Finished after 16	1.63 (0.73-3.64)	1.64 (0.73-3.67)	1.77 (0.75-4.18)
Former Occupation			
Routine	1.00	1.00	1.00
Non-routine	1.68 (0.82-3.45)	1.66 (0.81-3.43)	1.55 (0.73-3.28)
Distance to NOS			
Within 10 min walk		1.00	1.00
Beyond 10 min walk		0.90 (0.46-1.78)	1.13 (0.53-2.39)
Perceived Environment			
• Good paths to NOS			1.51 (1.08-2.11)*
• Water features nearby			1.37 (1.05-1.79)*

* $p < .05$, ** $p < .01$

^a Step 1: Age, sex, living arrangement, living alone or not, education and occupation forced enter

^b Step 2: Distance to NOS forced enter

^c Step 3: Six perceived environmental scores added stepwise (forward, likelihood ratio)

Discussion

Data analysis found that, after controlling for sociodemographic variables, the facilities and amenities offered by green open spaces and paths to reach such spaces contributed positively to more frequent and longer outdoor activity of this sample of older people. An important finding of this research is that “good quality paths” to local open spaces emerged as a significant predictor of all of the outdoor activity measures. This factor contained three elements: “it is easy to walk on the paths to open spaces,” “the paths to open spaces are enjoyable,” and “there is no obstacles to get into open spaces.” Past studies in a non-UK context have shown

the presence of a footpath as a predictor of walking behaviour (e.g., Eyler et al., 2003; Giles-Corti & Donovan, 2002). However, the current study suggests that what matters is not just the presence but also the quality of pavement (easy to walk, no barriers) and the experience of walk (enjoyable). The findings also imply that the quality of footpaths plays an important role in promoting not only older people's walking but also their other outdoor activities. The questionnaire revealed that almost 70% of the participants go to a nearby open space on foot (data not shown). Outdoor activities, such as playing with children and bowling, can happen in a neighbourhood open space. Thus, it can be argued that paths enabling an easy and enjoyable walk to such a space are conducive to more outdoor activities. It is also likely that good footpaths without barriers in a neighbourhood encourage more walking to go to local destinations such as shops, i.e., walking for a purpose other than to visit an open space is also enhanced. The findings can be interpreted as evidence substantiating the idea of "green space network" advocated in design guidelines for public open spaces (e.g., CABE Space, 2004; DTLR, 2002).

The other perceived environmental variables associated with older people's outdoor activities were "pleasant open spaces," "good facilities" and "water features nearby." Having a pleasant open space in one's neighbourhood was found to contribute to a higher level of walking. The pleasantness factor included items relevant to maintenance, the quality of trees and plants, and the suitability for children's play and chatting with people: beyond the aesthetics or the attractiveness of open spaces, the factor has a social and practical dimension as well as an aesthetic one. The result is consistent with past studies that demonstrated the relationship between neighbourhood attractiveness and people's activity (e.g., Ball, Bauman, Leslie, & Owen, 2001; Duncan & Mummery, 2005; Humpel et al., 2004) and shows how attractiveness may be of importance partly because it means good opportunities for social interaction. It has been shown earlier that social engagement may have positive effects on older people's quality of life. The exploration of environmental attributes that have a bearing on social interaction among neighbours will be a subject of future research by the authors.

The perception of good facilities was shown to predict the total time spent outdoors. The idea of comfort against the vagaries of weather and personal needs may be the underlying factor. It is intuitively understandable that an open space with good facilities (seats, toilets, shelters, etc), that allows people to cope with variable personal and environmental conditions, invites more people to come out and to spend more time outdoors. Analysis also indicated that the presence of water features such as a fountain in local open spaces and an accessible body of water (e.g., canal or river bank, lakeside or beach) in a neighbourhood area contributed to a longer outdoor activity time. It may be that the attraction of water in the landscape, which has been described by many researchers (e.g., Oriens, 1986; Wilson, 1998), is in itself sufficient to encourage people to undertake activities nearby. Although Humpel et al. (2004) found that people living near a beach (in a different location and climate) reported a longer walking time, the same result was not observed in the current study. The findings suggest that an area with water provides older people with opportunities for outdoor activities but not for walking. It is not possible to identify from the current data what types of activity take place near water. Exploring the mechanism through which the presence of water promotes outdoor activity for older people seems worthwhile as a future research topic.

