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Joint use policies: Are they related to adolescent behavior?

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ABSTRACT

Objective. Joint use policies (JUP) encourage shared facility use, usually between schools and a city or private organization, for both physical activity-related and non-physical activity-related programs. Little is known about JUP's impact on physical activity (PA). This study examined whether more specific JUPs were associated with increased PA and decreased sedentary behavior (SB) in adolescents.

Methods. Data on PA, sports participation, and SB were taken from annual cross-sectional nationally representative samples of 51,269 8th, 10th and 12th grade public school students nested in 461 school districts in the US from 2009–2011. JUP measures were constructed using information obtained from corresponding school district JU policies. Multivariable analyses were conducted, controlling for individual demographic and socioeconomic characteristics and clustering at the district level.

Results. Results showed small associations between more specific JUPs and increased PA (IRR 1.01, 95% CI: 1.00, 1.02). Closer examination of specific JUP provisions indicates that specifying what times facilities are available for use was associated with vigorous exercise and prioritizing school or affiliated organizations' use and which spaces were available for use were associated with vigorous exercise and more frequent PA participation, which includes participation in sports or athletics. No associations were found between more specific JUPs and SB.

Conclusions. JUPS may have small influences on adolescent physical activity behavior. Future longitudinal studies should be conducted to examine the impact of JUPs in conjunction with other physical activity-related policies and environmental changes to determine what impact they have on overall adolescent physical activity and sedentary behavior.

Introduction

Increased physical activity and reduced sedentary behavior have been identified as two preventative strategies to combat adolescent obesity prevalence (Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents, 2011), yet youth experience declines in physical activity (Troiano et al., 2008) and increased screen-related sedentary behavior (Rideout et al., 2010) as they move into adolescence. Two recent Institute of Medicine reports (National Research Council, 2012; Institute of Medicine, 2013) recommended making schools a focal point for obesity prevention efforts and the primary setting where youth should acquire the recommended 60 min of daily, moderate-to-vigorous physical activity (MVPA), which includes increasing physical activity opportunities before, during, and after school hours. As part of this strategy, there has been a call to increase joint use or shared use policies between local communities and school districts (USDHHS, 2010; AAP, 2006; NPLAN, 2010; Leadership for Healthy Communities, 2010; White House Task Force on Childhood Obesity, 2010; Khan et al., 2009).

Implementation of joint use policies (JUP) is one possible policy solution that can increase the utilization of existing recreational space in facility- and park-poor neighborhoods to improve access and availability to physical activity opportunities. This use of existing facilities is cost-effective and allows for the provision of free, safe play spaces, as well as the potential to offer structured/formal physical activity programs at a reduced cost. Building support with school principals and teachers is also important when facilitating the implementation of a JUP (Vincent, 2010).

Some studies have found that children with access to existing and renovated school recreational facilities outside of regular school hours were more likely to be active (Farley et al., 2007; Brink et al., 2010; Colabianchi et al., 2009; Durant et al., 2009). However, research examining JUP implementation consistently found lack of staffing, insufficient funding, risk of vandalism, safety, and insurance liability concerns were often cited by school personnel as barriers to opening school grounds outside of school hours (Cox et al., 2011; Evenson et al., 2009;

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Filardo et al., 2010; Spengler et al., 2011). Despite the promise of this policy strategy, and the significant attention and promotion JUPs have received at the national level, little is known about its effectiveness in increasing physical activity and reducing sedentary behavior. Currently, to our knowledge, only two published studies have examined the association between JUPs and physical activity (Choy et al., 2008; LaFleur et al., 2013). Both studies involved examining the initial impact of a newly enacted JUP that resulted from newly formed local partnerships and targeted relatively small geographic areas.

Recent research documented that 93% of school districts surrounding secondary schools where a national sample of secondary school students were enrolled had a JUP and 81% of those agreements addressed recreational use of school facilities, but most of the JUPs contained vague language or they limited the types of shared use and facilities that are available to the public during non-school hours (Chriqui et al., 2012). Therefore, through this research study, we sought to examine whether more specific JUPs—defined as those policies that included provisions on when and what school facilities/features could be used by specific groups—are associated with increased physical activity and decreased sedentary behavior in adolescents. To our knowledge, this will be the first national study to examine the association between more specific JUPs and adolescent physical activity and sedentary behavior.

Methods

This study combined cross-sectional individual-level data on physical activity and sedentary behavior collected in Spring 2009 through 2011 from 8th, 10th and 12th grade public school students participating in the Monitoring the Future (MTF) Survey. JUP data were collected from all school districts containing the MTF schools through the Bridging the Gap Community Obesity Measures Project (BTG-COMP), an ongoing, large-scale study that identifies local policy and environmental factors that are likely to be important determinants of healthy eating, physical activity and obesity among children and adolescents. Study procedures were approved by the Institutional Review Boards at the University of Michigan and the University of Illinois at Chicago.

