



## Park use is associated with less sedentary time among low-income parents and their preschool child: The NET-Works study

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### ABSTRACT

**Introduction.** Parks are an important component of the neighborhood environment, and their presence is believed to support higher levels of physical activity among residents.

The present study examined park use frequency among a sample of 534 low-income parents of preschool aged children. Associations with child and parent physical activity, neighborhood characteristics and physical characteristics of the block immediately surrounding the home were examined.

**Methods.** Data are from baseline measurements completed in 2012–2014 as part of larger study (NET-Works: Now Everybody Together for Amazing and Healthy Kids) targeting low-income preschool children and their parents ( $N = 534$  parent-child dyads). Physical activity was measured in parent and child using accelerometry. Parents reported their frequency of use with their child of parks within a half kilometer from their residence. Block audits were performed by trained research staff to describe the quality and walkability of the streets around the home.

**Statistical analysis.** Bivariate associations between demographic variables, perceptions of the neighborhood environment, parent support for child physical activity, and physical activity were examined using regression or Chi square analysis.

**Results.** Park use frequency was not significantly associated with child accelerometry light, moderate or vigorous physical activity. However, it was marginally significantly inversely associated with child accelerometry sedentary time ( $p < 0.06$ ). Television viewing hours on weekend days (but not on weekdays) were significantly fewer among children in the high park use group compared with children who visited the park less frequently ( $p < 0.01$ ). Park use frequency was significantly positively associated with parent accelerometry moderate physical activity ( $p < 0.004$ ), and was significantly inversely associated with parent accelerometry sedentary time ( $p < 0.002$ ). Frequent park use was significantly positively associated with parent report of the child frequency of being taken to a park or playground outside the home ( $p < 0.0001$ ), past week visit to park and recreation center ( $p < 0.0001$ ) and parent-reported supportive behaviors for child physical activity ( $p < 0.0001$ ). Parents who reported having to cross busy streets to reach play areas reported less frequent park use ( $p < 0.02$ ). Walkable neighborhoods ( $p < 0.003$ ) and more incivilities ( $p < 0.02$ ) in the immediate block surrounding the home were significantly associated with more frequent park use.

**Conclusions.** Frequent park use with their preschool child may support higher levels of physical activity among low-income parents and reduce sedentary time for both child and parent.

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### 1. Introduction

Parks are an important component of the neighborhood environment, and their presence is believed to support higher levels of physical

activity among residents (Fan et al., 2011; Davison and Lawson, 2006; Bedimo-Rung et al., 2005; Cohen et al., 2007; Giles-Corti and Donovan, 2002). Living in under-resourced, dangerous neighborhoods that either lack parks and playgrounds, or where the use of parks and playgrounds is unsafe due to crime may contribute to low levels of physical activity and higher obesity prevalence among lower-income children and families (Bedimo-Rung et al., 2005; Fan et al., 2012; Das et al., 2016; Cradock et al., 2005; Gordon-Larsen et al., 2006; Cohen et al., 2012). Since time spent outdoors is a strong correlate of physical activity, it is

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important to better understand the factors that promote and support spending time outdoors among children and families (Davison and Lawson, 2006; Fan et al., 2012; Sallis et al., 2000; Hinkley et al., 2008).

Available research on park use among families with children has examined both physical environmental factors, home environment and parent supportive behaviors (Davison and Lawson, 2006; Sallis et al., 2000; Fan and Chen, 2012). Generally, data support the idea that proximity to parks is associated with higher frequency of park use (Davison and Lawson, 2006; Cohen et al., 2007; Sallis et al., 2000). Walkable neighborhoods are associated with more walking trips, (Saelens et al., 2003; Wen et al., 2007) which could include walking to a local park or playground. However, the positive influence of proximity and walkability on park use may not apply to low-income neighborhoods. Low-income neighborhoods may have accessible parks, but they may be in disrepair, (Bedimo-Rung et al., 2005; Cradock et al., 2005; Cohen et al., 2012; Zhu and Lee, 2008) or families may not feel safe using them (Cohen et al., 2007; Cradock et al., 2005; Wen et al., 2007; Cohen et al., 2010).

