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Socioeconomic and Racial/Ethnic Disparities in Physical Activity Environments in Georgia Elementary Schools

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Abstract

Purpose: This study aimed to characterize physical activity (PA) environments in Georgia public elementary schools and to identify socioeconomic status (SES) and racial/ethnic disparities in PA environments.

Design: A school setting PA survey was launched in 2013 to 2014 as a cross-sectional online survey assessing PA environment factors, including facility access and school PA practices, staff PA opportunities, parental involvement in school PA, and out-of-school PA opportunities.

Setting: All 1333 Georgia public elementary schools were recruited.

Participants: A total of 1083 schools (81.2%) responded. Survey respondents included school administrators, physical education (PE) teachers, and grade-level chairs.

Measures: Physical activity environment factors were assessed via an online questionnaire adapted from school PA surveys and articles.

Analysis: The chi-square and Fisher exact analyses were conducted to examine the reporting of PA environment factors overall and by school SES, as measured by free/reduced lunch rate, and/or racial/ethnic composition.

Results: Overall, many PA environment factors were widely prevalent (ie, gym [99%] or field [79%] access), although some factors such as some PA-related programs (ie, a structured walk/bike program [11%]) were less widely reported. Disparities in school PA environment factors were largely patterned by SES, though they varied for some factors by racial/ethnic composition and across SES within racial/ethnic composition categories. For example, lower SES schools were less likely to report access to blacktops and tracks (p -value < .0001), and higher SES schools were less

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Authors' Note

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Declaration of Conflicting Interests

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likely to report access to playgrounds (p -value = .0076). Lower SES schools were also less likely to report “always/often” giving access to PE/PA equipment during recess (p -value < .01). Lower SES and majority nonwhite schools were less likely to report having joint use agreements with community agencies (p -value < .0001).

Conclusion: This study highlights SES and racial/ethnic disparities in PA environments in Georgia public elementary schools.

Keywords

active living/built environment; health promoting community design; low income; racial minority groups; school; school physical activity environment

Purpose

The US Department of Health and Human Services recommends children and adolescents participate in 60 minutes or more of physical activity (PA) per day.¹ Increased child and adolescent participation in PA has been associated with a reduced incidence of becoming overweight or obese and developing type II diabetes in childhood and chronic conditions in adulthood.^{2,3} Schools, where children and adolescents spend much of their time, are environments that could serve as a vital intervention to increase children’s and adolescents’ participation in daily PA.^{4–8} Within a social–ecological framework, in addition to peers and family, schools may fit into the “microsystem” that influences opportunities for health promotion among children and adolescents.⁹ A school’s PA environment in particular, in the form of access to PA-related resources and facilities, as well as opportunities for student, staff, and parental involvement in school-based PA programs, may facilitate an increase in PA at school and serve as a launching point for increasing physically active behavior for children and adolescents outside of school and among staff and parents.^{6,10–16} The association between school PA environment factors, including environment improvements, supervision, and area type and size, and student participation in moderate to vigorous PA has been established in at least 1 study.¹³

However, some schools may not have a PA environment that supports adequate access to PA-related resources, facilities, and opportunities. In 2009 to 2010, 1 in 4 US public elementary school students attended a school with no access to a gymnasium or with access to one that was inadequate.¹⁷ Further, administrators of 14% of US public elementary school students deemed their schools’ indoor facilities as inadequate and “a barrier to implementing high-quality physical education (PE) programming.”¹⁷ Inadequate facilities and equipment has also been cited elsewhere as barriers to implementing PE programs.¹⁸

Although studies on disparities in school PA environments are limited (particularly, as it pertains to factors outside of facility access), research has shown that disparities in school PA environments are often socially patterned by socioeconomic status (SES) and race. At the school level, lower SES schools are less likely to have PE teachers^{5,19,20} and facilities that are conducive for PA.²¹ Further, predominantly non-Hispanic white schools have been found to have better recess practices and PA facilities (eg, gymnasium or playground) than schools that are predominantly Latino or non-Hispanic black.²² On an individual level, these

disparities persist as well. For example, in a nationally representative cohort of US adolescents, 39.4% of black and 58.5% of Hispanic fifth graders reported not having access to a gymnasium or having access to one that was not always adequate compared to 31.5% of white fifth graders, though this stark disparity was not observed in access to playgrounds.²³

For the state of Georgia, improving a school's PA environment may prevent and combat the growing obesity epidemic by increasing child and adolescent participation in quality school PA. In 2014, only one-fourth of youth met the 60-minute guideline for PA in Georgia.²⁴ Maximizing the intervention potential of school PA environments may be critically important,^{12,25} especially in schools that primarily consist of lower socioeconomic and minority student populations that are more likely to be overweight or obese and to participate in less PA.²⁶ Thus, this study aims to characterize PA environments in Georgia public elementary schools and to identify socioeconomic and racial/ethnic disparities in school PA environments using data from a statewide school setting PA survey. Moreover, this study aims to add to the limited PA environment research available on racial/ethnic and SES disparities in less widely studied school PA environment factors, including joint use agreements, access to equipment during recess, staff PA and parental involvement opportunities, among others.

Methods

Design

A school setting PA survey, Power Up for 30 (PU30), was launched in 2013 through a collaboration between the Georgia Department of Education (DOE), the Department of Public Health, and a nonprofit organization, HealthMPowers. The PU30 survey was created as an online survey and aimed to assess the PA environment and opportunities provided by Georgia public elementary schools for students and staff using reported information from school administrators, PE teachers, and grade-level chairs. The survey was created from adapting current school PA survey tools and articles, including the Institute of Medicine's *Educating the Student Body: Taking PA and PE to School*,²⁷ the Centers for Disease Control and Prevention's (CDC) *School Health Index*,²⁸ the Society for Health and Physical Education America and CDC's *Comprehensive School PA Programs: A Guide for Schools*,²⁹ and the Alliance for a Healthier Generation's *Healthy School Inventory*.³⁰ Information on the pilot testing and additional details of the survey are available on request.

