
PHYSICAL ACTIVITY IN GEORGIA STATE PARKS: A PILOT STUDY

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Abstract.—This pilot study assessed the role of Georgia State Parks in the promotion of physical activity among different racial/ethnic and age groups. Data were collected at three state parks in north Georgia during the summer of 2009 using two research methods: behavior observations (N=2281) and intercept surveys (N=473). Observational data showed that African Americans and children were the most active demographic groups. Surveys revealed that almost 80 percent of adults and 95 percent of children engaged in some physical activity during their state park visit. Relative to other sites, state parks appeared to be an especially important physical activity destination for Hispanic/Latinos. Although white, African American, and Latino children engaged in land and water activities at approximately equal rates, white children participated in more nature-based activities and minority children spent more time outside interacting with electronics. Participant comments suggested that higher levels of physical activity could be encouraged through an expansion of open green space, construction of kid-friendly trails near picnic areas, and better advertising and information. Results of this study should provide Georgia state park managers with insightful strategies for promoting and sustaining park-based physical activity across diverse populations.

1.0 INTRODUCTION

The negative health effects associated with physical inactivity have become a major problem for the United States population, especially for children and low-income minority groups (Ogden et al. 2006, Pratt 2008). In Georgia, for example, less than 50 percent of all adults are regularly active; the percentages of regularly active African American (38 percent) and Hispanic/Latino adults (28 percent) in the state are particularly low (CDC 2009a).

By providing multiple opportunities for increasing physical activity levels, public parks represent a potential solution to this problem (Mowen et al. 2008). In fact, outdoor recreation planners acknowledge the physical health benefits often associated with park visitation (Georgia SCORP 2008). Researchers have also recognized a need for more studies that examine relationships between park use and physical activity, including the identification of park attributes that encourage activity in minority and low socio-economic populations (Flores 2008, Kaczynski and Henderson 2007). Investigations of park-based physical activity should also examine factors influencing the outdoor activities of children, another high-risk population (Roemmich et al. 2006). Therefore, the purpose of this pilot study was to assess the role that state parks play in the promotion of physical activity among diverse racial/ethnic and age groups in Georgia.

2.0 METHODS

Data were collected at three state parks in north Georgia (Fort Mountain, Fort Yargo, and Red Top Mountain) during the summer of 2009 using two research methods: behavior observations (N=2281) and intercept surveys (N=473). The three state parks were selected as study sites based on annual visitation rates and anecdotal reports from park managers regarding the ethnic, racial, and cultural

diversity of visitors. Data collection focused on concentrated centers of recreation activity with high visitor densities, or recreation hotspots, within each park. Examples of recreation hotspots included campgrounds, swimming beaches, and other grassy play and picnic areas ideally suited for fitness and/or sports activities.

Observations of park visitors in designated recreation hotspots were conducted using a modified version of the System for Observing Play and Recreation in Communities (SOPARC). SOPARC is a reliable and feasible strategy for assessing physical activity in community settings, and has been used to examine park activity in multiple contexts (McKenzie et al. 2006). During SOPARC sessions, a researcher began at one end of a target area and slowly walked across the zone, documenting the age, ethnicity, and physical activity level (sedentary, moderate, or vigorous) of recreation participants. If visitors were engaged in either moderate or vigorous physical activity when they were observed, the activity type was also noted.

Intercept surveys administered in the recreation hotspots focused on physical activity in parks. During intercept survey sessions, researchers and trained volunteers approached every third visitor age 18 or older and asked if he/she would be willing to participate in a ten-minute survey about state park use. After a survey was distributed, researchers remained in the area and responded to questions as necessary, allowing ample time (approximately 10-15 minutes) for survey completion. Surveys were available in Spanish, and the Spanish language proficiency of all survey administrators was verified prior to field work.

Self-reported physical activity questions reflected those used in international and national lifestyle surveys such as the International Physical Activity Questionnaire and the Behavioral Risk Factor Surveillance System (CDC 2009b, Craig et al. 2003). Items distinguished between moderate physical activity, which causes some increase in breathing and heart rates for at least ten minutes at a time, and

vigorous physical activity, which produces a large increase in breathing and heart rates for at least ten minutes at a time (CDC 2009b).

