



Afterschool shared use of public school facilities for physical activity in North Carolina



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ABSTRACT

Objective: To determine the status and common characteristics of shared use in public schools in North Carolina.

Method: All public school principals (N = 2,359) in North Carolina were invited to participate in an online survey (February – May, 2013) designed to provide baseline information about the extent and nature of shared use of school facilities.

Results: Responses (n = 1182, 50.1%) indicated that most schools share their facilities (88.9%). Formal agreements were more common when schools shared gyms and outdoor athletic fields. Informal agreements were most common with playgrounds and track facilities. Schools with more low income or Black students were less likely to share facilities. For schools that did not share use of their facilities the most frequent reason was no outside groups had ever asked.

Conclusion: Schools may be more accommodating to shared use partnerships. Community organizations seeking to use indoor school facilities or athletic fields should be prepared to complete a formal written agreement. Preconceived notions that schools are unwilling to share their facilities may be preventing community organizations from initiating shared use inquiries. Schools located in the middle tier of economic distress and schools with a greater concentration of Black students were less likely to share their facilities.

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Background

Partnerships between schools and other community agencies to share facilities can create new opportunities for community-based physical activity (PA) (Kanters et al., 2014). Increasing access to safe and accessible opportunities for PA is especially important for disadvantaged populations (Powell et al., 2006). Prior research has shown that families who live in low socioeconomic status (SES) neighborhoods and communities with a higher percentage of Black and/or Hispanic families are less likely to have access to recreation facilities and amenities (Powell et al., 2006) and less likely to be physically active (Babey et al., 2007). Concerns about environmental safety has also been identified as a barrier to PA in low SES neighborhoods (Wilson et al., 2004). One method of increasing access to places for PA is the sharing of public school facilities and spaces designed to facilitate PA (Institute of Medicine, 2009). Schools are more conveniently located in most communities and offer an accessible and safe environment for community members to engage in physical activity (Booth and Okely, 2005).

Shared use, also termed joint use, refers to the sharing of a facility by two or more organizations. Shared use can be both formal (e.g., a YMCA enters into a contract with a local elementary school to use a gymnasium for afterschool daycare) or informal (e.g., high school running tracks are used by local residents for unstructured PA). Shared use is not a new concept (Spengler et al., 2007) but its resurgence as an efficient and effective way to create community based physical activity opportunities comes at a time when researchers, practitioners, and policy-makers have adopted ecological frameworks to develop interventions to increase physical activity (Sallis et al., 2006). However, local agencies or community groups seeking to use public school buildings and grounds for community based programs often find it difficult to access these spaces during afterschool hours (Evenson and McGinn, 2004). For example, Lee, Burgeson, Fulton, and Spain reported that only 59.6% of all public schools made their physical activity facilities available for children and adolescents in the evenings, 57.6% were available after school and 46% on weekends (Lee et al., 2007). Frequently cited barriers to shared use include concerns about liability (Spengler et al., 2011) and the perceived operating cost increases associated with the additional use of facilities (Spengler).

National organizations like the Institute of Medicine (Institute of Medicine, 2009), the American Heart Association (American Heart Association, 2012), and the U.S. Department of Health and Human

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Services ([Physical Activity Guidelines for Americans, 2012](#)) have identified shared use of school facilities as a priority strategy to make healthy living easier in communities across the nation, especially those of racial minorities, low socioeconomic status and individuals living in rural areas. For example, Healthy People 2020 reported that 28.8% of the country's private and public schools provided access to their physical activity facilities outside of school hours and recommended a 10% increase in this amount by 2020. Within North Carolina, the Healthy North Carolina 2020 report recommended shared use of school facilities as one of its primary policy and programming strategies to address the growing childhood obesity problem within the state ([NC Department of Health and Human Services, 2011](#)).

[Lafleur et al. \(2013\)](#), in a study of Los Angeles County school districts, found community residents' use of school sites was 16 times higher at schools with shared use agreements and 75 percent of these participants were engaged in moderate-to-vigorous physical activity (MVPA). Although these findings suggest shared use of school facilities after school hours can substantially increase opportunities for physical activity at MVPA levels, little is known about the current status of shared use across a large sample of public schools. Furthermore, while some studies have identified potential barriers that prevent shared use school partnerships ([Kanters et al., 2014](#); [Spengler et al., 2011](#)) much of this research has relied on either a cross-section of school administrators or responses from a single school district. The purpose of this study was to: a) survey all public schools in a State to determine the current status of shared use in public schools at all levels (elementary, middle, high); b) examine the common characteristics of school shared use and its barriers; and c) determine whether participation in shared use associates with school demographics.