Samples

Between October 29, 2013, and September 8, 2014, an administrator, a PE teacher, and a grade-level chair for each grade between kindergarten through fifth grade at all 1333 Georgia public elementary schools were contacted to participate in the PU30 survey. Participants were sent an e-mail which included an online link to the school setting PA survey. A total of 1083 schools (response rate = 81.2%) responded. A total of 1077 schools submitted completed (at least 1 administrator, 1 PE teacher, and 1 grade-level chair submitted a complete survey) or partially completed (at least 1 administrator, PE teacher, or grade-level chair submitted a complete survey) surveys. Overall, the survey included responses from 880 PE teachers; 938 administrators; and 662 kindergarten, 667 first-grade,

665 second-grade, 689 third-grade, 689 fourth-grade, and 672 fifth-grade-level chairs, respectively. The study was approved by the institutional review board of the Emory University and determined to be exempt.

Measures

School characteristics.—Georgia DOE data from 2013 on school racial/ethnicity composition, free/reduced lunch eligibility, size, and geography were extracted and matched to the 1333 Georgia elementary schools contacted for participation in the PU30 survey. Categorizations for free/reduced lunch eligibility, which were used as a proxy of school SES, were created—high SES: 20%; middle-high SES: 21% to 50%; middle-low SES: 51% to 80%; and low SES: 81%. Categorizations for geography included city, town, suburban, and rural. School racial/ethnic composition was categorized majority white (>50% white students) and majority nonwhite (<50% white students). School size tertile categories were also created (tertile cut points: first: <514 students, second: 514–687 students, and third: >687 students).

Physical activity environment measures.—Physical activity environment measures from the PU30 survey were categorized based on 3 themes: (1) facilities and school practices, (2) staff opportunities, and (3) parental involvement and out-of-school opportunities. For facilities and school practices, schools were asked to answer questions regarding facilities available for PE use (eg, gym, blacktop, or “asphalt concrete,” field, playground, track, classroom, or none); availability of PE/PA equipment during recess; whether a policy/practice that recess may not be withheld as punishment for behavior is available; and whether various PA-related events/programs are available (eg, structured walk/bike school program, assemblies, school health advisory council/committee, or wellness committee, etc). For staff opportunities, schools were asked to answer questions regarding whether and when various PA opportunities (eg, exercise classes, walking clubs, etc) are offered to staff and how many staff members participate in the PA opportunities offered. For parental involvement and out-of-school opportunities, schools were asked to answer questions regarding how many parents are involved in promoting PE/PA before, during, and after school and whether there is a joint use agreement with any community agencies for access to school facilities or properties for recreational use outside of school hours. If schools reported having a joint use agreement, they were asked how many days per week the school facilities or properties are open for recreational use outside of school hours.

Analysis

Data from completed or partially completed surveys from 1077 schools were used for analyses. In order to depict the most accurate information possible, survey responses used for analyses were taken from staff members who were expected to know the most about the respective PA environment question. Information on facility access was taken from PE teacher survey responses, and information on classroom PA and recess was taken from grade-level chair survey responses. Information on policies and parental and staff opportunity and participation was taken from administrator survey responses. Descriptive statistics were used to describe overall school characteristics and distributions of PA environment features in the sample of schools. Chi-square and Fisher exact analyses were

used to examine the distribution of PA environment features overall and by school characteristics, including free/reduced lunch eligibility, racial/ethnicity composition, and free/reduced lunch eligibility within racial/ethnicity composition categories. All analyses were performed using SAS, version 9.4 (Cary, North Carolina). An α value of .05 was used to determine statistical significance.

Results

School Characteristics

The majority of schools were categorized as suburban (40%) and rural (30%) schools, while fewer schools were categorized as city (20%) or town (11%) schools (Table 1). According to Georgia DOE records, almost half (47%) of surveyed schools had 75% or more of students who were eligible for free/reduced lunch, while only 10% of schools had less than 25% of students who were eligible for free/reduced lunch. Approximately 55% of schools were majority nonwhite. On average, schools enrolled 650 full-time students. Percentage free/reduced lunch eligibility was strongly inversely associated with percentage white students ($r = -.61$, p -value $< .01$) and weakly inversely associated with school size ($r = -.12$, p -value $< .05$; Table 2). City (79%) and town (77%) schools had a higher percentage of free/reduced lunch eligible students than suburban (59%) and rural (67%) schools. City schools had the highest percentage of nonwhite students (79%), while rural schools had the highest percentage of white students (62%). Suburban schools had the largest school size, with an average of 749 full-time students enrolled.

Differences in Facilities and School Practices

Most schools had access to gyms (99%) and fields (79%; Table 3); however, fewer schools reported access to blacktops (52%), playgrounds (58%), tracks (25%), and classrooms (28%). Socioeconomic disparities were observed for access to blacktops, playgrounds, and tracks. Lower SES schools were less likely to report access to blacktops and tracks (p -value $< .0001$), and higher SES schools were less likely to report access to playgrounds (p -value = .0076). Racial/ethnic disparities were also observed for access to blacktops and tracks. Majority nonwhite schools were less likely to report access to blacktops (p -value = .0001) and tracks (p -value $< .0001$). For differences across SES levels within racial/ethnic composition categories, among majority nonwhite schools, lowest SES schools were least likely to have access to blacktops and tracks (p -value $< .0001$; Table 4). Among majority white schools, highest SES schools were least likely to have access to playgrounds (p -value = .0032) but most likely to have access to blacktops (p -value = .0005) for PE use.

