Published in final edited form as:

J Sports Sci. 2018 November ; 36(22): 2544–2550. doi:10.1080/02640414.2018.1469225.

Park use and physical activity among adolescent girls at two time points

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Abstract

This longitudinal study described park usage and assessed the contribution of parks to moderate to vigorous physical activity (MVPA) among adolescent girls. High school girls from California (n=131) and Minnesota (n=134) wore a global positioning system (GPS) monitor and accelerometer for 6 consecutive days at two time points, one year apart. Park visits were classified by linking the GPS, accelerometer, and park and built environment data around home and school locations into a geographic information system. At baseline, 20% of girls visited a park at least once (mean 0.1 times/day), which was similar one year later (19%, mean 0.1 times/day). Girls lived a mean Euclidean distance of 0.2 miles to the nearest park at both times. Among all park visits, the mean Euclidean distance of the park visited was 4.1 (baseline) and 3.9 miles (follow-up). The average duration of park visits was higher at baseline (63.9 minutes) compared to follow-up (38.4 minutes). On days when a park was visited, MVPA was higher than on days when a park was not visited. On average, 1.9% (baseline) and 2.8% (follow-up) of MVPA occurred in parks. In this study, parks were an under-used resource for adolescent girls, particularly for MVPA.

Keywords

geographic information system; global positioning system; parks and recreation; physical activity; sedentary behavior

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Clinical Trials.gov Identifier: NCT00046631

Introduction

Due to concern about United States (US) levels of physical activity among youth (Troiano et al., 2008), in 2009 the American Academy of Pediatrics released a policy statement promoting environments and policies favoring physical activity, such as consideration of easier access to parks and open space (Tester, 2009). There is growing evidence supporting this recommendation (Heath et al., 2006; Community Preventive Services Task Force, 2016). In particular, parks provide free or low cost public space that can be used by the public for physical activity and recreation. Studies have identified presence of parks as being positively associated with walking and moderate-to-vigorous physical activity (MVPA) among adolescents (McGrath et al., 2015).

A review of studies using systematic observation of park users across a variety of US parks found that park use was lower among females than males, regardless of the age category (Evenson et al., 2016). Moreover, females were observed engaging in vigorous physical activity less often than males and more often observed as being sedentary. The aforementioned studies used direct observational methods to assess park use (the System for Observing Play and Recreation in Communities) that requires observers to assess park use in predetermined target areas (McKenzie, 2006). This method requires multiple observations over different days and seasons to be reliable (Cohen et al., 2011), adding to the time and cost to collect this type of data. While a useful surveillance tool, it is not able to detail patterns of park use for particular individuals since observations are aggregated to small areas of the park (e.g., target areas). Specifically, SOPARC does not allow quantification of the length of time, activities performed, and intensity of physical activities for individuals in the park.

An alternative measure of adolescent park use relies on self-report, either using questionnaire or ecologic momentary assessment. Self-reported questionnaires on park use are most common, but are subject to recall and social desirability bias (for example, Kuo et al., 2009). Ecologic momentary assessment reduces recall bias (Dunton et al., 2007), but is still subject to social desirability bias. Moreover, to obtain the detail on park use desired, such as the times and days at the park, self-report instrumentation may become too burdensome.

An alternative measure of park use to address limitation of self-report emerged with the development of portable global positioning system (GPS) units. This instrumentation requires participants wear a GPS monitor to record location over time. The location information is overlaid with digital maps of parks and provides context for where participants are located. Concurrent with GPS, physical activity is measured, typically with accelerometry, in order to time-match the data to determine concurrently when and where physical activity is occurring. GPS may more accurately account for physical activity frequency (Stopher et al., 2007). As early as a decade ago, studies described the usefulness of GPS to examine individual-level physical activity (Duncan et al., 2007; Rodriguez et al., 2005). However, few park-related studies with GPS include adolescent girls, a population that is at risk for marked declines in physical activity (Dumith et al., 2011). Moreover, longitudinal study designs of adolescent girls are lacking, which would provide more causal

support of findings. The aims of this paper were to describe park usage and their contribution to overall physical activity and MVPA among adolescent girls at two points in time. Specifically, park usage was quantified in terms of frequency, duration, intensity of physical activity, and distance from home.