Methods

All public elementary, middle, and high schools ($N = 2,359$) in North Carolina were selected for the study. North Carolina has state level policies that are supportive of shared use agreements. For example, the North Carolina State Board of Education encourages local boards of education to enter into agreements with local governments and other entities regarding the joint use of their facilities for physical activity. There is also state legislation (North Carolina General Statute 115C-524) which states that "no liability shall attach to any board of education, individually or collectively, for personal injury suffered by reason of the use of such school property pursuant to such agreements."

Contact information for all public school principals listed in the 2012 North Carolina Department of Public Instruction database ([NC Department of Public Instruction, 2012](#)) was compiled. We selected principals for several reasons: (1) they are generally the most knowledgeable administrator concerning current shared use agreements in place at their school, (2) they are the chief decision makers in creating shared use agreements (3) they are typically 12-month employees and generally available to respond to the survey over the summer timeframe, and (4) their work email addresses are readily available at school central offices.

The survey was administered electronically using e-mail and Qualtrics. Each school principal received a pre-survey email from the Chief Health and Community Relations Officer and the Health and Physical Education Consultant with the North Carolina Department of Public Instruction. The pre-survey email informed principals of the forthcoming survey, its importance, and included a request to participate ([Dillman, 1999](#)). The contents of the email included a welcome message, description of the study, a statement of confidentiality and a URL link to the survey questionnaire. Two reminder emails to complete the survey were sent during the first month following the activation of the survey. The first reminder email was sent to all non-responding schools on March 13th, 2013. A final reminder was sent on March 25th, 2013. Follow-up phone calls were made to every school that had not responded between June 17th, 2013 through July 3rd, 2013. The survey was open for 149 calendar days and officially closed on August 3rd, 2013. Of the 2,359 school principals who received either an email link or phone contact regarding the survey, 1,230 responded resulting in a response rate of 52.14%. Of 1,230 who responded, 1182 completed

enough of the survey to be included in the analysis. Forty-eight schools did not answer any questions about shared use (yes/no) or type of agreement and therefore did not have data to be included in the analysis.

Data

Survey questions were designed to provide baseline information about the extent of formal and non-formal shared use of school facilities. Questions were similar to those used by [Spengler et al. \(2011\)](#) but expanded to include a more detailed examination of shared use such as the type of shared facilities and the nature of shared use arrangements. A total of 22 questions included items on school type (elementary, middle, high school), facilities shared, outside groups using the facilities (e.g., parks and recreation, YMCA), type of use (e.g., after-school programs, casual use, or other), type of agreement (informal, formal, or no agreement), and perceived barriers that deter shared use (e.g. liability concerns, costs, etc.). Formal agreements include a written contract between the school and community organization to use school facilities. Informal agreements were defined as less formal arrangements to share school facilities and did not include a formal written contract. No agreement where situations where community use of school facilities occurred but no arrangement existed between the school and any community group or organizations (e.g., community use of elementary school playgrounds). The questionnaire was pilot-tested with 9 public school administrators in a large urban school district.

School demographics were measured by the percentage of students at each school receiving free and reduced lunch, the percentage of Black and Hispanic students, and economic well-being of the county where each school is located. Demographic data were obtained from the National Center for Education Statistics online database for the 2012–2013 school year ([National Center for Education Statistics](#)). Percentages were recoded into the following tertiles: low percentage of students; moderate; and high percentage of students in each demographic category. Each school county economic well-being indicator was obtained from the N.C. Department of Commerce 2011 ranking of the state's 100 counties based on economic well-being ([North Carolina Department of Commerce, 2011](#)). The 40 most distressed counties are designated as Tier 1, the next 40 as Tier 2 and the 20 least distressed as Tier 3.

Study methods and the questionnaire were approved by the Institutional Review Board for Human Subjects Research at North Carolina State University.