Among grades kindergarten to fifth for all schools, between 29% and 66% of schools reported “always/often” giving students access to PE/PA equipment during recess (Table 3). Compared to higher SES schools, lower SES schools were less likely to report “always/often” giving access to PE/PA equipment during recess for all grades (p -value $< .05$). Compared to majority white schools, second to fifth grades in majority non-white schools were less likely to report “always/often” giving access to PE/PA equipment during recess (p -value $< .05$). Among majority nonwhite schools specifically, lowest SES schools in first, second, and fifth grades were least likely to report “always/often” giving students access to

PE/PA equipment during recess (p -value $< .01$; Table 4); and among majority white schools, lower SES schools were less likely to report “always/often” giving students access to PE/PA equipment during recess for all grades (p -value $< .01$).

Approximately 39% of schools reported having a policy or practice that recess may not be withheld as punishment for behavior (Table 3). Low (35%), middle-low (33%), and middle-high (46%) SES schools were less likely to have such a policy or practice than high SES schools (59%; p -value $< .001$). No significant differences were observed by racial/ethnic composition for having such a policy or practice. Among majority white schools, lower SES schools were less likely to report having a policy or practice that recess may not be withheld as punishment for behavior (p -value $< .0001$; Table 4). Although similar trends for SES differences were observed among majority nonwhite schools, the differences were less pronounced and not statistically significant (p -value = $.0594$).

Between 32% and 56% of schools overall reported having PA-related events/programs, such as school health advisory councils, school improvement plans, and so on (Table 3). However, only 11% of schools had structured walk/bike school programs. Lowest-SES schools and nonmajority white schools were least likely to have written information or audio/visual information about PE and PA (p -value $< .01$). Highest SES schools were most likely to have school health advisory councils/committees or wellness committees and assemblies (p -value $< .01$). Similarly, among majority white schools specifically, highest SES schools were more likely to have school health advisory councils/committees or wellness committees and assemblies (p -value $< .0001$; Table 4). Also, among both majority white and nonwhite schools, lower SES schools were less likely to have structured walk/bike programs (p -value $< .0001$). Finally, among majority nonwhite and majority white schools, lowest SES schools were least likely to provide written information about PE and PA (p -value $< .05$); among majority nonwhite schools, lower SES schools were less likely to provide audio/visual information about PE and PA (p -value = $.0052$).

Differences in Staff PA Environment and Parental Involvement and Out-of-School Opportunities

Overall, 53% of schools offered at least 1 PA opportunity to staff (Table 5). Five percent and 38% of schools offered staff PA opportunities before or after school, respectively. Overall, no SES or racial/ethnic composition differences in the offering of staff PA opportunities were observed; however, among majority nonwhite schools, high SES schools were least likely to offer any PA opportunities for staff (p -value = $.0274$). Among majority white schools, this trend was reversed, such that low SES schools were least likely to offer any PA opportunities for staff, though the differences were only marginally significant (p -value = $.0524$). Among majority nonwhite schools, highest SES schools were least likely to have after-school staff PA opportunities, though this difference was marginally significant (p -value = $.0507$; Table 4). Overall, 46% of schools reported all, most, or some of their staff participated in PA opportunities. No statistically significant SES and/or racial/ethnic composition differences for staff PA participation were observed.

Approximately 24% of schools overall had all, most, or some parents involved in promoting PE/PA before, during, or after school (Table 5). Majority white schools (31%) were more

likely than majority nonwhite schools (17%) to report participation by all, most, or some parents (p -value < .0001). Higher SES schools overall and within majority white and majority nonwhite schools were more likely to report participation by all, most, or some parents (p -value < .0001; Tables 4 and 5).

Overall, 46% of schools reported having a joint use agreement with community agencies, and lower SES schools were less likely to report having joint use agreements than higher SES schools (p -value < .0001). Majority nonwhite schools (39%) were less likely to report having joint use agreements than majority white schools (55%; p -value < .0001). The SES differences within racial/ethnic composition categories were observed among both majority white and majority nonwhite schools, such that lowest SES schools were least likely to have a joint use agreement with community agencies (p -value < .05; Table 4). Among schools who reported having a joint use agreement, 76% opened their school for use 5 or more days per week (Table 5). Lowest SES schools overall and among majority nonwhite schools were more likely to report opening their school for use 5 or more days per week (p -value < 0.05; Table 4).

Discussion

This study describes the PA environments in Georgia public elementary schools and highlights differences in these environments by school SES and/or racial/ethnic composition. Overall, many PA environment factors were widely prevalent in schools, such as access to facilities including a gym or a field, although some factors, such as structured walk/bike programs, were less widely reported. In this sample of schools, disparities in PA environment factors were largely patterned by SES, though they varied for some factors by racial/ethnic composition and across SES within racial/ethnic composition.