Park use among preschool-aged children is dependent upon parent behaviors, such as taking the child to the park or playground. These parent behaviors may be related to parent attitudes, values and other supportive behaviors for their child's physical activity (Davison and Lawson, 2006; Loprinzi and Trost, 2010; Sallis et al., 1993). Parents who take time to transport their child to physical activities at other locations, play with their child, or watch their child play have more physically active children (Davison and Lawson, 2006; Loprinzi and Trost, 2010; Sallis et al., 1993). Children of parents who report that the family visits a park together at least once a week are more physically active (Veitch et al., 2010). However, this same study found that parent report of child frequency of visiting a park or playground during the week was not significantly associated with child physical activity (Veitch et al., 2010).

Although neighborhood environment and parent variables are expected to be important contributors to park use among families with preschool children, empirical research on park use among families with preschool aged children is limited, particularly among low-income families living in poor neighborhoods. The present study examined park use frequency among a sample of 534 low-income parent-preschool-aged child dyads participating in a larger study called NET-Works (Now Everybody Together for Amazing and Healthy Kids). Associations with child and parent physical activity, neighborhood characteristics and physical characteristics of the block immediately surrounding the home were examined. The study is unique in its multi-level measures of individual physical activity behavior for parent and child, measurement of both the home and neighborhood environment, and parent supportive behaviors for their child's physical activity. It was hypothesized that parent supportive behaviors for child physical activity, block and neighborhood variables such as walkability and attractiveness, and parent and child physical activity would be positively associated with frequency of local park use.

## 2. Methods

### 2.1. Participant sample

Data are from baseline measurements completed in 2012–2014 as part of larger study conducted in Minneapolis-St Paul, Minnesota, USA, targeting low-income preschool children and their parents ( $N = 534$  parent-child dyads) (Sherwood et al., 2013). Eligibility criteria for the larger parent study were: 1) the child was between ages of 2–4 years; 2) the child had no medical problems that would preclude study participation as determined by the primary care physician; 3) child did not use any medications that would affect the child's growth; 4) the child's BMI was  $\geq 50$ th percentile according to CDC age and sex reference standards (Centers for Disease Control and Prevention, National Center for Health Statistics, 2000); 5) the family's income

was below \$65,000 per year; 6) the child's parent agreed to participate in the study and did not plan to move out of the state in the next three years; 7) the parent spoke either English or Spanish. Parents were recruited through electronic medical records at 12 primary care clinics that served lower-income, diverse families. Eligible parents and children were invited to participate via a mailed letter and follow up phone call. Interested, eligible parents were scheduled for a home visit for consent and data collection. Invitation letters, screening phone calls, consent processes and data collection were conducted in either English or Spanish according to the parent's stated preference. The consent process was conducted in person at the home visit by staff trained in the consent process. Key elements of informed consent and issues specific to the present study were discussed in depth. Participants were offered a \$50 gift card to a local department store in exchange for their time to complete the baseline measures. Complete details about the study design, intervention and evaluation are available (Sherwood et al., 2013). The study was approved by the University of Minnesota Human Subjects Protection Program.

### 2.2. Measures

Measures were collected by two trained and certified research staff in the participant's home. Surveys were administered verbally in English or Spanish.

### 2.3. Child and parent park use frequency

Local park use was measured using a series of questions. The parks and playgrounds within a half-kilometer radius of the home were identified using a mapping program (GoogleMaps). A visual map of the half-kilometer radius around the participant's home was shown to the parent. Parks were marked on the map, and the number of parks on the map ranged from 1–9 parks, depending on the participant's neighborhood. For each park, the parent was asked "In the past month, how many times did you go with your child to play at [name of park/playground/green space]?" This process was continued until the parent had responded for each of the parks on the map. Local park use frequency during the past month was the sum of the frequency of visiting each of the parks within a half-kilometer radius from home.

### 2.4. Child and parent physical activity

Accelerometers capture both the volume and total magnitude of a movement as a function of time (Cliff et al., 2009). Accelerometry data were collected on all index children and the parent using the GT3X + monitor. The GT3X + monitor is worn on the right hip for seven complete days (including while sleeping and naptime) except during water activity (e.g., bathing, swimming, showering). The index parent also wore a GT3X or GT3X + monitor for seven days on the right hip. The ActiGraph GT3X + and the GT3X devices measure acceleration in three individual orthogonal planes using a vertical axis, horizontal axis and a perpendicular axis. The GT3X + was set to collect data at a 40-Hertz frequency and the GT3X was set to collect data in 1-second epochs. The valid wear time criteria (minimums) are four days (three weekdays and one weekend day) of at least 6 h of activity between 5:00 am and 11:59 pm. Accelerometry counts were converted to sedentary, light, moderate and vigorous minutes of physical activity using accepted cutpoints for preschool aged children (Hislop et al., 2012; Pate et al., 2004; Toschke et al., 2007; Van Cauwenberghe et al., 2011) and adults (Troiano et al., 2008; Matthew, 2005). Accelerometry has been shown to be feasible and valid in preschool age children 24–27. Sedentary, light, moderate and vigorous physical activity variables were examined for the child and for the parent.

