

# Dog-walking and sense of community in neighbourhoods: Implications for promoting physical activity in adults 50 years and older

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## Opportunities to promote sense of community and physical activity for older adults via dog-walking:



**A reason to get out:** having access to dog-supportive environments is a key.



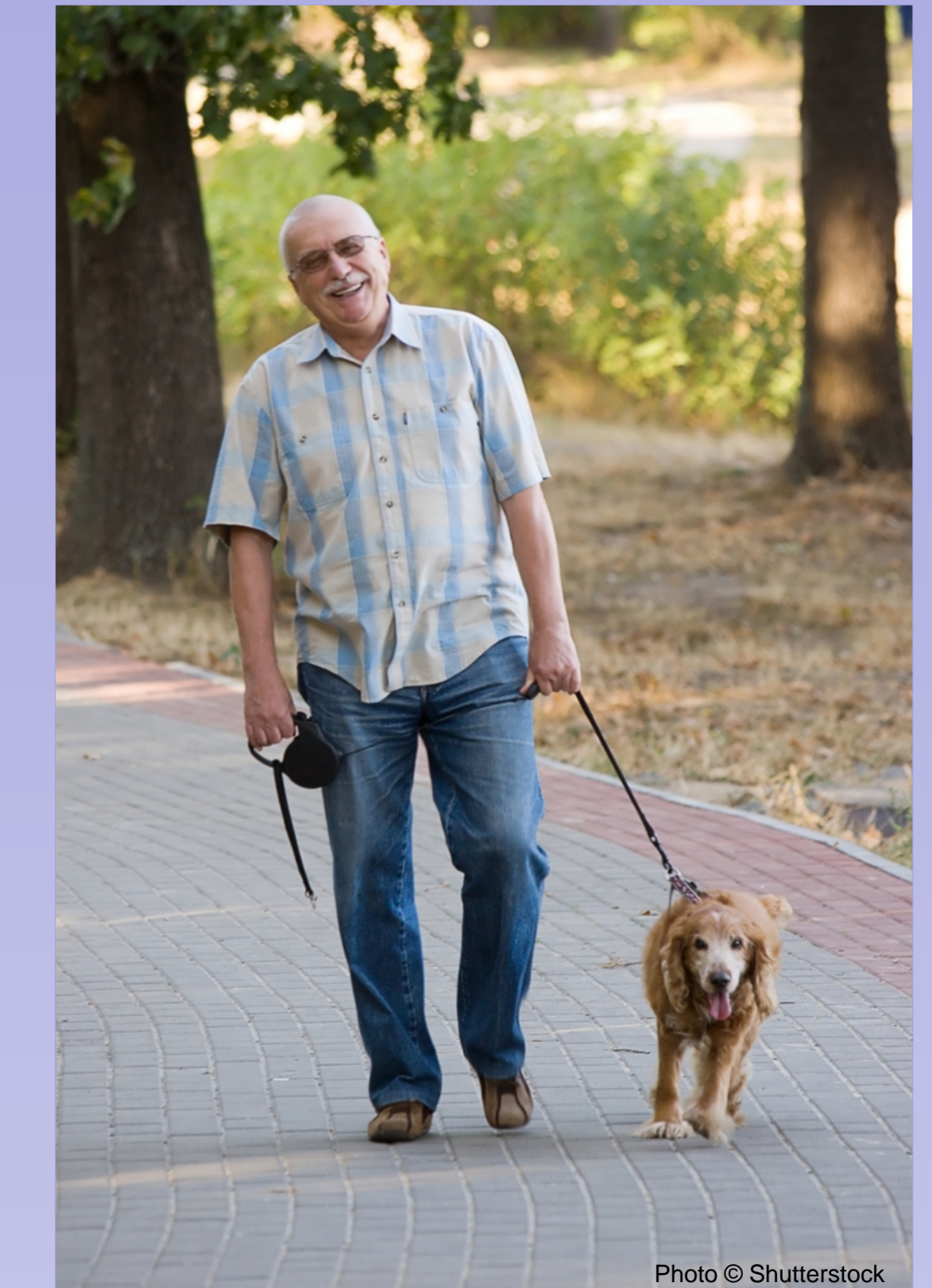
**Feelings of safety:** dog-walkers will be out and about as well.