Although there is limited research on socioeconomic and racial/ethnic differences in school PA environment-related factors, some disparities have been documented. In a nationally representative cohort of fifth graders, Hispanic students (42%) were less likely to have an “always adequate” gymnasium than black students (61%) and white students (68%). Additionally, blacks (45%) and Hispanics (58%) were less likely than whites (62%) to have an “always adequate” playground.²³ Another study of public middle schools in 6 states found that participation in the free/reduced lunch program was inversely associated with the support level of the school environment for PA.²⁰

Socioeconomic and racial/ethnic disparities in PA environments observed in the current study may be driven by financial and human resource constraints. Lower SES and racial/ethnic minority students are often concentrated in less well-funded schools and live in areas where funding systems and tax policies provide schools with fewer resources.³¹ Thus, the socioeconomic disparities observed in student access to PE/PA equipment during recess, for example, might result from budget constraints. Budget and human resource constraints may also impact a school’s ability to open facilities or properties for recreational use outside of school hours. Racial/ethnic and SES differences were observed in this study in the reporting of joint use agreements, such that majority nonwhite and lower SES schools were less likely to have an agreement in place. Access to school facilities outside of school hours could have

important implications for the PA and well-being of students in majority nonwhite and/or lower-SES schools, as racial/ethnic minorities and lower SES individuals are often more likely to live in neighborhoods that are less conducive to PA and less safe to play in.^{15,32–36} Various studies have found neighborhood safety to be a barrier to children's PA.^{37,38} Nonetheless, among schools with joint use agreements in place in this study, lower SES schools were more likely to have their facilities open for 5+ days for recreational use outside of school hours compared to higher SES schools.

In this study, access to written or audio/visual information about PE and PA was observed to vary by school race/ethnicity composition and SES, such that lower SES schools and majority nonwhite schools were least likely to have access to these resources, which could have implications for disparities in student PA promotion. In a randomized control trial of the Middle School Physical Activity and Nutrition (M-SPAN) PA intervention, a school-based PA environment intervention which included media and cultural messages promoting PA opportunities throughout the school day through flyers, bulletins, parent newsletters, and PTA meetings, a significant increase in PA among schools randomized to receive the intervention was observed.³⁹

In addition to providing PA promotion materials to parents, actual parental involvement in promoting PE/PA before, during, and after school may be important for increasing student PA activity as parents can serve as role models and create a supportive environment for PA for their children at home or during school.^{40,41} In a study examining the influence of parents and PE teachers on adolescent extracurricular PA, parents' influence was found to be more important in promoting PA in adolescents than PE teachers.⁴¹ In the current study, majority white and higher SES schools were more likely to report parental involvement in PA promotion. Parental involvement in PA promotion may vary by school SES and race/ethnicity composition as lower SES parents may not be able to dedicate time to PA promotion because of time constraints due to employment obligations and differential familial support. Moreover, racial/ethnic disparities in SES in the United States⁴² may help explain school racial/ethnic disparities in parental involvement. It is not clear how lower SES and nonmajority white schools could address disparities in parental involvement in PA promotion; however, schools may consider improving outreach to parents and creating innovative ways for parents to be involved without interfering with necessary obligations.

In the current study, no socioeconomic or racial/ethnic disparities were observed in the offering of staff PA opportunities, although socioeconomic disparities were observed among majority nonwhite schools such that highest SES schools were most likely to not offer staff PA opportunities. Even though this disparity was observed, evidence supporting the influence of staff participation in PA on student PA has not been well established; thus, the implications of these findings are not clear. Moreover, these results should be interpreted with caution as there was a small number of higher SES majority nonwhite schools included in our study. Nonetheless, similar to the possible positive influence of parental involvement in PA opportunities on student PA, staff could serve as role models to students through their participation in PA opportunities and promotion.^{8,15,39}

Highest SES schools in our study were less likely to have a playground but more likely to have a blacktop. It is not clear why we observed these differences, although differences between higher SES and lower SES schools in the patterns of extracurricular physical activities outside of school may help explain these differences, as lower SES schools may find playgrounds more necessary for after-school activities for students. Moreover, the differences in access to blacktops may be due to financial or geographic constraints among lower SES schools.

Although not the focus of our study, it is possible that socioeconomic and racial/ethnic disparities in PA environments at schools could influence the implementation of adequate PE programs and further perpetuate or maintain socioeconomic and racial/ethnic disparities in PA participation and rates of overweight and obese children.^{11,12,26,43} Moreover, school PA environments in combination with school PA opportunities, which are more directly related to PA and can consist of PE or recess length and the implementation of in-class PA break time, could synergistically work to influence socioeconomic and/or racial/ethnic disparities in PA participation and obesity during childhood. Although this may be true, findings from 1 nationally representative study of white, black, and Hispanic fifth and eighth graders may suggest otherwise for racial disparities in obesity at least, such that PA environment and opportunity features, including access to a gym and playground and total PE and recess time, were found to not play a role in racial disparities in body mass index.²³ More research is needed exploring the relationship between PA environment factors, PA levels, and socioeconomic or racial/ethnic disparities in childhood obesity. Given the lack of socioeconomic or racial/ethnic differences in certain aspects of the PA environment in this study (ie, gym or field access), this research may consider focusing on less widely studied PA environment factors that were observed to differ in this study by socioeconomic and/or racial/ethnic category (ie, joint use agreements or availability of equipment during recess).

In the current study, the low overall prevalence of some PA environment factors, such as structured walk/bike programs (reported by 11 % of schools), could have implications for PA levels and the risk of obesity among children. Regarding the structured walk/bike programs in particular, among US youth, active commuting including walking or biking to school was found to be associated with greater moderate to vigorous PA and lower body mass index.^{20,44,45} Overtime, from 1969 to 2009, trends in walking or biking to and from school among kindergarten to eighth graders in the United States decreased from 48% to 13%.⁴⁶ The infrequency of the structured walk/ bike programs in the current study is consistent with national trends and may be important to note, given the goal set by The White House Task Force on Childhood Obesity to increase walking and biking to school by 50% among 5- to 18-year-old individuals in 5 years by 2015.^{46,47} Geographic and safety barriers, as well as social norms, may be important to consider in the trends in walk/bike program availability observed in this study. Moreover, policies specific to school districts may also be important to consider. In general, more research is needed to examine the role of geography and other factors, including social norms and district-level policies,⁴⁸ in the distribution of school PA environment factors in Georgia public elementary schools, and schools where there may be geographic constraints to implementing certain PA environment factors should consider alternative ways to ensure there are opportunities for students to engage in school PA.