Two perceived environmental dimensions, "safety" and "nuisance," were not associated with any of the outdoor activity measures. The safety factor was

concerned with the nighttime safety (from crime) in local open space and the neighbourhood. The reason for the non-association might be that older people do not go outdoors often at night. Past studies are mixed with regard to the role of safety in outdoor activity. Ainsworth et al. (2003) and Humpel et al. (2004) have reported weak or non-significant associations between perceived safety and walking behaviours. Suminski et al. (2005), on the other hand, showed that neighbourhood safety was an important determinant of walking in women. Further research with refined conceptualisation of safety may be necessary to fully appreciate the implications of this construct on older people's outdoor activity. The perception of nuisance, which included the annoyance from youngsters and dogs (and dog fouling), also did not account for respondents' outdoor activities. Consistent with previous studies that showed no significant effects of unattended dogs on walking behaviour (e.g., Ainsworth et al., 2003; Eyster et al., 2003), the findings suggest that the nuisance factor does not affect the older people examined in this study very much.

The distance to a neighbourhood open space exhibited a significant association with walking time after controlling for the demographic variables, but the significant association disappeared when two environmental variables (good paths and pleasant open space) were included in the analysis. This appears to suggest that the quality of paths or open spaces outweighs the distance to open spaces in terms of relevance to how long people will spend walking overall. In other words, people may visit a good quality park even if the park is not within close walking distance, so long as the route to the park is pleasant and easy to use.

Methodological limitations in this study include reliance on self-reported data, which is susceptible to reporting bias, and cross-sectional research design, which precludes causal inference. Another limitation of the study, the low response rate, deserves further comment. The response rate of this study (14%) is lower than that of other similar studies dealing with people's physical activity. Postal surveys have recorded a 29% response rate in the UK (Hillsdon et al., 2002), 43% in Australia (Humpel et al., 2004) and 17% in the US (Saelens et al., 2003). A focus group interview was held in July 2005 to explore the reasons for the low response rate. It revealed that many older people living in the UK consider themselves to be inundated with postal surveys and "cold calls" by telephone. Since the names and addresses of the participants were purchased from a market research company, it is plausible that these people may have been regularly targeted by surveys. The risk from a lower response rate is that collected data is not truly representative of the population and might be biased in favour of outdoor enthusiasts. However, if the reason for low response is because most of the survey recipients are simply tired of responding to a questionnaire, then the risk may be lesser in the current situation. The danger of not including some subgroups, who might well be less interested in outdoor activity, was partially mitigated by the second round of data collection, which employed a different approach and resulted in a much higher response rate.

In conclusion, the study adds to the growing body of evidence that features of neighbourhood environments are associated with older people's walking and other outdoor activities. The most significant finding of the study is that it is the quality of paths to a local open space that is most consistently associated with older people's outdoor activity, of whatever kind. Regardless of their sociodemographic status, older people who reported that the paths to a local open space are easy to walk on, enjoyable and have no barriers tended to engage in outdoor activities for a longer time than those who did not. This raises the possibility that improvements in the quality of neighbourhood footpaths and routes may encourage more frequent use of

open spaces, and thereby provide a key to promoting active lifestyles for older people. The study also found that the quality and amenities offered by the open space itself are associated with older people's outdoor activity, and that this group of factors is more relevant than the distance to such spaces. An open space, which is pleasant and has good facilities and water features, even if it is not very close, might entice older people to go out more often. Further longitudinal studies are needed to test the causal hypothesis regarding the effects of path and open space alterations on older people's activity patterns and thereby on active or inactive lifestyles; this research points to the importance of such studies.

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