**Dog-ownership is not a requirement:** walking with neighbours and their dogs.



**Daily walks, year-round:** dogs help older adults overcome barriers like inclement weather, minor illness, or lethargy in order to get out and walk.



**Fulfilling companionship:** with shared health benefits.

## Background and Objectives

Owning a pet may help support the health of older adults, and dog-ownership is of particular interest for promoting dog-walking. Older dog-walkers appear positioned to maintain high levels of physical activity and social engagement via dog-walking.

Neighbourhoods may also play important roles in supporting healthy aging, as increasing numbers of older adults opt to remain in their homes and familiar communities as they age. Sense of community has been positively correlated with walking in the neighbourhood, but also with dog-walking. Regular dog-walking in neighbourhoods may bolster sense of community for older adults, whether they are dog-owners or not.

The relationships between neighbourhood context, dog-ownership, physical activity, and sense of community have yet to be tested for older adults. Thus the objectives of this study were to:

- Examine the associations between dog-ownership, neighbourhood characteristics, neighbourhood-based walking for recreation, and sense of community for a sample of older adults ( $\geq 50$  yrs); and
- Examine sense of community as a potential mediator of these associations.

## Methods

**Data collection:** Participants who were  $\geq 50$  years, derived from a random sample of Calgarians who had completed a cross-sectional telephone survey in either Fall 2007 or Spring 2008 and then a follow-up postal survey sent immediately thereafter, were included in our analysis.

**Respondent characteristics:** Surveys collected socio-demographic data, as well as data on dog-ownership, dog-walking frequency, minutes of neighbourhood-based walking for recreation (NWR) undertaken over the past 7 days, and sense of community in the neighbourhood (SC), derived from a 15-item scale.

**Neighbourhood characteristics:** Postal codes for each respondent were geocoded to derive information about neighbourhood characteristics, including street pattern, proportion of green space, population density, neighbourhood-level education and income, and dog-population density (based on City licensing).

**Data analysis:** Chi-square testing was used to compare dog-owners (frequent and infrequent walkers) and non-owners. Binary logistic regression was used to test for relationships among analytic variables. NWR was the outcome measure (90 min/week and 150 min/week). We divided dog-owners into frequent ( $\geq 4$  walks/week) vs. infrequent ( $< 4$  walks/week) dog-walkers, and compared these to non-dog-owners.

We also tested SC (medianized around 45) as a mediator of the relationship between dog-walking and NRW. All regressions were controlled for socio-demographic and other confounding variables.

## Results

### How do dog-owners and non-owners compare?

Frequent dog-walkers were:

- Most likely to report some NWR over the past 7 days ( $p < 0.05$ )
- Regular achievers of 90 min/wk (78%) and 150 min/wk (66%) NWR over the past 7 days, compared to 33% and 21% respectively for non-owners ( $p < 0.05$ ). Infrequent dog-walkers' achievements were not statistically different from non-owners' (29% and 16% respectively).
- More likely to report a high SC (56%,  $p < 0.05$ ) while infrequent dog-walkers and non-owners were not significantly different in their reported SC (42% and 45% respectively)

Dog-owners in general were:

- Younger than non-owners (22% 65 yrs or older, *versus* 45% of non-owners,  $p < 0.05$ )
- More likely to live in detached dwellings ( $p < 0.05$ )
- More likely to live in households with higher annual incomes ( $p < 0.05$ )

### Findings for neighbourhood-based recreational walking:

- Frequent dog-walkers had 8 times the odds of achieving 90 min/week and 10 times the odds of achieving 150 min/week of NWR compared to non-owners; no significant differences were found between infrequent dog-owners and non-owners ( $p < 0.05$ ).
- Respondents from warped-grid neighbourhoods had higher odds of achieving 150 min/wk NWR and those from high income neighbourhoods had higher odds of achieving 90 min/wk NWR ( $p < 0.05$ ).