## 2.5. Child television viewing hours

Television viewing hours were reported by the parent and included here as a measure of sedentary behavior (Schmitz et al., 2004). Separate questions were used for weekday and weekend television viewing hours by the child: “On an average week day [weekend day], how many hours does this child watch TV?” Response options were “none”, “<1 h/day”, “1 h/day”, “2 h/day”, “3 h/day”, “4 h/day”, “5+ h/day”.

## 2.6. Parent support for child physical activity

Parent support for their child's physical activity behaviors was measured using four questions that have been used in previous research and shown to have good internal consistency ( $r = 0.78$ ) and one week test-retest reliability ( $r = 0.81$ ) (Trost et al., 2003). Parents reported the frequency with which they provide verbal encouragement to be active, watch their child play, play with their child, and take the child to a location to play or be active. Items are summed to form a total score.

Parents reported the frequency per week that the child was taken to a park or playground outside the home. Response choices were “four times or more” [coded 4], “2–3 times” [coded 3], “once a week” [coded 2], or “less than once a week” [coded 1]. Parents reported in three separate questions whether their child was taken during the past week to each of these locations for physical activity: YW/YMCA; park and recreation center; other location. Response options were “yes” or “no”. Parents reported (2 questions) the extent to which they limit their child's play in the immediate neighborhood, and in the yard. Five response choices ranged from “all of the time” [coded 5] to “never” [coded 1].

Parents reported the extent to which they themselves enjoyed being physically active. Five response choices ranged from “not at all” [coded 0] to “a lot” [coded 4].

## 2.7. Parent perceived neighborhood safety

Parents reported agreement with nine statements related to perceptions about traffic density, road safety, strangers, sporting facilities, and walking safety in their neighborhood (Toschke et al., 2007; Van Cauwenberghe et al., 2011). Five response choices ranged from “strongly agree” to “strongly disagree”. Responses were dichotomized into “agree” (strongly agree, agree and neither) and “disagree” (strongly disagree, disagree) because the responses were not normally distributed.

## 2.8. Block audit observations

An objective measure of the condition of the block surrounding the participant's home was collected by research staff using a standard observation checklist and protocol (Evenson et al., 2009). Twenty three items were used to describe the physical environment immediately outside the home, the streets and sidewalks, and condition of the surrounding homes and structures. Items included “House or apartment free of potentially dangerous structural or health hazards?”; “Are there parks or playgrounds within sight?”; “Overall condition of most buildings or residential units?”; “Amount of litter?”; “Are there sidewalks? What is their condition?”. Responses were closed-ended categories such as “excellent or good condition”, “fair condition”, “poor or deteriorated condition”. A face-valid method was used to group items for summary score creation, due to the variability in the factor structure of the scales in previous research (Evenson et al., 2009). Three categories were defined: walkability/support for walking; places to go/destinations; physical incivilities. Walkability includes the following items: sidewalks; pedestrian crossings/markings; and traffic control signals/stop signs. Places to go include the following items: nearby parks (size and available equipment); and commercial outlets. Physical incivilities include the following items: physical condition of home or apartment building; visible trash or graffiti; and condition of nearby buildings.

## 2.9. Child and parent weight and height

Weight and height were measured with the participant in light clothing without shoes using a standardized protocol (Lohman et al., 1988). Weight was measured to the nearest 0.1 kg using research precision grade, calibrated, digital scales and height was measured to the nearest 0.1 cm using a free-standing or wall mounted stadiometer (Seca Corp., Hanover, MD). Measures were conducted in duplicate and averaged. Body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meters. BMI age and sex-specific percentile was calculated for children (Centers for Disease Control and Prevention, National Center for Health Statistics, 2000). For quality control, 10% of the anthropometric measurements were measured by two different data collectors.