Although this study includes a large sample of elementary schools, including over 81% of all public elementary schools throughout the state of Georgia, and provides measurement of multiple PA environment factors, including less studied factors related to staff and parental involvement opportunities, there are limitations that need to be considered. First, approximately 19% of the Georgia public elementary schools who were sent the school-based PU30 survey did not respond. Demographic differences between responders and nonresponders included geography, such that responding schools were more likely to be located in the city (21%) than nonresponding schools (12%), and SES, such that responding schools had a lower percentage of free and reduced lunch eligible students (67%) than nonresponding schools (72%). It is possible that nonresponding schools which had a higher percentage of free and reduced lunch eligible students and were less likely to be located in the city may have differing access to resources than the responding schools, and thus, our results may be biased by not including these schools. Secondly, this analysis does not specify specific racial/ethnicity groups besides white in the categorization of racial/ethnic composition. This could possibly obscure any heterogeneity in PA environments among schools with a relatively large population of specific racial/ethnic groups, such as Asians, blacks, or Hispanics. Third, the current study did not conduct analyses to examine how groupings of certain school PA environment factors are distributed across racial/ethnic and/or socioeconomic categories. The presence (or absence) of certain groups of school PA environment factors may be important to consider over and above the presence (or absence) of specific individual school PA environment factors. Moreover, the survey only inquired about the presence or absence of PA environment factors, whereas the quality of the factors may also be important to consider. Further, data in the survey were collected at the school level; thus, we were not able to examine the role of PA environment factors for individual student PA.

Fourth, although the school setting survey used in this analysis was developed using a multidisciplinary team and based on widely used tools, it has not been validated and data collected using the study sample may only be generalizable to public elementary schools in Georgia. Fifth, the measurement of school PA environment in the survey was based on cross-sectional reports from 3 school staff members and may not be a comprehensive measure of school PA environment. Finally, free/reduced lunch eligibility may not be an appropriate marker of school SES, as it may not distinguish between schools that are persistently financially disadvantaged across time or have a deeper financial disadvantage not captured by the standard family income limits required for free/reduced lunch eligibility.⁴⁹

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SO WHAT?

What is already known on this topic?

A school's physical activity (PA) environment, in the form of access to PA-related resources and facilities, as well as opportunities for student, staff, and parental involvement in school-based PA programs, may facilitate PA at school. However, some schools may not have a PA environment that supports adequate access to PA-related resources, facilities, and opportunities. Research has shown that disparities in school PA environments are often socially patterned by socioeconomic status (SES) and race/ethnicity.

What does this article add?

This study highlights important socioeconomic and racial/ethnic disparities in PA environments specifically in Georgia public elementary schools.

What are the implications for health promotion practice or research?

The socioeconomic and racial/ethnic disparities identified in this report can help policy makers and education professionals improve their understanding of and planning to reduce or eliminate SES and racial/ethnic disparities in PA environments in Georgia public elementary schools.

Table 1.

Demographic Characteristics of Georgia Elementary Schools (N = 1077 Schools) Surveyed in 2013.

School Characteristics	n	%	Mean (SD)
Geography			
City	218	20.2	
Suburban	425	39.5	
Town	113	10.5	
Rural	321	29.8	
% Free or reduced lunch eligible (FRL) ^a			
Percent FRL			67.1 (26.9)
<25%	108	10.2	
25%–50%	168	15.8	
50%–75%	287	27.0	
>75%	499	47.0	
Racial/ethnic composition			
Percent white			42.6 (29.3)
Majority white	486	45.1	
Majority nonwhite	591	54.9	
School size			
<514 students (first tertile)	352	32.7	
514–687 students (second tertile)	358	33.2	
>687 students (third tertile)	367	34.1	

Abbreviation: SD, standard deviation.

^aMissing <2% of FRL data.

Table 2.

Bivariate Relationships Between Demographic Characteristics of Georgia Elementary Schools (N = 1077 Schools) Surveyed in 2013.

	%FRL Eligible	%White	School Size
%FRL	1	-0.61 ^a	-0.12 ^a
%White		1	0.0001
School size Geography			1
City	78.6	20.7	569
Suburban	58.5	37.7	749
Town	77.1	48.0	624
Rural	67.0	62.0	582
<i>p</i> value	<.0001	<.0001	<.0001

Abbreviation: FRL, free/reduced lunch.

^aSignificant at *p*-value < .0001 using Pearson correlation tests. Analyses of variance (ANOVAs) were conducted for differences in characteristics across geography.

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Table 3. Socioeconomic and Racial/Ethnic Patterns in Physical Activity Environment-Related Facilities and School Practices Among Georgia Elementary Schools (N = 1077 Schools) Surveyed in 2013.^{a,b}