Methods

Participants

These aims were explored using participants from the control arm of the Trial of Activity for Adolescent Girls (TAAG) Study recruited from 2 sites. TAAG was a multicenter school-based group-randomized trial designed to test an intervention to reduce the usual decline in physical activity among middle-school girls (Stevens et al., 2005; Webber et al., 2008). The study-directed intervention targeted schools, community agencies, and girls to increase support, opportunities, and incentives for increased physical activity. The intervention lasted for one school year and control schools received a delayed intervention after all measurements were taken. In total, participants came from 36 public schools located in six diverse US locations. Public middle schools in which most students lived in the surrounding community were eligible to participate. In addition, eligibility included yearly withdrawal rates of <28%, enrollment of at least 90 8th graders, and at least one semester of physical education required for each grade. Of the 68 schools invited to participate, 41 agreed and 36 were selected.

Before participating in the study, parental consent and participant assent were required. For this study, participants were 8th grade girls in 2003–2005 who originally participated in one of the TAAG control middle schools located in San Diego, California and Minneapolis/St. Paul, Minnesota. We refer to the sites by their state names. These eligible girls were invited to participate in a follow-up longitudinal observational study and data for this study were collected during their high school years (2009–2011). This study was approved by the institutional review boards at the study sites, RAND, and the University of North Carolina.

Accelerometry Measurement

An ActiGraph (model #AM7164; Pensacola, Florida) accelerometer was used at two time periods. Participants wore the accelerometer on their right hip secured by a belt. Trained and certified TAAG staff members distributed the accelerometers and provided detailed verbal and written instructions on when and how to wear the accelerometers over a 6-day period. Girls were asked to remove the monitor only for sleeping, bathing, or swimming. Data were collected and stored in 30-second epochs.

Accelerometer readings were cleaned using methods previously described (Treuth et al., 2004) and aggregated up to 1-minute counts. If counts were recorded as zero for 20 minutes or more, then it was assumed that the participant was not wearing the accelerometer and the data for that epoch was set to missing. An adherent accelerometry wear day was defined as ≥ 10.6 hours of wear on a weekday and ≥ 8.3 hours of wear on a weekend day as determined in the TAAG cohort (Catellier et al., 2005; Rodriguez et al., 2012). This was equivalent to having nonmissing accelerometer counts for at least 80% of a standard

measurement day defined as the length of time in which at least 70% of the sample were wearing the accelerometer. On weekdays 10.6 hours was computed as $0.80 \times (70^{\text{th}} \text{ percentile of off time minus on time})$. MVPA was defined as ≥ 3000 counts/minute since this threshold could discriminate brisk walking from less vigorous activities in 8th-grade girls (Treuth et al., 2004). Light physical activity was defined as 100–2999 counts/minute and sedentary behavior was defined as < 100 counts/minute. Average counts/minute was calculated to indicate the average intensity of physical activity throughout the day.

GPS Measurement

Concurrent with the accelerometer, participants were asked to wear a Foretrex 201 portable GPS unit on their wrist or belt around their waist (Garmin Ltd., Olathe, Kansas). Participants were asked to charge the unit overnight every night. These units have adequate accuracy and reliability in free-living conditions (Rodriguez et al., 2005). An internal non-volatile memory card provided the capacity to store 10,000 points before the data required downloading. The units were set to record the positional coordinates of their location at 60-second intervals with the Wide Area Augmentation System (WAAS) disabled. The map datum used was World Geodetic Survey 1984 and the position format was latitude and longitude in degrees and minutes (HD° MM').

Park and Other Environmental Measures

All built environment measures were derived using ArcGIS 9.2 (Environmental Systems Research Institute (Esri Inc., Redlands California, 2006). Shape files for national, state, and local parks and forests were obtained for the study locations using 2008 data assimilated by Tele Atlas North America, Inc. (Esri). Based on Feature Class Codes, national parks and forests (D83), state parks (D85), and local parks or recreation areas (D89) were used to create the park shape file. The attribute table contained information regarding the name, size, and the feature classification code of each park. These park shape files were supplemented with county and municipal park data.

Each participant's home address was geocoded using 2009 TIGER/Line shapefiles in ArcGIS, and supplemented with the digital maps (Rodriguez et al., 2012). The home neighborhood was defined as the area within an 800-meter Euclidean buffer around each participant's home location. Using the US Census Bureau (Summary Files 1 and 3, and the Census Transportation Planning Package for the year 2000), gross population density, percentage of households under the federally designated level of poverty, percentage of adults unemployed, percentage of adults with less than a high school education, and percentage of households that were Hispanic or African American were calculated for the home neighborhoods. When a circle around a GPS point or a participant's home was not fully contained within a census polygon, the data were assigned in direct proportion to the area of the polygon contained within the circle. The Euclidean distance from participants' home to the nearest edge of the closest park was calculated using the ArcGIS Analysis tool. Network distance was highly correlated with Euclidean distance (Hwang et al., 2016), and since travel to parks may not follow the street network, we used Euclidean distance.