## 2.10. Demographic questions

Parents reported demographic information including child age, race and ethnicity, parent employment status, income, marital status and number of children living in the household.

## 2.11. Statistical analysis

Park use frequency during the past month ranged from zero to 50 visits and was trichotomized for the purpose of analysis (zero visits ( $n = 268$ ); 1–3 visits ( $n = 116$ ); and 4 or more visits ( $n = 150$ )). Bivariate associations between demographic variables, perceptions of the neighborhood environment, parent support for child physical activity, moderate/vigorous physical activity and BMI percentile (or BMI for parents) were examined using regression or Chi square analysis. The only demographic variable significantly associated with park use frequency in bivariate analyses was child age. Adjustment for child age in models examining associations with other variables of interest yielded materially identical results and therefore are not presented. Comparisons were considered statistically significant where  $p < 0.05$ . Analyses were conducted using SAS version 9.4 software programs (Cary, NC: 2016).

## 3. Results

### 3.1. Park use frequency and physical activity

Park use frequency averaged 3.5 visits (sd = 6.6; range 0–50) during the past month. Fifty one percent of parents reported no visits, 22% reported 1–3 visits, and 27% reported four or more visits during the past month (Table 1). Park use frequency was not significantly associated with child accelerometry-measured light, moderate or vigorous physical activity. However, it was marginally significantly inversely associated with child accelerometry sedentary time ( $p < 0.06$ ). Television viewing hours on weekend days (but not on weekdays) were significantly fewer among children in the high park use group compared with children who visited the park less frequently ( $p < 0.01$ ). Park use frequency was significantly positively associated with parent accelerometry moderate physical activity ( $p < 0.004$ ), and was significantly inversely associated with parent accelerometry sedentary time ( $p < 0.002$ ).

### 3.2. Park use frequency and parent behaviors related to child physical activity

Frequent park use was significantly positively associated with parent report of the frequency of the child being taken to a park or playground outside the home (Table 1;  $p < 0.0001$ ), past week visit to park and recreation center ( $p < 0.0001$ ) and parent-reported supportive behaviors for child physical activity ( $p < 0.0001$ ). Parent enjoyment of physical activity significantly differed by frequency of park use, but the pattern was not linear.

**Table 1**

Park use frequency among low-income parents of preschool-aged children ( $n = 534$ ). Unadjusted means (se) for demographic, physical activity and neighborhood variables.