### Findings for sense of community in the neighbourhood:

- Frequent dog-walkers had twice the odds of reporting high SC compared to non-owners and infrequent dog-walkers ( $p < 0.05$ ).
- Respondents from neighbourhoods with lower rates of high school completion also had lower odds of reporting high SC ( $p < 0.05$ ).

### Mediation by sense of community in the neighbourhood:

- There was no evidence of attenuation of associations between dog-ownership and NWR when SC was added to the regression model, thus no evidence that SC mediated the relationship between dog-ownership and NWR.

**TABLE: Logistic models showing the mediation effect of sense of community (SC) on neighbourhood-based recreational walking (NWR) (n=884)\***

	Associations with SC		Associations with $\geq 90$ min/wk NWR		Associations with $\geq 150$ min/wk NWR	
	OR (95% CI)	OR (95% CI) – SC removed	OR (95% CI) – SC included	OR (95% CI) – SC removed	OR (95% CI) – SC included	
<b>Dog-ownership &amp; dog-walking</b>						
Non-owner	1.00	1.00	1.00	1.00	1.00	
Dog-owner/infrequent dog-walker	0.91 (0.57 – 1.48)	0.95 (0.58 – 1.57)	0.96 (0.58 – 1.57)	0.95 (0.51 – 1.75)	0.95 (0.51 – 1.76)	
Dog-owner/frequent dog-walker	1.94 (1.28 – 2.93)**	8.18 (5.11 – 13.11)**	8.07 (5.03 – 12.96)**	10.68 (6.73 – 16.95)**	10.35 (6.51 – 16.45)**	
<b>Street layout</b>						
Grid	1.00	1.00	1.00	1.00	1.00	
Curvilinear	1.11 (0.73 – 1.68)	1.16 (0.75 – 1.79)	1.16 (0.75 – 1.79)	1.45 (0.88 – 2.39)	1.43 (0.87 – 2.36)	
Warped-grid	1.22 (0.82 – 1.84)	1.25 (0.81 – 1.91)	1.24 (0.81 – 1.90)	1.67 (1.02 – 2.73)**	1.64 (1.00 – 2.68)**	
<b>Neighbourhood green space</b>						
Low ( $\leq 12.5\%$ )	1.00	1.00	1.00	1.00	1.00	
Mid (12.5 – 20.0%)	1.03 (0.71 – 1.50)	1.03 (0.70 – 1.52)	1.03 (0.70 – 1.52)	1.16 (0.74 – 1.82)	1.16 (0.74 – 1.81)	
High ( $> 20.0\%$ )	1.01 (0.68 – 1.51)	0.99 (0.66 – 1.49)	0.99 (0.66 – 1.49)	1.24 (0.78 – 1.97)	1.24 (0.78 – 1.97)	
<b>Neighbourhood pop'n density</b>						
Low ( $\leq 2,400$ people/km <sup>2</sup> )	1.00	1.00	1.00	1.00	1.00	
Mid (2,400–3,200)	0.88 (0.63 – 1.25)	0.89 (0.62 – 1.27)	0.89 (0.62 – 1.27)	1.11 (0.74 – 1.67)	1.12 (0.75 – 1.68)	
High ( $> 3,200$ )	0.74 (0.48 – 1.13)	0.93 (0.60 – 1.44)	0.93 (0.60 – 1.45)	1.05 (0.63 – 1.75)	1.07 (0.64 – 1.79)	
<b>Neighbourhood-level education</b>						
Low ( $\leq 12\%$ incomplete high school)	1.00	1.00	1.00	1.00	1.00	
Mid (12–18%)	1.01 (0.70 – 1.45)	0.80 (0.55 – 1.16)	0.80 (0.55 – 1.16)	0.87 (0.57 – 1.33)	0.87 (0.56 – 1.33)	
High ( $> 18\%$ )	0.59 (0.38 – 0.92)**	0.87 (0.55 – 1.35)	0.87 (0.55 – 1.37)	1.19 (0.72 – 1.98)	1.23 (0.74 – 2.05)	
<b>Neighbourhood-level income</b>						
Low ( $\leq \$30,000$ annual, household)	1.00	1.00	1.00	1.00	1.00	
Mid ( $\$30,000$ – $\$37,500$ )	1.06 (0.74 – 1.53)	1.01 (0.69 – 1.47)	1.01 (0.69 – 1.47)	1.06 (0.69 – 1.63)	1.05 (0.68 – 1.62)	
High ( $> \$37,500$ )	0.86 (0.57 – 1.32)	1.62 (1.05 – 2.50)**	1.63 (1.05 – 2.51)**	1.50 (0.91 – 2.45)	1.51 (0.92 – 2.47)	
<b>Neighbourhood dog pop'n density</b>						
Low ( $\leq 250$ licensed dogs/km <sup>2</sup> )	1.00	1.00	1.00	1.00	1.00	
Mid (250–350)	0.84 (0.58 – 1.21)	1.05 (0.72 – 1.53)	1.06 (0.72 – 1.54)	1.11 (0.72 – 1.71)	1.12 (0.73 – 1.73)	
High ( $> 350$ )	0.84 (0.54 – 1.31)	1.17 (0.74 – 1.85)	1.17 (0.74 – 1.86)	1.20 (0.71 – 2.02)	1.21 (0.72 – 2.04)	
<b>Sense of community</b>						
Low	-	-	1.00	-	1.00	
High	-	-	1.11 (0.82 – 1.51)	-	1.28 (0.90 – 1.83)	

