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Shared use agreements and leisure time physical activity in North Carolina public schools

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ABSTRACT

Although increasing community access to public schools through shared use agreements (SUAs) has been a recommended strategy for promoting physical activity (PA) among national, state and local organizations, empirical evidence examining the efficacy of SUAs is limited. This study examined the degree of usage and production of PA among schools with shared use, and how variation in PA output is related to characteristics of the school, type of activity, facility type, and when activity occurs. Data were collected in 20 schools across North Carolina using System for Observing Play and Recreation in Communities (SOPARC) and Structured Physical Activity Surveys (SPAS) to assess PA in school athletic facilities during out of school time. Findings indicated that although schools had a policy of shared or open use, most facilities were empty during non-school hours. Hierarchical linear regression models also showed that formal programming was positively associated with both use and PA levels. Given the abundance of empty facilities, community groups in need of space to facilitate structured PA programs should pursue avenues of sharing facilities with public schools. Furthermore, to increase the efficacy of shared use, structured physical activity programs may be needed. Future studies are encouraged to further explore the effects of the specific types of shared use programs on PA production as well other aspects of the built environment surrounding schools.

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1. Introduction

Increasing access to places for leisure time physical activity (LTPA) within communities is compromised by the high cost of acquiring and developing activity-friendly environments such as playgrounds, athletic fields, and walking trails (Stein et al., 2015). Devoting land and allocating financial resources for community sport and recreation infrastructure is becoming more difficult to achieve as the demand for space continues to grow (Lafleur et al., 2013). Public schools across the United States have been identified as an important setting to facilitate greater access to opportunities for LTPA, especially in underserved and rural communities (Umstatt Meyer et al., 2016). Public schools have an established infrastructure and are inherently capable of handling a multitude of programs serving large volumes of people (Keener et al., 2009) during after-school, weekends, and summers (Filardo et al., 2010; Pate and O'Neill, 2009). School facilities are often centrally located complete with gymnasiums, playgrounds, sports fields, green spaces, tracks, and basketball courts and built using public funds. Furthermore, schools

are also readily available and safe environments for active play and recreation through after school programs and youth sport organizations (Bassett et al., 2013; Pate and O'Neill, 2009; Spengler, 2012), and are located in both urban and rural environments irrespective of community demographics and socio-economic status (SES) (Young et al., 2014).

Partnerships through shared use formal (e.g., contractual, fee-based) and informal (e.g., general open use, non-fee based) agreements (SUA) between schools and community partners can create new opportunities for community-based physical activity (Kanters et al., 2014). SUAs allow groups or individuals not associated with the school the opportunity to use the campus physical activity facilities during times when they are not being utilized by the school. A growing body of evidence indicates that increasing access to safe places for physical activity (PA) represents a promising strategy to encourage activity among all age groups (Umstatt Meyer et al., 2016). While previous research has indicated school LTPA facilities are often unavailable, under-utilized, or inaccessible for public use during non-school hours (Bocarro et al., 2012; Everett-Jones and Wendell, 2015; Lee et al., 2007), more recent findings suggest that public schools may be willing to open their facilities for public use and enter into SUAs (Kanters et al., 2014). For example, Kanters et al. (2014) reported that most public school principals were willing to allow open and/or shared use of school facilities with

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community groups and organizations, and the primary reason for not sharing LTPA facilities was because outside groups had not approached the school to share their facilities. This differs from the long-standing narrative that increased legal liability and added costs are the biggest barriers to schools sharing LTPA resources with outside parties (Spengler et al., 2012).

Although increasing community accessibility to public schools through SUAs has been a recommended policy strategy for promoting LTPA, empirical evidence examining the efficacy of SUAs is limited (Stein et al., 2015). In addition, most investigations of access to school resources have predominantly focused on urban schools (Edwards et al., 2012; Giles-Corti and Donovan, 2002). For instance, SUAs within public school facilities in Los Angeles school districts showed that schools with organized programming from SUAs had higher community use than those without SUAs in place (Lafleur et al., 2013).

People living in rural areas are more likely to be economically disadvantaged, lack resources for extracurricular activity, and have less supportive environments than urbanized communities (Edwards et al., 2012). Thus, SUAs involving schools may be particularly important in rural communities (Everett-Jones and Wendell, 2015). In these cases, neighborhood schools may be the only place for people to be physically active during their leisure time (Filardo et al., 2010).

Disparities in access to adequate PA facilities among rural and urban areas have been documented (Edwards et al., 2011; Everett-Jones et al., 2003; Frost et al., 2010; Shores and West, 2010), but not in the context of shared use programming in schools. More research is needed to assess the effectiveness of shared use in increasing LTPA, particularly with public school facilities not located in urban settings (Beighle et al., 2010; Evenson and McGinn, 2010). Additionally, researchers have discussed the need to fully explore the extent of shared use, the quantity and type of programs, and the amount of PA resulting from shared use of public school facilities (Kanters et al., 2014).