	Overall		Socioeconomic Status ^c				Racial/Ethnic Composition							
			High SES (n = 108)		Middle-High SES (n = 168)		Middle-Low SES (n = 287)		Low SES (n = 499)		Majority white (n = 486)		Majority nonwhite (n = 591)	
	Yes n (%)	Value p	Yes n (%)	Value p	Yes n (%)	Value p	Yes n (%)	Value p	Yes n (%)	Value p	Yes n (%)	Value p	Yes n (%)	Value p
Facilities and School Practices														
Teaching facilities available to use for PE at your school ^d														
Gym	871 (99.0)		96 (97.9)		145 (98.0)		219 (99.6)		399 (99.3)		375 (98.4)		496 (99.4)	.1549
Blacktop	454 (51.6)		74 (75.5)		90 (60.8)		115 (52.3)		168 (41.8)		225 (59.1)		229 (45.9)	.0001
Field	693 (78.8)		81 (82.7)		122 (82.4)		164 (74.6)		316 (78.6)		306 (80.3)		387 (77.6)	.3214
Playground	506 (57.5)		41 (41.84)		83 (56.1)		132 (60.0)		243 (60.5)		225 (59.1)		281 (56.3)	.4148
Track	217 (24.7)		38 (38.8)		55 (37.2)		61 (27.7)		59 (14.7)		131 (34.4)		86 (17.2)	<.0001
Classroom	242 (27.5)		18 (18.4)		41 (27.7)		64 (29.1)		116 (28.9)		104 (27.3)		138 (27.7)	.9060
During recess, how often do students have access to PE/PA equipment? ^e														
Always/often														
Kindergarten	187 (29.4)		41 (53.3)		40 (35.4)		34 (20.5)		70 (25.5)		100 (28.4)		87 (30.5)	.5596
First grade	218 (34.7)		47 (61.0)		50 (45.5)		52 (32.7)		64 (23.4)		101 (36.2)		117 (33.5)	.4839
Second grade	288 (45.8)		50 (71.4)		62 (58.5)		69 (41.1)		101 (36.9)		140 (51.3)		148 (41.6)	.0154
Third grade	362 (56.7)		60 (79.0)		73 (64.0)		95 (56.9)		128 (47.2)		176 (61.5)		186 (52.7)	.0248
Fourth grade	389 (62.5)		55 (73.3)		86 (74.8)		98 (59.8)		142 (55.0)		201 (69.1)		188 (56.8)	.0016
Fifth grade	399 (66.3)		66 (81.5)		91 (79.8)		107 (65.6)		128 (54.5)		202 (70.9)		197 (62.2)	.0237
Does your school have a policy/practice that recess will not be withheld from students or entire < class as a behavioral consequence or as a form of punishment? (Among those with recess)														
Yes	356 (38.8)		58 (58.6)		70 (46.4)		82 (32.7)		140 (34.7)		160 (35.1)		196 (40.8)	.1991
Which of the following, if any, is/are provided at your school? Check all that apply. ^d														
School health advisory council/committee or wellness committee	360 (41.1)		56 (57.7)		62 (42.2)		87 (39.7)		149 (37.2)		145 (38.3)		215 (43.3)	.1361
School improvement plan	322 (36.8)		29 (29.9)		45 (30.6)		89 (40.6)		153 (38.2)		132 (34.8)		190 (38.2)	.3010

	Overall			Socioeconomic Status ^c			Racial/Ethnic Composition				
				High SES (n = 108)	Middle-High SES (n = 168)	Middle-Low SES (n = 287)	Low SES (n = 499)	Majority white (n = 486)	Majority nonwhite (n = 591)		
	Yes	n (%)	p Value	Yes	n (%)	Yes	n (%)	Yes	n (%)	Yes	n (%)
Written information about PE and PA	491	(56.1)	71 (73.2)	106 (72.1)	126 (57.5)	180 (44.9)	<.0001	238 (62.8)	253 (50.9)	.0004	
Audio/visual information about PE and PA	277	(31.6)	42 (43.3)	63 (42.9)	70 (32.0)	96 (23.9)	<.0001	140 (36.9)	137 (27.6)	.0031	
Multidisciplinary school-wide events	337	(38.5)	46 (47.4)	63 (42.9)	84 (38.4)	139 (34.7)	.0739	159 (42.0)	178 (35.8)	.0643	
Assemblies	291	(33.2)	50 (51.6)	54 (36.7)	62 (28.3)	121 (30.2)	.0002	122 (32.2)	169 (34.00)	.5572	
Structured walk/bike school program	96	(11.0)	31 (32.0)	26 (17.7)	12 (5.5)	25 (6.2)	<.0001	45 (11.9)	51 (10.3)	.4493	

Abbreviations: PA, physical activity; PE, physical education; SES, socioeconomic status.

^aFree/reduced lunch eligibility rate is proxy for SES.

^bChi-square analyses were conducted across SES or racial/ethnic composition unless cell size <5, in which Fisher exact analyses were conducted.

^cMissing <2% of FRL data.

^dMissing <25% of data.

^eMissing <30% of data.

Table 4.

Socioeconomic and Racial/Ethnic Patterns in Physical Activity Environment-Related Facilities, School Practices, Staff and Parental Involvement, and Out-of-School Opportunities Among Georgia Elementary Schools (N = 1077 Schools) Surveyed in 2013.^{a,b}