Other Measures

Each girl responded to questions on race and ethnicity. Date of birth was collected on the parental consent form and age was calculated from the date of birth to the date of completion of the survey. Eligibility for free or reduced price lunch was reported in the 10th or 11th grade and categorized as “yes” versus “no or don’t know”. Generally, students whose families earned less than 200% of the poverty level were eligible for this program.

Weight was measured in kilograms using a SECA 876 or 880 scale and height was measured in centimeters using a SECA stadiometer. Body mass index (BMI) was calculated as weight in kilograms divided by height in squared meters and corresponding BMI-for-age percentiles were calculated using age specific norms for US females (Centers for Disease Control and Prevention, 2000).

Statistical Analyses

We merged each participant’s accelerometer data with their GPS data according to the date and time from each unit, such that each GPS point had a corresponding accelerometer count. Using ArcGIS, the GPS points were overlaid onto a map with the parks displayed. The points that fell within a park were selected and any points falling within 50 meters of a participant’s residence were dropped. This was done since some participants lived very close to the parks and the GPS monitor could not adequately distinguish location placement to this degree of resolution. For all remaining GPS points that fell within a park, the time gap between each 1-minute record was checked. If there were any time gaps ≥ 2 minutes, then the location of the next points were explored. If the next point was within the park and close in time, then we imputed the data for the location by assuming that the participant stayed in the park (Meseck et al., 2016). This recoding helped ensure stray GPS points did not interrupt a park visit or that visits to indoor facilities within parks (when the GPS may not record) were assigned properly.

We defined the minimum duration of a park visit as 3 minutes. This was a practical choice based on the fact that we did not want to miss short park visits, particularly for individuals living close to the parks or walking or bicycling through the park. However, shorter than 3 minutes would lead to too many visits that may not be particularly relevant. To account for driving through a park, if the average speed between GPS points was higher than 30 kilometers/hour, then we excluded those points from the park visit database. Unique park visits were then grouped together, based on location and time. Each park visit was quantified in terms of duration and intensity of accelerometry-assessed physical activity. We calculated how many times each participant visited a park and how far it was from their home.

For each park visit, we described physical activity separately at baseline and follow-up. Park visits (including number and duration) were compared between baseline and follow-up using the non-parametric Wilcoxon sign rank test for two dependent samples. Pearson correlation coefficients compared park visit frequency and duration at both time points.

Results

Between 2008–2010, 632 eligible participants attending 7 different high schools were contacted for the study. After obtaining parental consent and participant assent, we enrolled the first 303 respondents (152 California/151 Minnesota). About one-half of the sample participated in 10th grade and a second time in 11th grade; the other half of the sample participated in 11th grade and a second time in 12th grade. For the 303 baseline participants, 293 at baseline and 273 at follow-up had ≥ 2 adherent days of accelerometry recorded during either of the two measurement periods. Of these, 265 participants were observed in both measurement periods and were included in these analyses.

Among the sample of 265 girls, approximately half lived in Minnesota ($n=134$) and the other half in California ($n=131$). The average time between baseline and follow-up measurements was 1.0 years (standard deviation 0.1). The California sample included more participants who self-identified as Hispanic, moved homes between baseline and follow-up, and had a higher proportion on free or reduced lunch at both measurement periods than the Minnesota sample (Online Table 1). Overall, 22 girls moved from baseline to follow-up, but all remained in the study area. Using the home environment measures around each participant's home, the California site had a higher population density (52.0 vs. 12.8 persons/mile²) and percentage of households that were African American (9.7% vs. 0.7%), Hispanic (27.6% vs. 1.4%), less than a high school education (43.9% vs. 30.2%), unemployed (5.4% vs. 2.4%), and under the poverty level (8.2% vs. 3.1%) compared to the Minnesota site.