Moreover, much of the research investigating SUAs is based largely on reducing the scarcity of places to be physically active (Everett-Jones and Wendell, 2015; Hodge, 2015). However, simply creating or enhancing accessible places through SUAs may not be sufficient to increase PA behavior. From a social ecological perspective, place-based PA interventions would need to consider addressing additional levels of influence like the physical and organizational environment to achieve maximum effectiveness (McLeroy et al., 1988). A comprehensive examination of the supporting practices and characteristics of schools with SUAs, rather than merely the presence of a blanket SUA itself, could provide a clearer understanding of the effectiveness of SUAs in communities. Thus, this study builds upon the limited evidence on the role that shared use and its underlying factors play in promoting PA in school facilities, especially in non-urban environments.

Using a sample of schools in predominantly rural areas with formal SUAs in place, the current study addressed several aims. Specifically it sought to (a) measure the level of athletic facility use and PA for schools with shared use and describe the characteristics of users; (b) examine how school characteristics and facility type are associated with levels of structured activity programs in athletic facilities at schools with SUAs; and (c) determine how variation in PA is related to factors measured at the school (i.e., grade level, number of community programs), facility (i.e., facility type), and observation (i.e., time of day, day of the week) levels.

2. Methods

2.1. Procedures

This study followed a cross-sectional research design involving a sample of 20 public middle and high schools across North Carolina. Schools were selected using a stratified nonrandom sampling method based on their proximity (≤ 25 miles) to the residence of a trained data collector and if the schools were located in a predominantly rural

area. Rural was defined according to the National Center for Education Statistics classification system for determining rurality of schools (U.S. Department of Education, 2015). The study was approved by the NC State University Institutional Review Board.

Data collection was completed in two phases. School principals and athletic directors were surveyed to identify structured physical activity programs and level of shared use occurring at each school during non-school hours (Kanters et al., 2014). Using the survey results, PA facilities were identified and used to determine the target areas for subsequent systematic assessment of facility use and PA.

2.2. Instrumentation

The amount of structured physical activity programs at schools with SUAs was assessed using the Structured Physical Activity Survey (SPAS) instrument (Powers et al., 2002). The SPAS documents the frequency, duration, and type of structured afterschool PA programs offered by the school and non-school community groups at each PA facility within a specified two week period. This estimates the number of afterschool PA programs from shared use operated by community organizations on school facilities and the number of non-school participants served per year (Kanters et al., 2013).

The System for Observing Play and Recreation in Communities (SOPARC), a widely accepted approach for assessing PA in community settings (McKenzie et al., 2006) was used to measure school facility use and PA. SOPARC is based on momentary time-sampling in which school facilities are divided into predetermined target areas, where observers perform rapid visual scans at specified times per day. Observers count the number of people in target areas while also coding for PA level, age, and gender. As part of the protocol, simultaneous coding was conducted for contextual characteristics such as the accessibility, usability, presence of organization, provided equipment, and supervision. Observations were conducted on randomly selected Mondays, Wednesdays, and Fridays and both weekend days in 30 min intervals between the hours of 3:00 PM and 7:00 PM on week days and 9:00 AM and 7:00 PM on weekend days between January and August 2014.

2.3. Measures

Amount of organized shared use programming from non-school groups was calculated to analyze the relationship between shared use structured programs with PA. Informal or general open use policies that indicated no organization affiliation were removed leaving only structured, organized programs for analysis. Open use policies were excluded because principals found it impossible to estimate the amount of usage since SPAS intakes the characteristics of programs from structured activities. Researchers totaled the number of 60 min program sessions run by non-school, community organizations at each site. Outcome measures for PA were: (1) Total number of participants observed and (2) Total Metabolic Equivalent of Tasks (TMETs). Users' gender and age were documented along with PA levels. Standard TMETs were calculated by multiplying each observed participants' PA level with an assigned energy expenditure value: 1.5, 3.0, and 6.0, for every *sedentary* person, *moderate* person and *vigorous* person, respectively. These values have been accepted and widely used in estimating the amount and level of PA (Ainsworth et al., 2011; Kanters et al., 2015). School facilities were categorized into five facility types: multi-purpose field, track, baseball/softball field, tennis court, and indoor gym. Participants were summed to calculate the total number of participants per observation.

2.4. Analysis

Descriptive and regression analyses were conducted using IBM's Statistical Package for Social Sciences (SPSS) Version 22.0 software.

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