Analysis

Descriptive statistics were used to describe school characteristics and level of shared use. We used binary logistic regression to examine differences between schools participating in shared use and those reporting no shared use in relation to school type (elementary, middle, middle/high combined, and high schools), level of economic distress (most, middle, least), percentage of students receiving free and reduced lunch (tertiles representing low, middle, and highest), and percent Black student population (recoded as tertiles). The reference categories were elementary schools, least distressed, and lowest percentages (first tertile) of free/reduced lunch and Black student population.

Results

Of the 1,182 schools represented, 56.3% were elementary schools, 19.7% were middle schools, 3.8% were combined middle/high schools, and 20.2% were high schools ([Table 1](#)). The overall population of school in North Carolina, also presented in [Table 1](#), indicate that our sample distribution is highly representative of distribution of school type and demographic characteristics examined in this study. Eighty two percent (82.5%) of the respondents were principals, 5.9% were assistant principals, 7.5% were administrative assistants, 0.3% teacher, and 0.2% athletic

Table 1
Characteristics of Participating Schools (n = 1,182, Year = 2013).

School characteristics	Sample		Population	
	Frequency	Percentage	Frequency	Percentage
School type				
Elementary	665	56.3	1250	52.0 ¹
Middle	233	19.7	473	20.0 ¹
Middle/High	45	3.8	100	4.2 ¹
High schools	239	20.2	536	22.7 ¹
Economic tier				
Tier 1 (most distressed)	253	21.4	548	21.5 ²
Tier 2	490	41.5	864	33.9 ²
Tier 3 (least distressed)	436	37.1	1137	44.6 ²
Free/reduced lunch (median % = 50)				
Low (<40%)	383	33.8	569	23.4 ³
Moderate (41–60%)	373	32.9	806	33.2 ³
High (>61%)	378	33.3	1055	43.4 ³
Percent Black student population (median % = 18)				
Low (<10%)	388	33.8	717	29.7 ³
Moderate (11–30%)	378	32.9	766	31.8 ³
High (>31%)	379	33.3	929	38.5 ³
Total number of schools that share facilities	1051	88.9	2,359	–

¹ North Carolina Department of Public Instruction, Educational Directory and Demographical Information Exchange for year 2011–2012: <http://apps.schools.nc.gov/pls/apex/f?p=125:1:>

² North Carolina Department of Commerce, 2011 County Tier Designations: <http://www.nccommerce.com/research-publications/incentive-reports/2011-county-tier-designations>

³ National Center for Education Statistics, CCD Public School Data 2011–2012 school year: <http://nces.ed.gov/datatools/>

directors. The median percentage of students receiving free or reduced lunch among the schools was 50. The median Black student population among the schools was 18. Approximately 21 percent of the schools were located in counties designated as the most economically distressed in NC.

Nearly 90 percent (88.9%) of respondents (n = 1051) indicated that school facilities were used by outside/non-school groups or individuals. The five most commonly shared school facilities were gyms (72.4%), cafeterias (48.0%), baseball/softball fields (35.5%), open spaces (30.0%), and classrooms (27.0%) (Table 2). Formal written agreements were more common when schools shared use of gyms (67.3%), cafeteria (45.6%), baseball/softball fields (32.8%), and open space (26.7%) (Table 2). A distribution of agreement type for each facility are also reported in Table 2. The most frequently shared facilities at the 665 elementary schools were the gym (69.5%), cafeteria (46.2%), playground (32.6%), and open space (32.0%). Middle schools (n = 233) were most

Table 2
Summary of Most Frequently Shared Facilities and Type of Shared Use Agreement.