Limiting to “adherent days”, the accelerometer was worn on average 4.5 days (SD 1.4) at baseline and 4.1 days (SD 1.3) at follow-up (maximum possible 6 days). Girls averaged 16.6 and 16.0 minutes/day of MVPA at baseline and follow-up, respectively, with similar results by site (Table 1). Average accelerometer counts/minute declined from 355.2 at baseline to 342.9 at follow-up, with a larger decline noted for Minnesota participants (data not shown). Among MVPA minutes with concurrent GPS data, 30% occurred near home (defined as a 1 kilometer Euclidean distance), 30% near school, and 40% elsewhere.

The median Euclidean distance to the park closest to participants' home was 0.2 miles (SD 0.3 miles) at baseline, with no changes at follow-up (Online Table 1). Overall, 20.0% visited a park at least once during the 6-day monitoring period at baseline and 19.2% at follow-up. However, the average daily number of parks visits was low at both time periods (mean 0.1 times/adherent accelerometer day, Table 2). At baseline, 5.7% ($n=15$) had ≥ 2 visits to the park and one girl had 5 visits; the maximum number of park visits/adherent day was 1 with a maximal duration of 215.5 minutes. At follow-up, 7.5% ($n=20$) had ≥ 2 visits and one girl had 4 visits; the maximum number of park visits/adherent day was 1 with a maximal duration of 82.7 minutes. The Pearson correlation coefficient between the park visit frequency at time 1 and time 2 was 0.16, and between park visit duration at time 1 and time 2 was 0.07.

Park visits were more frequent for California compared to Minnesota participants at both time periods (data not shown), and visits were higher on the weekends compared to the weekdays at baseline but not follow-up. When combining both visits, the median size of the

parks visited within 0–<5 miles, 5–<10 miles, and ≥10 miles was 12.8, 158.1, and 720.6 acres, respectively.

On days when a park was visited, the duration of MVPA and average counts/minute were higher than on days when a park was not visited at both baseline and follow-up (Table 2). At baseline and follow-up, average MVPA minutes per day were 42% and 102% higher on days when parks were visited relative to days when they were not visited at baseline, respectively. On average, 1.9% in California and 2.8% in Minnesota of MVPA occurred in parks.

There were 73 park visits recorded at baseline (among 53 of 265 participants) and 83 park visits at follow-up (among 51 of 265 participants) during the 6-day monitoring period (Table 3). Parks were visited a mean distance of 4.1 miles from home at baseline and 3.9 miles at follow-up. The mean duration of park visits was 63.9 minutes (baseline) and 38.4 minutes (follow-up). Overall, n=6 at baseline and n=3 at follow-up had park visits ≥3 hours in duration (all in California). When exploring further, differences were also found in the number of short park visits over the one-year period (visits <10 minutes in duration: n=22 at baseline, n=32 at follow-up). It is possible that some of these short visits were attributable to commuting rather than an actual visit in the park.

For each park visit at baseline, a mean of 5.4 minutes was spent in MVPA (9.6% of accelerometer monitoring time), with 29.2 minutes in light activity (51.3%) and 22.3 minutes in sedentary (39.1%). At follow-up, a mean of 6.0 minutes was spent in MVPA (16.3% of accelerometer monitoring time) with 18.4 minutes in light activity (49.6%) and 12.7 minutes in sedentary (34.1%).

Discussion

Earlier results from the TAAG Study, focusing on girls when they were in the 6th grade from all 6 study sites, revealed that living near a higher number of parks was associated with more non-school MVPA than living near fewer parks (Cohen et al., 2006a; Cohen et al., 2006b). In addition, the type of park (neighborhood or community park), park offerings (playgrounds, basketball courts, gyms, walking paths, swimming areas, and tracks), and park amenities (streetlights or floodlights) were associated with more non-school MVPA. However, the 6th grade assessment lacked a measure of girl-level park use in order to discern whether the parks were being used. The current study overcame this limitation, with a focus on girls from 2 of the 6 sites, by combining accelerometry, GPS, and GIS data. The current study revealed that when girls reach high school age, about one-fifth visited parks at least once in the past 6 days of measurement. At both times, on days when a park was visited, MVPA and average counts/minute were consistently higher than on days when a park was not visited.