n	Past month frequency of park visits			
	Zero	1–3 visits	4 ± visits	p
Demographic variables				
Child BMI percentile	81.7 (.88)	81.5 (1.3)	82.1 (1.2)	.44
Child sex: Male (%)	51.1	47.4	46.2	.59
Child age (yrs)	3.3 (.04)	3.4 (.06)	3.5 (.05)	.03
Child race (%)				.30
White ( $n = 174$ )	45.7	25.4	28.9	
African American ( $n = 108$ )	56.7	17.0	27.4	
American Indian ( $n = 13$ )	61.5	30.8	7.7	
Asian ( $n = 10$ )	50.0	30.0	20.0	
Other ( $n = 163$ )	46.9	21.9	31.3	
Multiracial ( $n = 65$ )	64.1	18.8	17.2	
Child ethnicity: Hispanic (%)	57.5	58.6	60.8	.80
Parent BMI (kg/m <sup>2</sup> )	30.1 (.43)	30.8 (.65)	29.7 (.59)	.48
Parent sex (% female)	91.4	90.5	93.0	.76
Parent age (yrs)	31.8 (.39)	31.8 (.59)	32.1 (.53)	.91
Parent married (%)	66.0	70.7	71.3	.46
Parent employment				.60
Full time	29.5	26.7	33.6	
Part time	29.9	27.6	23.8	
Not working for pay	40.7	45.7	42.7	
Household income				.54
\$14,999 or less	36.2	41.4	37.8	
\$15,000–\$24,999	28.9	19.0	25.9	
\$25,000–\$34,999	19.0	16.4	16.8	
\$35,000–\$49,999	9.7	10.3	9.1	
\$50,000–\$74,999	7.1	12.9	10.5	
Housing (% rental)	77.2	73.3	75.5	.72
Children in household (n)	2.3 (.07)	2.3 (.10)	2.4 (.09)	.56
Physical activity				
Child sedentary time (min)	780.4 (10.9) <sup>A</sup>	758.9 (16.4) <sup>AB</sup>	736.7 (14.9) <sup>B</sup>	.06
Child light activity (min)	297.0 (3.5)	296.5 (5.3)	288.7 (4.8)	.35
Child moderate activity (min)	75.3 (1.4)	74.8 (2.2)	74.9 (2.0)	.98
Child vigorous activity (min)	19.0 (0.9)	19.8 (1.4)	22.1 (1.3)	.16
Child television viewing				
Weekday hours	3.3 (.09)	3.1 (.14)	3.1 (.12)	.29
Weekend hours	3.2 (.10)	3.1 (.15)	2.7 (.14) <sup>A</sup>	.01
Parent sedentary time (min)	801.4 (12.7) <sup>A</sup>	741.8 (18.3)	733.5 (17.2)	.002
Parent light activity (min)	339.4 (6.5)	345.7 (9.4)	357.6 (8.8)	.25
Parent moderate activity (min)	17.7 (1.2) <sup>A</sup>	21.2 (1.7) <sup>AB</sup>	24.2 (1.6) <sup>B</sup>	.004
Parent vigorous activity (min)	3.0 (.79)	2.9 (1.1)	2.7 (1.1)	.98
Parent support for child PA				
Playground (freq per/week)*	2.7 (.06)	2.8 (.09)	3.2 (.08) <sup>A</sup>	.0001
Limit play in yard*	2.4 (.07)	2.4 (.11)	2.3 (.10)	.55
Limit play in neighborhood*	2.7 (.08)	2.8 (.13)	2.9 (.11)	.28
YW/MCA past week (%yes)	4.9	9.5	7.7	.21
Park/Rec center past week (%yes)	19.8 <sup>A</sup>	30.2 <sup>B</sup>	44.8 <sup>C</sup>	.0001
Other PA location past week (%yes)	38.6	43.1	39.2	.70
Parent support for child physical activity	2.4 (.05)	2.4 (.07)	2.7 (.07) <sup>A</sup>	.0001
Parent enjoyment* of physical activity	2.8 (.07) <sup>A</sup>	3.1 (.11) <sup>B</sup>	3.0 (.10) <sup>AB</sup>	.04
Neighborhood				
Safety Perceptions (% agree)				
Heavy traffic where live	73.3	67.2	66.4	.26
No street crossings/lights	39.9	37.9	45.5	.42
Must cross street to play	53.9 <sup>A</sup>	43.1 <sup>AB</sup>	40.6 <sup>B</sup>	.02
Not many parks nearby	31.1	25.9	23.9	.27
Safe to walk	83.7	82.8	85.2	.86
Safe from crime	67.8	71.6	67.1	.71
Block audit score				
Places to go	4.5 (.14)	4.5 (.22)	4.3 (0.20)	.79
Walkability	9.6 (.17) <sup>A</sup>	10.0 (.25) <sup>AB</sup>	10.5 (.23) <sup>B</sup>	.003
Incivilities	3.4 (.15)	3.2 (.23)	4.0 (0.21) <sup>A</sup>	0.02

Note. \*high scores mean more frequent (1 = less than once a week; 4 = 4 or more times per week). Limit play in yard/neighborhood (5 = all of the time; 1 = Never). Parent enjoyment (0 = not at all; 4 = a lot).

### 3.3. Park use frequency and parent perception of neighborhood safety

Perception of neighborhood safety was not significantly associated with park use frequency, with the exception of one item (Table 1). Parents who reported having to cross busy streets to reach play areas were significantly less likely to frequently use parks with their child ( $p < 0.02$ ).

### 3.4. Park use frequency and observed block characteristics

More walkable neighborhoods ( $p < 0.003$ ) and neighborhoods with more incivilities ( $p < 0.02$ ) in the immediate block surrounding the parent and child's home were significantly associated with frequent park use (Table 1).