	Majority White				Majority Not White				P Value
	High SES	Middle-High SES	Middle-Low SES	Low SES	High SES	Middle-High SES	Middle-Low SES	Low SES	
	(n = 94) Yes n (%)	(n = 115) Yes n (%)	(n = 171) Yes n (%)	(n = 93) Yes n (%)	(n = 14) Yes n (%)	(n = 53) Yes n (%)	(n = 116) Yes n (%)	(n = 406) Yes n (%)	
Facilities and School Practices									
Teaching facilities available to use for PE at your school ^c									
Gym	83 (97.7)	97 (97.0)	120 (99.2)	65 (100.0)	13 (100.0)	48 (100.0)	99 (100.0)	334 (99.1)	1.0
Blacktop	65 (76.5)	61 (61.0)	58 (47.9)	35 (53.9)	9 (69.2)	29 (60.4)	57 (57.6)	133 (39.5)	.0004
Field	70 (82.4)	84 (84.0)	89 (73.6)	54 (83.1)	11 (84.6)	38 (79.2)	75 (75.8)	262 (77.7)	.9235
Playground	36 (42.4)	60 (60.0)	79 (65.3)	44 (67.7)	5 (38.5)	23 (47.9)	53 (53.5)	199 (59.1)	.2217
Track	34 (40.0)	39 (39.0)	35 (28.9)	20 (30.8)	4 (30.8)	16 (33.3)	26 (26.3)	39 (11.6)	<.0001
Classroom	15 (17.7)	29 (29.0)	36 (29.8)	21 (32.3)	3 (23.1)	12 (25.0)	28 (28.3)	95 (28.2)	.9720
During recess, how often do students have access to PE/PA equipment? ^d									
Always/often									
Kindergarten	36 (52.2)	24 (33.8)	16 (18.0)	9 (17.7)	5 (62.5)	16 (38.1)	18 (23.4)	61 (27.2)	.0549
First grade	42 (60.9)	29 (41.4)	19 (22.6)	7 (14.0)	5 (62.5)	21 (52.5)	33 (44.0)	57 (25.5)	.0002
Second grade	43 (69.4)	41 (62.1)	40 (44.0)	11 (24.4)	7 (87.5)	21 (52.5)	29 (37.7)	90 (39.3)	.0195
Third grade	56 (84.9)	49 (68.1)	50 (54.4)	16 (34.0)	4 (40.0)	24 (57.1)	45 (60.0)	112 (50.0)	.3563
Fourth grade	50 (75.8)	64 (81.0)	56 (60.9)	24 (53.3)	5 (55.6)	22 (61.1)	42 (58.3)	118 (55.4)	.9156
Fifth grade	60 (84.5)	56 (77.8)	57 (64.0)	22 (48.9)	6 (60.0)	35 (83.3)	50 (67.6)	106 (55.8)	.0066
Does your school have a policy/practice that recess will not be withheld from students or entire class as a behavioral consequence or as a form of punishment? (Among those with recess)									
Yes	52 (59.1)	44 (41.9)	38 (25.3)	20 (24.4)	6 (54.6)	26 (56.5)	44 (43.6)	120 (37.4)	.0594
Which of the following, if any, is/are provided at your school? Check all that apply. ^e									
School health advisory council/committee or wellness committee	49 (58.3)	39 (39.0)	39 (32.5)	13 (20.0)	7 (53.9)	23 (48.9)	48 (48.5)	136 (40.5)	.3377
School improvement plan	26 (31.0)	34 (34.0)	50 (41.7)	17 (26.2)	3 (23.1)	11 (23.4)	39 (39.4)	136 (40.5)	.0930

	Majority White						Majority Not White					
	High SES	Middle-High SES	Middle-Low SES	Low SES	High SES	Middle-High SES	Middle-Low SES	Low SES	High SES	Middle-High SES	Middle-Low SES	Low SES
	(n = 94) Yes n (%)	(n = 115) Yes n (%)	(n = 171) Yes n (%)	(n = 93) Yes n (%)	(n = 14) Yes n (%)	(n = 53) Yes n (%)	(n = 116) Yes n (%)	(n = 406) Yes n (%)	(n = 14) Yes n (%)	(n = 53) Yes n (%)	(n = 116) Yes n (%)	(n = 406) Yes n (%)
Written information about PE and PA	61 (72.6)	72 (72.0)	69 (57.5)	30 (46.2)	10 (76.9)	34 (72.3)	57 (57.6)	150 (44.6)	10 (76.9)	34 (72.3)	57 (57.6)	150 (44.6)
Audio/visual information about PE and PA	35 (41.7)	43 (43.0)	41 (34.2)	17 (26.2)	7 (53.9)	20 (42.6)	29 (29.3)	79 (23.5)	7 (53.9)	20 (42.6)	29 (29.3)	79 (23.5)
Multidisciplinary school-wide events	40 (47.6)	44 (44.0)	42 (35.0)	30 (46.2)	6 (46.2)	19 (40.4)	42 (42.4)	109 (32.4)	6 (46.2)	19 (40.4)	42 (42.4)	109 (32.4)
Assemblies	43 (51.2)	37 (37.0)	27 (22.5)	11 (16.9)	7 (53.9)	17 (36.2)	35 (35.4)	110 (32.7)	7 (53.9)	17 (36.2)	35 (35.4)	110 (32.7)
Structured walk/bike school program	28 (33.3)	12 (12.0)	4 (3.3)	0 (0)	3 (23.1)	14 (29.8)	8 (8.1)	25 (7.4)	3 (23.1)	14 (29.8)	8 (8.1)	25 (7.4)
Staff												
Which of the following PA opportunities (eg, exercise classes, walking clubs, etc) if any, are offered to staff? ^d												
None offered	29 (34.5)	46 (46.0)	57 (47.5)	37 (56.9)	10 (76.9)	16 (34.0)	43 (43.4)	167 (49.6)	10 (76.9)	16 (34.0)	43 (43.4)	167 (49.6)
Before school	4 (4.8)	3 (3.0)	7 (5.8)	0 (0)	1 (7.7)	5 (10.6)	7 (7.1)	19 (5.6)	1 (7.7)	5 (10.6)	7 (7.1)	19 (5.6)
After school	43 (51.2)	39 (39.0)	44 (36.7)	23 (35.4)	2 (15.4)	24 (51.1)	40 (40.4)	117 (34.7)	2 (15.4)	24 (51.1)	40 (40.4)	117 (34.7)
Planning time	2 (2.4)	2 (3.0)	3 (1.7)	1 (1.5)	0 (0)	1 (2.1)	2 (2.0)	13 (3.9)	0 (0)	1 (2.1)	2 (2.0)	13 (3.9)
During school with students	4 (4.8)	7 (7.0)	17 (14.2)	6 (9.2)	1 (7.7)	4 (8.5)	11 (11.1)	36 (10.7)	1 (7.7)	4 (8.5)	11 (11.1)	36 (10.7)
Special events	27 (32.1)	24 (24.0)	30 (25.0)	14 (21.5)	2 (15.4)	16 (34.0)	26 (26.3)	72 (21.4)	2 (15.4)	16 (34.0)	26 (26.3)	72 (21.4)
Approximately, how many school staff members participate in these PA opportunities offered by your school? (Among schools offering staff PA opportunities)												
All/most/some	25 (53.2)	21 (42.0)	27 (45.8)	11 (45.8)	3 (100.0)	16 (53.3)	26 (51.0)	62 (40.8)	3 (100.0)	16 (53.3)	26 (51.0)	62 (40.8)
Parental Involvement and Out-of-School Opportunity												
At your school, how many parents are involved in promoting PE/PA before, during, and after school? ^e												
All/most/some	53 (68.0)	26 (28.3)	23 (18.6)	8 (13.3)	4 (50.0)	16 (39.0)	22 (25.6)	29 (10.5)	4 (50.0)	16 (39.0)	22 (25.6)	29 (10.5)
Does your school have a joint use agreement with any community agencies for access to school facilities or properties for recreational use outside of school hours? ^c												
Yes	61 (69.3)	59 (56.2)	74 (49.7)	40 (48.8)	5 (45.5)	26 (56.5)	45 (45.0)	116 (34.2)	5 (45.5)	26 (56.5)	45 (45.0)	116 (34.2)
How many days per week is/are school facilities or property open for recreational use after school hours? (Among those who have joint use agreement)												
5+ days	39 (63.9)	45 (76.3)	61 (82.4)	33 (82.5)	2 (40.0)	21 (80.8)	29 (64.4)	93 (80.2)	2 (40.0)	21 (80.8)	29 (64.4)	93 (80.2)