In addition to self-reported estimates of physical activity, respondents were asked to assess their use of state parks relative to other possible settings during their daily physical activity pursuits. Participants also rated the value of different park features and facilities in promoting physical activity. Additional open-ended items allowed visitors to offer suggestions for increasing park-based physical activity. If survey participants were in groups with children, they were given a supplemental survey page with additional questions about children's outdoor activities adapted from the National Kids Survey (Cordell et al. 2009). The intercept survey response rate was approximately 83 percent.

Data were analyzed using SPSS Version 17.0. Inter-rater reliability of the SOPARC observations was assessed using bivariate and intra-class correlations. Pearson's chi-square tests were used to examine associations between physical activity observations and demographic variables. Descriptive statistics describing physical activity levels and location preferences were obtained for the overall population and specific demographic groups, and analysis of variance was used to compare group means when distribution assumptions were satisfied.

3.0 RESULTS

Inter-rater reliability of the SOPARC observation counts for specific demographic and activity categories was high (Pearson's r and intra-class correlation coefficients ≥ 0.939) and comparable to inter-observer agreement in similar studies (Floyd et al. 2008). The SOPARC sampling showed that 56.9 percent of park visitors were sedentary, 39.4 percent were engaged in moderate activity, and 3.8 percent were engaged in vigorous activity. The activity levels of state park visitors differed by ethnicity ($\chi^2_{6,N=2281} = 61.1$, $p \leq 0.001$) and age ($\chi^2_{6,N=2281} = 281.1$, $p \leq 0.001$), with African Americans being more active than other

racial/ethnic groups and children being more active than other age groups (Tables 1 and 2). African American children were also more active than children from other racial/ethnic groups ($\chi^2_{6,N=703} = 20.0$, $p = 0.003$). Swimming was the most popular activity in recreation hotspots, especially among Hispanic/Latinos and children.

Almost 80 percent of visitors reported some physical activity during their state park visit, with mean levels of self-reported moderate (83.7 minutes) and vigorous (35.9 minutes) physical activity exceeding average recommended daily values (without a state park visit) by at least 120 percent. Approximately 95 percent of children were active during their visits, engaging in an average of 166.3 minutes of moderate and 63.2 minutes of vigorous physical activity per visit.

Picnic areas, swimming areas, and hiking trails were the most popular physical activity locations within state parks, followed by open green space and playgrounds. Visitors reported personal homes/backyards as the most frequently used location for physical activity across all ethnic groups. Statistically significant differences in use levels were not observed among state parks, neighborhood parks, and streets and sidewalks during physical activity pursuits. State parks [$F(2,428)=10.04$, $p < 0.001$] and neighborhood parks [$F(2,430)=10.11$, $p < 0.001$] were more important physical activity locations for Hispanic/Latinos than whites or African Americans (Figure 1). Homes/backyards were a more important physical activity location for whites than ethnic minorities [$F(2,410)=3.98$, $p = 0.019$].

Swimming (approximately 69.9 percent of child visitors) and walking/hiking (39.3 percent) were the most popular activities for children in state parks. Children's outdoor activity participation varied by ethnicity. Based on parents' reports, white children and minority children engaged in land (walking, running, biking) and water (swimming, canoeing) activities at approximately equal rates [$F(2,344)=0.09$, $p = 0.915$ for land; $F(2,331)=0.99$, $p=0.0374$ for water]. However, white children participated in more

Table 1.—Percent of Georgia State Park visitors by racial/ethnic group participating in different levels of physical activity during moment-in-time behavior observations at recreation hotspots, summer 2009 (N=2281)

Racial/Ethnic Group	Physical Activity Level		
	Sedentary	Moderate	Vigorous
White	58%	38%	4%
African American	38%	56%	6%
Hispanic/Latino	58%	40%	2%
Other	65%	24%	11%