## 4. Discussion

Parks are an important component of the neighborhood environment and are believed to support higher levels of physical activity among residents (Sallis et al., 2000). However, little is known about how parents and preschool-aged children use parks near where they live, and factors that might enable them to visit more frequently. The present results suggest that the physical environment and parent characteristics both play an important role. Parents who engage in supportive behaviors for their child's physical activity, such as watching their child play or playing with their child, and parents who enjoy physical activity themselves, were more likely to frequently visit parks with their child. Results of the present study show that frequent park use is associated with less sedentary time for both parent and child, and only for the parent, with higher levels moderate physical activity. It has been suggested that encouraging unstructured play, such as the type of play that is engaged in by preschool-aged children and parents in a park setting, may be an effective way to increase physical activity in children (Burdeie and Whitaker, 2005; American Academy of Pediatrics et al., 2006). The present results suggest that unstructured play with their child might be an effective way to increase physical activity levels in adults as well.

The built environment is an important variable that can support higher levels of physical activity and contribute to the prevention of obesity (Frank et al., 2005; Cohen et al., 2006). It has been hypothesized that lower physical activity and higher obesity prevalence among lower-income children and families in part may be due to living in under-resourced, dangerous neighborhoods (Gordon-Larsen et al., 2006). The results of the present study suggest that physical characteristics of the neighborhood, in fact, are associated with use of the available local parks among families with young children. Parents who reported having to cross streets with heavy traffic and those whose homes had a less walkable street reported fewer trips to the parks near their home. The data suggest that, in this sample of low-income parents of preschool children, concerns about crime and physical safety were not related to parents' use of nearby parks (Sallis et al., 2000). Notably, most parents in this study sample perceived their neighborhood to be safe from crime (69%) and safe to walk (84%). These findings are encouraging, because installation of traffic calming measures and safe pedestrian crossings maybe more easily addressed than perceptions of safety from crime. Physical improvements to enhance the walkability of the neighborhood also may be readily addressed. It is not clear why higher levels of observed incivilities such as broken glass and boarded up buildings were associated with more frequent neighborhood park use. The present findings suggest that neighborhood changes related to walkability and traffic safety could support more frequent use of local parks by parents with children and thereby increase parent levels of physical activity.

In the present study, 51% of parents reported no visits to the park during the past month, and an additional 22% reported only 1–3 visits to the park during the past month. Low frequency of park use may be

attributable in part to the seasonality of park use in the north-central climate where the study was conducted. Enrollment into the study was on a rolling basis and included the winter months (November through March). Parent-reported frequency of taking their child to a community recreation center or YW/YMCA was also low. Both of these observations point to intervention opportunities for family-focused physical activity interventions involving neighborhood parks and park-based community centers (Cohen et al., 2012; Cohen et al., 2010). Outreach specifically to parents with programs directly targeting preschool aged children's physical activities might enhance parent-child use of local parks and park-based community centers (Tester and Baker, 2009).

The finding that the neighborhood environment and parent characteristics both play an important role in child park use suggests that both family and neighborhood are critical points for interventions that aim to enhance child and family physical activity (Giles-Corti and Donovan, 2002; Sallis et al., 2000; Fan and Chen, 2012). Family-based interventions to promote child physical activity are likely to have limited effectiveness without supportive neighborhood conditions. Similarly, neighborhood-based interventions are unlikely to be successful without supportive parent behaviors. In the present study, most of the participating parents were mothers. Physical activity locations and types for fathers and preschool children are important to examine and may provide insight into additional unique strategies to enhance physical activity levels of preschool-aged children (Hamilton and White, 2010).

Few studies are available that describe in detail park use behaviors among low-income parents with young children. The present study has many important strengths, including its diverse, low-income sample; the use of accelerometry to measure both child and parent physical activity; and the inclusion of both observed and perceived measures of the neighborhood physical environment. The cross-sectional design of the present study is a limitation. Correlations between park use frequency, parent and neighborhood variables may suggest causal relationships. However, longitudinal data are needed to examine the causal influence, if any, of these parent and neighborhood-level variables on park use frequency. The generalizability of these findings may be limited to relatively safe urban areas, where threats to physical safety and crime levels are lower than those observed in other cities.

The results of this study highlight the importance of both parent behaviors related to support for their preschool child's physical activity, and specific aspects of the neighborhood built environment to support the use of parks near the home. Walkable neighborhoods with clearly marked pedestrian crossings can support more frequent use of local parks by parents with preschool children. Promotions to support and encourage parents to be active with their preschool child outdoors in unstructured play at local parks has the potential to enhance both parent and child physical activity. Unstructured outdoor play may be a non-threatening and widely accessible physical activity format for parents of all income levels, diverse cultural backgrounds and varying fitness levels.

### Conflict of interest statements

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