Individual-level measures

The MTF study—conducted at the University of Michigan's Institute for Social Research (ISR) and funded by the National Institute on Drug Abuse (NIDA)—begun in 1975 using national samples of high school seniors in the coterminous United States, is the nation's longest running survey of youth substance use and abuse, and related health behavior. Since 1991, the MTF surveys have also included 8th and 10th grade students annually. Schools are selected annually based on a three-stage sampling procedure (Johnston et al., 2013). Stage 1 involves geographic area selection. Stage 2 involves selection of one or more schools in each area based on establishing the probability for inclusion proportionate to the size of the respective grade to be sampled. Stage 3 focuses on selection of students within each selected grade. Within each school, up to 350 students per grade are selected for the study. For those schools with a smaller student body for the respective grade, all students are selected. If a school has more than 350 students then a random sample of classrooms or other random method is used to choose the final sample.

Questionnaires were administered by an ISR representative in classrooms during normal class periods whenever possible. In order to cover the range of topic areas in the study, 8th and 10th graders were administered four different forms, and 12th graders, six different forms of the questionnaire. This occurs in an ordered sequence to ensure virtually identical sub-samples for each form. Approximately one-third of the questions on each form are common to all 10 forms, including the demographic variables. This study uses a mix of core and form-specific questions, resulting in variation in model-specific sample sizes.

MTF student measures

Physical activity outcome measures were based on self-reported responses to the following five questions: (1) "To what extent have you participated in school athletic teams this school year?" (school-based sports participation); (2) "In which competitive sports (if any) did you participate during the LAST 12 MONTHS (include school, community, and other organized sports)?" (competitive sports participation); (3) "How often do you do actively participate in sports, athletics or exercising?" (PA participation); (4) "During the LAST 7 DAYS, on how many days were you physically active for a total of at least 60 minutes per day?" (PA/60 min. daily); and (5) "How often do you exercise vigorously (i.e., jogging, swimming, calisthenics, or any other active sports)?" (vigorous exercise).

Sedentary behavior outcome measures were based on self-reported responses to the following three questions: (1) "Not counting work for school or a job, about how many hours a week do you spend on the Internet e-mailing, instant messaging, gaming, shopping, searching, downloading music, etc.?"; (2) "Not counting work for school or a job, about how many hours a week do you spend using a computer doing other things?"; and (3) "How many hours a day do you spend watching T.V. (separate questions for weekday vs. weekend)?" All behavioral outcome measures were dichotomized in order to conduct analyses with the full JUP indices (described in detail below) due to low and/or zero numbers in numerous cells in cross tabulations between the categorical physical activity and sedentary behavior measures and the JUP indices. Variable dichotomization was determined by examining cross tabulation distributions and conducting sensitivity analyses between outcome and JUP predictor variables. Based on the results of these analyses, occasional physical activity (e.g., "at least once a week" and "once or twice a month" for PA Participation) was coded as 1 = yes in the final dichotomized physical activity variables.

An aggregate school-level measure of perceived safety was constructed using individual responses to a form specific question in which students were asked, "How often do you feel unsafe going to or from school?" The measure represents the proportion of students from each school who responded some days, most days, and every day.

For all MTF schools, principals were asked to complete a survey on school health policies and practices. Using information provided by school principals through this survey, principal-reported measures on the percent of male and female students participating in interscholastic or varsity sports and intramural sports or physical activity clubs were constructed.

JUP policy measures

Hard copies of on-the-books joint/shared use policies were collected from all school districts containing the MTF schools via Internet research with telephone follow-up and verification.

Joint use "policy" reflected the school board-approved policy, typically codified in the School Board Policy Manual, related to joint, shared, or community use of facilities outside of school hours. In two instances, the school board had not adopted a formal policy but had included specific joint use provisions in the district's student handbook–this information was captured as a proxy for these two districts. Ninety-six percent of the districts' policies were referred to as "community use" policies; the remaining districts' policies were referred to as "joint" or "shared" use policies. Policy collection rates were >92% across all school years (SY): 92.3% (SY08-09), 96.8% (SY09-10), and 93.3% (SY10-11). All policies were coded using a 95-item coding tool developed by BTG researchers, categories included: "Type of policy" (9 items); "Which groups" were authorized to use and their relative priority/rank for use (42 items); "What" they were authorized to use (13 items), "When" they were authorized to use it (8 items), and for provisions related to "Maintenance, liability, repairs, supervision, and parking" (23 items). All policies were reviewed and independently coded by two trained, master's level coders. A consensus coding meeting was held between the coders to develop a final coding for each school district.

Using these policy data, six JUP indices, comprised of all possible time and physical activity-related space provisions, were constructed (see Table 1 for the maximum scores for each index). The indices, comprised of multiple JUP provisions, were developed to capture variations in physical activity-relevant JUP provisions, rather than limiting analyses to whether or not a JUP exists. The first index gives priority for use of (a) school-sponsored or school affiliated groups. The second index gives priority use to (b) school facilities to specific community groups, such as park and recreation departments, YMCA, and Boys and Girls Clubs. The indices then include the following additional joint/shared use "time" provisions that specify whether school facilities are allowed to be used: (1) in the evenings; (2) on weekends; (3) during holidays; (4) after school; (5) during vacation break; and (6) before school. The index also includes physical activity-related "space" provisions that specify the use of (7) indoor facilities, which included multi-purpose rooms, gyms, weight rooms and pools, and (8) outdoor facilities, which included fields, basketball courts, tennis courts, track, and playgrounds. The full school JUP index includes provision "A" plus 1 through 8, and the full community JUP index includes provision "B" plus 1