Table 2.—Percent of Georgia State Park visitors by age group participating in different levels of physical activity during moment-in-time behavior observations at recreation hotspots, summer 2009 (N=2281)

Age Group	Physical Activity Level		
	Sedentary	Moderate	Vigorous
Children	36%	58%	6%
Teens	54%	41%	5%
Adults	73%	25%	2%
Seniors	83%	16%	1%

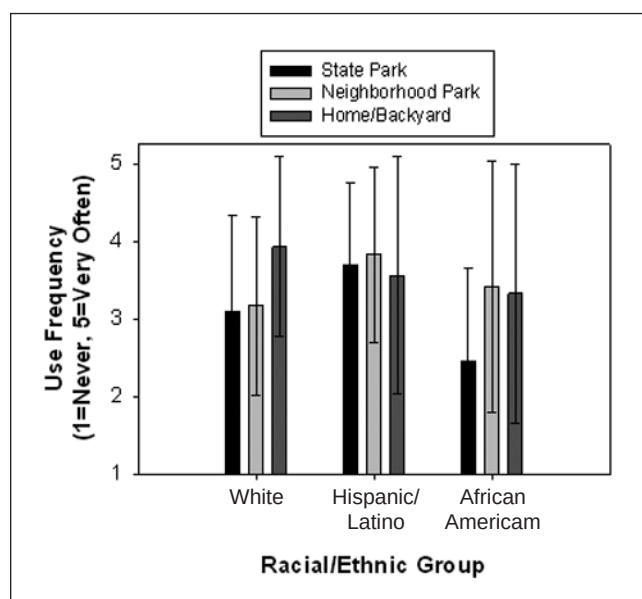


Figure 1.—Frequency of use rating (with standard deviations) for potential physical activity destinations among different racial ethnic groups in North Georgia (N=473).

nature-based activities and wildlife viewing than minority children [$F(2,330)=8.14$, $p < 0.000$], who spent more time interacting with electronics outdoors [$F(2,333)=10.03$, $p < 0.000$].

Many respondents provided suggestions for encouraging physical activity in state parks for adults ($n=150$) and children ($n=200$). The most common ideas for promoting adult park-based activities included: lower entrance fees (16); better advertising/information (16); better areas for children (13); easier trails (7); and more open green space (7). The most common recommendations for promoting children's park-based activity included: larger playgrounds (24); more guided walks and ranger programs (20); more events and camps (19); more open green space (16); better advertising/information (16); cleaner/safer recreation areas (15); and easier trails (14).

4.0 DISCUSSION AND IMPLICATIONS

This study emphasized the increasing importance of physical health-related issues in outdoor recreation management and addressed a growing need to identify and inventory physical activity offerings in public parks (Wilhelm Stanis et al. 2008). The mixed method data collection approach involving self-reported and observed behavior measures yielded a comprehensive overview of physical activity superior to that of many single metrics. The SOPARC observations indicated that two high-risk groups, children and African Americans, were especially active in state park recreation hotspots. Intercept surveys also revealed surprisingly high levels of park-based physical activity across all racial/ethnic groups. Although these findings were encouraging, refined survey questions and innovative, objective data collection strategies may be needed to validate the high physical activity levels reported by participants in this study.

Preliminary results of this pilot study suggested that state parks already play an important role in supporting physical activity in the lives of many Georgia residents. Public parks, including state parks, appeared to be an especially important physical activity destination for Hispanic/Latinos. Additional

examinations of correlations between park visitation frequency and park-based physical activity could yield more information about the specific capacity of state parks to promote healthy, active lifestyles. Future research efforts should also expand to incorporate information regarding the physical activity of nonusers in racially/ethnically diverse communities surrounding focal parks.

Finally, this study revealed several ways to improve parks and increase opportunities for physical activity. Participant comments suggested that higher levels of physical activity could be encouraged through expansion of open green space, construction of kid-friendly biking and hiking trails near picnic areas, and more aggressive advertising campaigns. Continued efforts to attract and engage new visitors by incorporating these suggestions could especially benefit minority children, who typically have fewer opportunities to experience outdoor nature activities (Larson et al. 2009). Overall, this pilot study created a functional framework for future park-based physical activity assessments and provided a foundation for additional research to help park managers promote and sustain park-based physical activity across diverse populations.