Abbreviations: PA, physical activity; PE, physical education; SES, socioeconomic status.

^aFree/reduced lunch eligibility rate is proxy for SES.

^bChi-square analyses were conducted across SES within racial/ethnic composition unless cell size <5, in which Fisher exact analyses were conducted.

Missing <25% of data.
 p_2
Missing <35% of data.
 p_3
Missing <45% of data.

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Table 5.

Socioeconomic and Racial/Ethnic Patterns in Physical Activity Environment-Related Staff, Parental Involvement, and Out-of-School Opportunities Among Georgia Elementary Schools (N = 1077 Schools) Surveyed in 2013.^{a,b}

	Overall		Socioeconomic Status ^c				Racial/Ethnic Composition			
	N = 1077		High SES (n = 108)	Middle-High SES (n = 168)	Middle-Low SES (n = 287)	Low SES (n = 499)	Majority White (n = 486)		Majority Non- white (n = 591)	
	Yes n (%)	Yes n (%)	Yes n (%)	Yes n (%)	Yes n (%)	Yes n (%)	Yes n (%)	Yes n (%)	Yes n (%)	p Value
Staff										
Which of the following PA opportunities (eg, exercise classes, walking clubs, etc) if any, are offered to staff? ^d										
None offered	409 (46.6)	39 (40.2)	62 (42.2)	100 (45.7)	204 (50.8)	173 (45.7)	236 (47.4)	.1337		.6082
Before school	47 (5.4)	5 (5.2)	8 (5.4)	14 (6.4)	19 (4.7)	15 (4.0)	32 (6.4)	.8515		.1079
After school	336 (38.3)	45 (46.4)	63 (42.9)	84 (38.4)	140 (34.8)	152 (40.1)	184 (37.0)	.1104		.3406
Planning time	24 (2.7)	2 (2.1)	3 (2.0)	5 (2.3)	14 (3.5)	8 (2.1)	16 (3.2)	.8371		.3217
During school with students	89 (10.2)	5 (5.2)	11 (7.5)	28 (12.8)	42 (10.5)	36 (9.5)	53 (10.6)	.1346		.5784
Special events	215 (24.5)	29 (29.9)	40 (27.2)	56 (25.6)	86 (21.4)	97 (25.6)	118 (23.7)	.2258		.5173
Approximately, how many school staff members participate in these physical activity opportunities offered by your school? (Among schools offering staff PA opportunities)										
All/most/some	194 (45.9)	28 (56.0)	37 (46.3)	53 (48.2)	73 (41.5)	85 (46.0)	109 (45.8)	.2988		.9759
Parental Involvement and Out-of-School Opportunity										
At your school, how many parents are involved in promoting PE/PA before, during, and after school? ^e										
All/most/some	185 (23.8)	57 (66.3)	42 (31.6)	45 (21.4)	37 (11.0)	113 (31.2)	72 (17.4)	<.0001		<.0001
Does your school have a joint use agreement with any community agencies for access to school facilities or properties for recreational use outside of school hours? ^d										
Yes	432 (46.3)	66 (66.7)	85 (56.3)	119 (47.8)	156 (37.1)	239 (54.8)	193 (38.8)	<.0001		<.0001
How many days per week is/are school facilities or property open for recreational use after school hours? (Among those who have joint use agreement)										
5+ days	327 (75.7)	41 (62.1)	66 (77.7)	90 (75.6)	126 (80.8)	182 (76.2)	145 (75.1)	.0293		.8057

Abbreviations: PA, physical activity; PE, physical education; SES, socioeconomic status.

^aFree/reduced lunch eligibility rate is proxy for SES.

^bChi-square analyses were conducted across SES or racial/ethnic composition unless cell size <5, in which Fisher exact analyses were conducted.

^cMissing <2% of FRL data.

Missing <25% of data.
Missing <45% of data.

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