Facility	Type of Agreement			
	Total schools ^a # (%)	Formal # (%)	Informal # (%)	No Agreement # (%)
Gym	856 (67.3)	795 (67.3)	273 (23.1)	243 (20.6)
Cafeteria	567 (45.6)	539 (45.6)	209 (17.7)	172 (14.6)
Baseball/softball	420 (32.8)	388 (32.8)	153 (12.9)	145 (12.3)
Open space	354 (26.7)	316 (26.7)	141 (11.9)	156 (13.2)
Classrooms	320 (25.2)	298 (25.2)	144 (12.2)	106 (9.0)
Football	384 (22.2)	263 (22.3)	116 (9.8)	86 (7.3)
Playground	255 (18.0)	213 (18.0)	118 (10.0)	158 (13.4)
Soccer	236 (20.0)	217 (18.4)	91 (7.7)	90 (7.6)
Track	193 (16.3)	174 (14.7)	101 (8.5)	118 (10.0)

^a Percentages were calculated out of 1182; the response categories for type of agreement are not mutually exclusive.

likely to share the gym (81.1%), baseball/softball field (52.4%), cafeteria (45.1%), and football field (44.2%) and high schools (n = 239) shared the gym (72.0%), cafeteria (54.8%), football field (49.0%), and baseball/softball field (43.5%).

Formal written agreements for shared use were more common across all school types and facilities. When shared use occurred, the percentage of formal written agreements for each school type were 75.9% for elementary schools, 84.5% for middle schools, and 80.8% for high schools (Table 3). For schools that did not share use of their school facilities (n = 131) the most frequent reasons were no outside groups had ever asked to use school facilities (61.8%), followed by availability of facilities (16.0%), design of school facilities (14.5%), facility maintenance responsibilities and costs (13.7%), and liability concerns (12.2%). Respondents could choose more than one reason so these categories are not mutually exclusive.

Results of logistic regression models examining whether school characteristics associate with participation in shared use are shown in Table 4. In the unadjusted analyses, type of school was significantly related to shared use. Compared to elementary schools, middle schools were associated with greater odds (OR = 2.21; 95% CI = 1.22–3.98, P = 0.008) of sharing facilities with other community organizations. The moderately economically distressed (2nd tertile) tier designation (OR = 0.66; 95% CI = 0.43–0.99, P = 0.04) was significantly associated with lower odds of participation in shared use of school facilities, compared to schools located in the least distressed region. Greater percentage of students in free and reduced lunch was also significantly related to lower odds of shared use participation (third tertile, OR = 0.46; 95% CI = 0.28–0.73; P = .001). Greater percentages of Black student population (second tertile, OR = 0.50; 95% CI = 0.28–0.88; P = .000; third tertile, OR = 0.27; 95% CI = 0.16–0.54; P = .005) were significantly associated with lower odds of participation in shared use. When all variables were included in the analysis together (the adjusted model), school type (middle schools) (OR = 2.15; 95% CI = 1.56–3.99), the moderate economically distressed designation (OR = 0.49; 95% CI = 0.28–0.86, P = 0.013), and the higher percentages of Black population (second tertile, OR = 0.50; 95% CI = 0.29–0.89; P = .019; third tertile, OR = 0.30; 95% CI = .16–0.54; P = .000) were significantly associated with shared use of school facilities.

Discussion

Four key findings emerge from the study results. First, the percent of public schools in North Carolina that indicated they currently allow outside/non-school groups or organizations to use their facilities (88.9%) was much higher than previously reported. For example Lee et al. (2007) reported that only 59% of schools in a national survey shared school facilities and Spengler et al. (2011) found that 69% of responding schools shared facilities. Although this may suggest schools are more inclined to open recreational facilities for community use and that national survey findings may be under estimating the current status of school shared use, additional research is needed to fully explore the extent of shared use, the number and type of additional programs, and the amount of physical activity engaged in by participants. This finding may also be somewhat unique to North Carolina resulting from State level education policy and legislation encouraging shared

Table 3
Formal Shared Use Agreements by School Type.

School Type	Frequency (#)	Percentage
Elementary	505	75.9
Middle	197	84.5
Combined elem/mid	33	73.3
High	193	80.8
Total	879	74.4

Table 4
Odds Ratios (ORs) for Association among Participation in Shared Use by School Types and Demographics.