In this study, we found that a variety of parks were visited, not always the closest one from home, a finding supported by an Australian study of adolescents (Edwards et al., 2015). We also found on average only 2–3% of MVPA occurred in parks at baseline and follow-up, although there was also variation across participants. Other studies of both male and female children (Dunton et al., 2014; Jones et al., 2009; Oreskovic et al., 2012) and adolescents

(Klinker et al., 2014; Rainham et al., 2012) indicate that parks are more common locations for MVPA than in our study. However, an exception is a New Zealand study of 5–10 year old boys and girls which documented only 2% of daily physical activity occurring in parks or playgrounds (Quigg et al., 2010). Of note, our study included girls only but others have documented that boys accrue more of their physical activity from “greenspace” (Wheeler et al., 2010). Other locations of importance for physical activity include schools, roads, homes, and other green spaces, which could be explored in the future using this data. It is important to identify and further examine the reasons that draw some girls to parks and not others.

We found some individual variation across the sample among those who visited park, in terms of frequency of visits and visit duration. There were several high-frequency park users and more non-users. The high-frequency users may have been participating in organized sports activities, but unfortunately we do not have data on where the sports activities were occurring to verify this. The finding is also supported by findings in a systematic review, that highlighted large individual variation in time spent in various built environment settings among youth (McGrath et al., 2015). The authors suggest that youth with lower physical activity in a given setting, such as parks, could be targeted to increase their physical activity at that setting such as through improved or increased opportunities or extending the time of the visit.

The finding of diminishing park usage as youth age is supported by observational studies of park users, with girls proportionately lower than boys both among children and adolescents (Evenson et al., 2016). Some have hypothesized that with greater autonomy and independence, adolescents become more independently mobile outside of the home (McGrath et al., 2015). This hypothesis may be supported in our study in that although girls lived close to parks, they often chosen to visit parks that were further from home. However, we do not have data on whether the girls were accompanied by a parent or guardian.

Study Limitations and Strengths

There are several limitations to this study. First, the GPS unit has difficulty accurately pinpointing locations indoors or in dense urban environments with large closely connected buildings. In this study, GPS points were missing during park visits 13.7% at baseline and 11.0% at follow-up. Because of this, we may have missed short duration park visits or portions of visits when a participant was near or inside a building. Second, despite our attempts using multiple data sources to determine park locations, it is possible that some park visits were missed (Evenson and Wen, 2013). Third, these findings were generated from two US cities and thus, generalizability is limited. Fourth, the sample size of actual park visits was small, limiting statistical power and precision. Fifth, we do not have data on park quality, programming, and amenities which may contribute to why girls often visited more distant parks. Finally, it is possible that 2 to 6 days of measurement does not adequately reflect park use among adolescent girls. Another study has explored the number of days required to assess context among adults and found large variation in (Holliday et al., 2016). However, it is encouraging that our findings were generally similar between the two time points. The strengths of this study include expanding methods developed and used by earlier studies to match GPS and accelerometer data, not relying solely on self-reported

information to determine physical activity behavior and location, and the multiple assessments of physical activity and location.

Conclusion

In conclusion, this study found that although one-fifth of the high school girls visited a park in the past 6 days, the contribution to MVPA was small and did not meaningfully change over the one-year follow-up period. MVPA and average physical activity was higher on days when girls visited parks than on days when they did not. Although girls generally lived close to parks, more distant parks were visited more often than those closer to home. These findings indicate that parks were an underused physical activity resource for adolescent girls in the study. Future work could determine the activities adolescent girls are participating in at the parks and the reasons that draw girls to some parks and not others, such as park quality, programming, advertisement, amenities, and safety (Loukaitou-Sideris and Sideris, 2010; Timperio et al., 2008).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The authors thank the participants, staff, and investigators at both study sites for their contributions to this study.

Funding: This study was supported by the National Institutes of Health (NIH), National Heart Lung and Blood Institute grants #R01HL71244, U01HL-66845, HL-66852, HL-66853, HL-66855, HL-66856, HL-66857, and HL-66858. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

List of Abbreviations

BMI	body mass index
GIS	geographic information systems
GPS	global positioning system
MVPA	moderate to vigorous physical activity
PA	physical activity
TAAG	Trial of Activity for Adolescent Girls
US	United States

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Table 1

Description of physical activity and sedentary behavior at baseline and follow-up (total sample n=265)

	Baseline		Follow-up	
	Mean minutes/day	Percent	Mean minutes/day	Percent
Distribution of physical activity and sedentary behavior				
Sedentary	480.9	60.6	487.1	61.2
Light	296.3	37.3	292.6	36.8
Moderate	13.8	1.7	13.6	1.7
Vigorous	2.8	0.3	2.5	0.3
MVPA	16.6	2.1	16.0	2.0
Average counts/minute	355.2		342.9	
<u>While in the park:</u>				
MVPA	0.32	0.04	0.44	0.06
Average counts/minute	846.7		1339.9	