\* All models are adjusted for self-reported health, tenure in the neighbourhood, dwelling type, age, gender, marital status, annual gross household income, education, and season survey was completed.

\*\*  $p < 0.05$

## Implications

Our study is the first to demonstrate that older adults who walk their dogs frequently are more likely to report having positive feelings about their neighbourhoods, in addition to being more likely to achieve recommended levels of physical activity (i.e., 150 min/wk, and 90 min/wk help support cognitive health) via neighbourhood-based walking.

Even if they do not own a dog, older adults who assist neighbours or other acquaintances with pet-care that includes dog-walking may stand to benefit from an increased sense of community, in addition to being more physically active.

Older dog-owners who are infrequent dog-walkers also merit our attention when considering health promoting interventions. Infrequent dog-walkers are “missing out”, both in terms of achieving higher levels of physical activity and in terms of the mental health benefits of having positive feelings about one’s neighbourhood.

Neighbourhoods that can accommodate the needs of older adults, as well as those of dog-walkers, may play a key role in promoting healthy aging-in-place. Older adults may be particularly susceptible to barriers to physical activity, like dog-waste and uncontrolled dogs in their neighbourhoods. At the same time, older adults may find the social interactions facilitated by dogs to be particularly meaningful, as their own social networks begin to diminish.

Limitations to our findings include our cross-sectional design, which prohibits us from drawing conclusions about causality, as well as the characteristics of our sample of older adults, which lacked both ethnic and socio-demographic diversity.

## Conclusion

Our findings suggest that frequent dog-walking may offer health benefits for older adults by increasing physical activity and heightening sense of community in the neighbourhood. Policies that promote positive interactions between dogs and other neighbourhood residents, and those that promote built environment features that offer appropriate walking amenities for dog-walkers and older adults in general, may increase walking for dog-owners and non-owners as they age. Other types of population health interventions, including health promotion campaigns that are tailored to older adults who own dogs but walk them infrequently, also merit consideration.

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