Background

Design, implementation and dissemination of effective school-based prevention programs are critical to addressing the childhood obesity epidemic. Currently, few successful models exist for the prevention of childhood obesity. Interventions involving just one influencing factor may not have the desired strong independent effects on children’s obesity-related behaviors, but may contribute to behavior change if integrated with other individual, social, and environmental changes. This study seeks to evaluate the synergistic impacts of integrating an elementary school-based environment and curriculum intervention on children’s obesity-related behaviors. This research also examines whether the effects of the intervention on children’s physical activity vary by gender, ethnicity, and weight status and whether they extend to outside of school time.

Purpose

Primarily, we seek to examine the effects of implementing an environmental intervention and curriculum change, both separately and in combination, on children’s physical activity during the school day.

Additionally, our design and methodology allow for further investigation including: Evaluate whether the effects of the intervention on children’s PA vary by gender, ethnicity, and weight status (e.g., are the effects of the intervention stronger in overweight children?), identify whether the effects of the intervention on children’s PA behaviors extend outside of the school day, examine the impact of the intervention on sedentary behavior, and hypothesize mediators of the intervention and children’s obesity-related behaviors (e.g., social support, perceived environment), and examine the characteristics of playground design that contribute to children’s PA.

Methodology

Using a mixed-method case control design, 12 schools with a Learning Landscapes schoolyard are matched with 12 schools without a Learning Landscapes schoolyard. Further, half of the schools from each will be randomly selected to or not to receive the curriculum. Schools are broken down into 2 waves with 12 schools starting the research in Wave 1 (Spring 2010) and 12 schools starting Wave 2 (Spring 2011).

Measures of children’s physical activity were obtained during school recess hours using the observational methodology, the System for Observing Play and Leisure Activity in Youth (SOPLAY). Additional measures were done at one school in each sub-category including 6-day continuous wear of wrist-based accelerometers and questionnaires gathering data on mediating variables and self-report PA.

Additionally, environmental measures were taken of each of the school yards including square footage, play equipment colors, distance between equipment, etc. These measures will be used in collaboration with the questionnaire, accelerometers and SOPLAY data to be able to understand how the environment affects PA.

Results

Previous research suggests that schools with renovated schoolyard have significantly more students who were either “walking” or “very active” than control schools. Also, certain play surfaces significantly increase the number of children who are active. SPARK AR curriculum has been proven to significantly increase PA in students during after school activities. This curriculum has not yet been used during structured recess times; this research will hope to find how this curriculum is affective during this play time for children. Balance First has been proven to increase children’s knowledge on how to balance PA with health eating.

What we hope to find is that in those schools that have both improved schoolyards and curricula there is a significant increase in the number of children who are very active, an increase in the variety of different kinds of physical activity that is occurring and that students are more comfortable participating in physical activity.

Implications

Should this data prove to be significant it will provide data to schools, school districts and policymakers that the design of a schoolyard and implementation of outdoor curricula should be implemented in collaboration with or separately from schoolyard improvements and renovations. This research spans into several disciplines creating an environment in which the implications of design, architecture, and education can be proven to significantly and collaboratively affect the health of children in schools. If significant, this public health research can be used to drive the practices in architecture, planning, landscape architecture, as well as education.

Additionally, through using graduate students from the School of Public Health, the College of Architecture and Planning, the Department of Health Anthropology and others; an atmosphere of interdisciplinary work is being developed in the next generation of public health, education, design, etc professionals.

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