Abbreviations: MVPA, moderate to vigorous physical activity

Table 2
Participant characteristics on park visits and physical activity at baseline and follow-up (total sample n=265)

	Baseline					Follow-up					p value*
	n	Mean	Median	25th	75th	n	Mean	Median	25th	75th	
Number of park visits/adherent day	265	0.1	0.0	0.0	0.0	265	0.1	0.0	0.0	0.0	0.02
Duration of park visits/adherent day	265	4.4	0.0	0.0	0.0	265	3.2	0.0	0.0	0.0	0.03
Euclidean distance from home to the closest park (miles)	265	0.3	0.2	0.1	0.4	265	0.3	0.2	0.1	0.4	0.20
Number of days visited park/adherent day	265	0.1	0.0	0.0	0.0	265	0.08	0.00	0.00	0.00	0.02
Weekdays	261	0.0	0.0	0.0	0.0	263	0.08	0.00	0.00	0.00	0.09
Weekends	220	0.1	0.0	0.0	0.0	194	0.10	0.00	0.00	0.00	0.995
p value**		0.01					0.43				
# MVPA minutes/day:											
Overall	265	17.1	14.5	9.2	23.0	265	16.1	13.5	8.2	21.1	0.33
On days with park visit	53	23.3	16.0	4.0	34.5	51	26.6	20.0	10.0	30.0	0.48
On days without park visit	265	16.4	14.3	8.5	22.1	265	12.8	10.6	6.0	17.6	<0.0001
p value**		0.001					<0.0001				
Average counts/minute:											
Overall	265	358.9	343.4	282.0	419.1	265	346.3	320.2	270.8	406.4	0.16
On days with park visit	53	414.6	393.6	304.1	483.0	51	427.5	385.3	290.8	537.9	0.70
On days without park visit	265	355.4	340.9	278.8	414.2	265	341.4	319.1	268.0	396.9	0.12
p value**		0.0008					<0.0001				

Abbreviations: MVPA, moderate to vigorous physical activity

* p value compares baseline to follow-up using the non-parametric Wilcoxon sign rank test for 2 dependent samples

** p value compares whether the measure differs on days when parks are visited vs. on days when a park is not visited using the non-parametric Wilcoxon sign rank test for 2 dependent samples

Note: Two or more adherent days were required for the analysis. The sample size for weekdays (n=261) and weekends (n=220) decreases from the original sample size (n=265) since some girls do not have these days.

Table 3

Description of unique park visits among girls with visits to the park

	Baseline Park Visits (n=73)				Follow-up Park Visits (n=83)			
	Mean	Median	25th Percentile	75th Percentile	Mean	Median	25th Percentile	75th Percentile
Physical activity during park visit (minutes):								
Non-wearing	7.0				1.3			
Sedentary	22.3	9.0	1.0	26.0	12.7	6.0	1.0	18.0
Light	29.2	12.0	3.0	44.0	18.4	5.0	2.0	25.0
Moderate	4.5	1.0	0.0	3.0	3.7	1.0	0.0	4.0
Vigorous	0.9	0.0	0.0	0.0	2.3	0.0	0.0	1.0
MVPA	5.4	1.0	0.0	6.0	6.0	1.0	0.0	5.0
Duration of park visit (minutes)	63.9	35.0	8.0	107.0	38.4	24.0	6.0	55.0
Euclidean distance to the parks that were visited (miles), excluding >=100 miles	4.10	2.33	0.91	5.10	3.89	2.34	0.60	4.71
Euclidean distance to the parks that were visited								
	Number	Percent	Number	Percent				
0-<1 mile	18	24.7	30	36.1				
1-<2 miles	12	16.4	8	9.6				
2-<5 miles	21	28.8	25	30.1				
5-<10 miles	8	11.0	10	12.0				
10-<100 miles	9	12.3	9	10.8				
>=100 miles	5	6.8	1	1.2				
Distribution of physical activity during park visit (while wearing accelerometer):								
	Mean	Percent	Mean	Percent				
Sedentary	22.3	39.1	12.7	34.1				
Light	29.2	51.3	18.4	49.6				
Moderate	4.52	7.9	3.72	10.0				
Vigorous	0.9	1.6	2.3	6.2				

Abbreviations: MVPA, moderate to vigorous physical activity

Note: The park visits were documented among 53 girls at baseline and 51 girls at follow-up.