5.0 LITERATURE CITED

- Centers for Disease Control and Prevention. 2009a. **Behavioral Risk Factor Surveillance System survey data**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Centers for Disease Control and Prevention. 2009b. **Behavioral Risk Factor Surveillance System questionnaire**. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Cordell, H.K.; Betz, C.J.; Green, G.T. 2009. **National Kids Survey - Part II: What do kids do outdoors?** 5 p. Internet Research Information Series (IRIS) Report. Available at <http://warnell.forestry.uga.edu/nrrt/nsre/IRISRec/IRISRec11rpt.pdf>. (Accessed March 8, 2010).

- Craig, C.L.; Marshall, A.L.; Sjostrom, M.; et al. 2003. **International physical activity questionnaire: 12-country reliability and validity.** *Medicine and Science in Sports and Exercise.* 35(8): 1381-1395.
- Flores, G.R. 2008. **Active living in Latino communities.** *American Journal of Preventive Medicine.* 34(4): 369-370.
- Floyd, M.F.; Spengler, J.O.; Maddock, J.E.; Gobster, P.H.; Suau, L.J. 2008. **Park-based physical activity in diverse communities of two U.S. cities: an observational study.** *American Journal of Preventive Medicine.* 34(4): 299-305.
- Georgia Statewide Comprehensive Outdoor Recreation Plan (SCORP). 2008. **Georgia Statewide Comprehensive Outdoor Recreation Plan 2008-2013.** Atlanta, GA: Georgia Department of Natural Resources, Parks, Recreation, and Historic Sites Division.
- Kaczynski, A.T.; Henderson, K.A. 2007. **Environmental correlates of physical activity: a review of evidence about parks and recreation.** *Leisure Sciences.* 29(4): 315-354.
- Larson, L.R.; Green, G.T.; Castleberry, S.B. 2009. **The impact of a summer education program on the environmental attitudes and awareness of minority children.** In: Klenosky, D.B.; Fisher, C.L., eds. *Proceedings of the 2008 Northeastern Recreation Research Symposium.* Gen. Tech. Rep. NRS-P-42. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station: 1-7.
- McKenzie, T.L.; Cohen, D.A.; Sehgal, A.; Williamson, S.; Golinelli, D. 2006. **System for observing play and recreation in communities (SOPARC): reliability and feasibility measures.** *Journal of Physical Activity and Health.* 3(S1): S208-S222.
- Mowen, A.; Kaczynski, A.; Cohen, D. 2008. **The potential of parks and recreation in addressing physical activity and fitness.** In: *Research Digest.* Washington, DC: President's Council on Physical Fitness and Sports. 9(1): 1-8.
- Ogden, C.L.; Carroll, M.D.; Curtin, L.R.; McDowell, M.A.; Tabak, C.J.; Flegal, K.M. 2006. **Prevalence of overweight and obesity in the U.S., 1999-2004.** *Journal of the American Medical Association.* 295: 1549-1555.
- Pratt, C.A. 2008. **Findings from the 2007 active living research conference: implications for future research.** *American Journal of Preventive Medicine.* 34(4): 366-368.
- Roemmich, J.N.; Epstein, L.H.; Raja, S.; Yin, L.; Robinson, J.; Winiewicz, D. 2006. **Association of access to parks and recreational facilities with the physical activity of young children.** *Preventive Medicine.* 43: 437-441.
- Wilhelm Stanis, S.A.; Schneider, I.E.; Shinew, K.J.; Chavez, D.J.; Vogel, M.C. 2008. **Physical activity among Hispanic/Latino and non-Hispanic/Latino white visitors on urban-proximate public lands.** In: Chavez, D.J.; Winter, P.L.; Absher, J.D., eds. *Recreation visitor research: studies of diversity.* Gen. Tech. Rep. PSW-GTR-210. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station: 113-122.

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