School characteristics	Unadjusted ORs (95% CI)	Adjusted ^a ORs (95% CI)
School Type		
Elementary	Ref.	Ref.
Middle	2.21 (1.22–3.98)	2.15 (1.15–4.00)
Combined middle/high	.77 (.33–1.78)	.65 (.27–1.56)
High School	1.21 (.75–1.95)	1.52 (.88–2.61)
Economic Tier		
Tier 3 (Least distress)	Ref.	Ref.
Tier 2 (Moderate distress)	0.66 (0.43–0.99)	0.49 (0.28–0.86)
Tier 3 (Most distress)	1.21 (.69–2.11)	1.26 (.69–2.33)
Percent free/reduced lunch		
Lowest (1st tertile)	Ref.	Ref.
Moderate (2nd tertile)	1.00 (.59–1.71)	1.16 (.67–2.02)
Highest (3rd tertile)	0.46 (0.28–0.73)	.73 (.42–1.27)
Percent Black student population		
Lowest (1st tertile)	Ref.	Ref.
Moderate (2nd tertile)	0.50 (0.28–0.88)	0.50 (0.28–0.89)
Highest (3rd tertile)	0.27 (0.16–0.46)	0.30 (0.16–0.54)

Note. CI refers to confidence interval. ^aAdjusted ORs for all 4 variables in the regression model together.

use of school facilities. Nonetheless, the fact that almost 90% of public schools in this survey share some portion of their facilities is an encouraging finding. If school administrators are willing to allow some outside use of their facilities there may be opportunities to increase community programming and places for PA.

Second, although shared use of indoor facilities and athletic fields was governed more frequently by formal written agreements, shared use of school playgrounds and track facilities was more frequently permitted with only informal or no agreement for community use. This may be due to the nature of activities associated with various school recreational facilities. Indoor facilities and athletic fields are more conducive to programmed activities like sports where playgrounds and running tracks allow more unstructured physical activity. School administrators may be hesitant to allow access to indoor facilities after school hours without formal agreements that include provisions for liability coverage, additional security, and facility operation, maintenance and repair costs.

Third, unlike previous research that cites concerns about increased liability and facility maintenance and operating costs as the most frequent barriers to shared use, we found that liability and costs were less frequently reported as a barrier than lack of community interest in using school facilities and school administrators not knowing where to start. This does not imply that schools administrators are less concerned about increased liability exposure or incurring additional facility operation and maintenance costs as reported in previous research (Spengler et al., 2007, 2011; Evenson and McGinn, 2004) since a majority of respondent schools indicated that formal agreements were required for shared use of school facilities. However, it does suggest that under used school facilities may be available for use.

Finally, schools located in the middle tier of economic distress and schools with a greater concentration of Black students were less likely to share their facilities with community-based organizations and members. This may be due to variations in quality and quantity of a community's PA facilities. While higher income communities are more likely to have a greater number and quality of public facilities designed for PA resulting in less demand for shared use of school facilities (Estabrooks et al., 2003), schools in these communities also appear to benefit from greater shared use. This is consistent with previous research that recreational facilities are not equitably distributed. Variations in the location and density of recreation resources has demonstrated that low income and Black neighborhoods are less likely

to have access to recreation facilities than high income and low minority neighborhoods (Gordon-Larsen et al., 2006). The reasons behind these results are not clearly evident. However, this finding highlights an opportunity for partnerships between schools and other community organizations to address disparate access to physical activity opportunities.

Two main limitations should be acknowledged. First, no information was collected on the context of shared use, specifically the number and type of programs, the number and type of participants, PA levels of program participants, and quality of the facilities. Second, we did not collect information on barriers from schools that currently share facilities. The barriers question was only administered to schools that indicated they "do not" currently share their facilities with outside groups. For example, some schools may allow unstructured use of a school's playground but prevent any use of school gym due to fear of increased liability.

Conclusions

These findings suggest most schools are accommodating to shared use partnerships. However, more research on the nature of shared use and types of programs and activities that occur is needed. Community organizations seeking to use indoor school facilities or athletic fields should be prepared to complete a formal written use agreement. However, access to playgrounds and running tracks may be achieved with little to no formality. A school history of low or no shared use may not be an indication of a school's unwillingness to allow community use of their facilities. Preconceived notions that schools are unwilling to share their facilities may be preventing community organizations from initiating contact with school administrators. Finally, shared use may be particularly effective in low income and racial minority communities where the need for recreation facilities that support PA is greatest. Future studies should determine if shared use leads to greater PA as well as explore the potential for shared use to reduce disparities in PA and associated risk factors.

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Conflicts of interests

The authors declare that there are no conflicts of interests.

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