

Children's Summer Camp-Based Physical Activity

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Abstract:

Childhood physical inactivity and obesity is a major concern because the current generation of children is one of the most inactive and unhealthy in history (Ogden, et al., 2006). A national study conducted by the Centers for Disease Control and Prevention reported that 62 percent of children aged nine to thirteen years old did not participate in any physical activity during nonschool hours and 23 percent engaged in no daily physical activity (Duke, Huhman, & Heitzler, 2003). To promote physical development and prepare children for a healthy future, the United States Department of Health and Human Services (USDHHS) recommends sixty or more minutes of moderate to vigorous physical activity daily (2008).

Keywords: childhood physical inactivity | Center for Disease Control (CDC) | summer camp

Article:

*****Note: Full text of article below**

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Childhood physical inactivity and obesity is a major concern because the current generation of children is one of the most inactive and unhealthy in history (Ogden, et al., 2006). A national study conducted by the Centers for Disease Control and Prevention reported that 62 percent of children aged nine to thirteen years old did not participate in any physical activity during nonschool hours and 23 percent engaged in no daily physical activity (Duke, Huhman, & Heitzler, 2003). To promote physical development and prepare children for a healthy future, the United States Department of Health and Human Services (USDHHS) recommends sixty or more minutes of moderate to vigorous physical activity daily (2008).

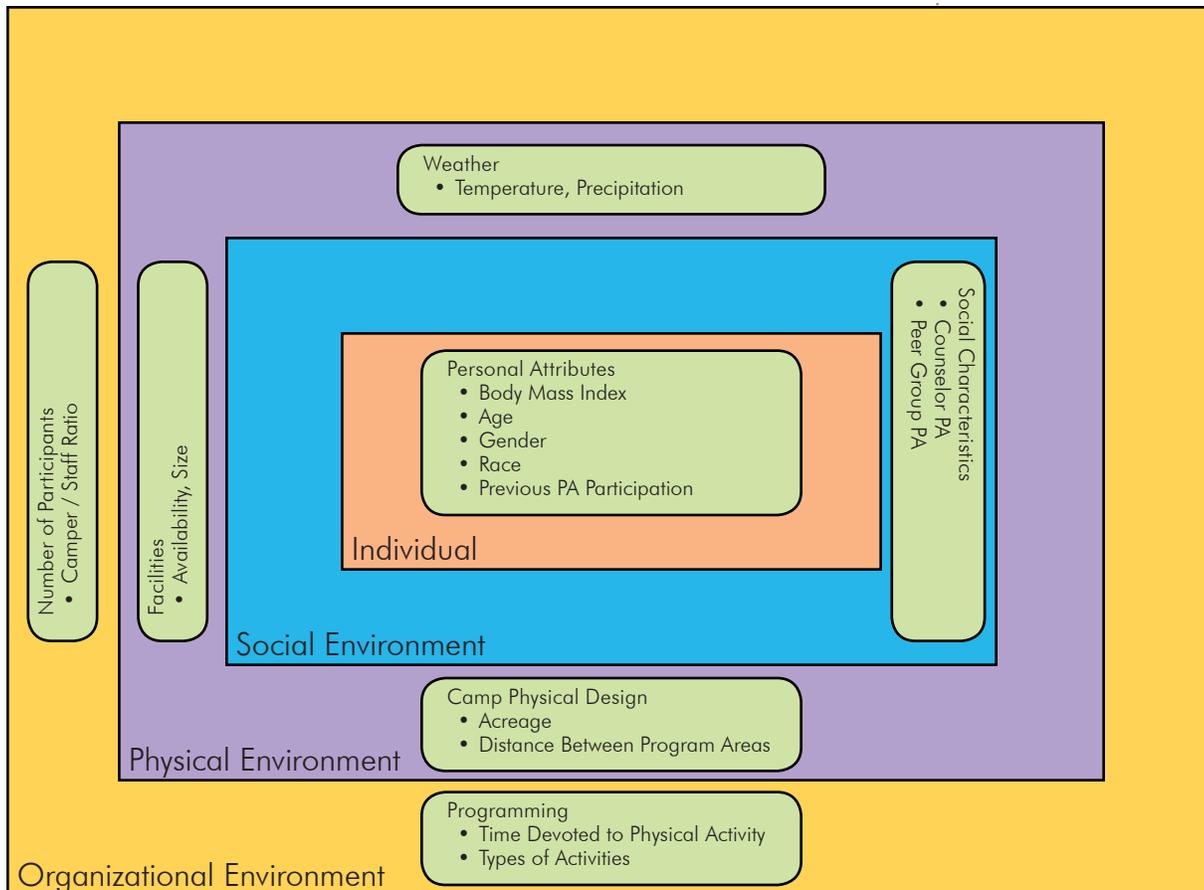
Some studies have found that children may be more susceptible to inactivity and obesity during the summer months (e.g., Carrel, Clark, Peterson, Eickhoff, & Allen, 2007; von Hippel, Powell, Douglas, & Rowland, 2007). These researchers concluded that summer break from schools may result in less structured days leading to less physical activity and a less healthy diet.

Jago and Baranowski (2004) suggested that structured summer opportunities such as youth camps could provide an opportunity for children to be physically active.

Although a good deal of physical activity is assumed to occur at camp, little is known about what circumstances may promote physical activity at camps. Therefore, the purpose of this study was to examine children’s levels of physical activity in summer camps and explore correlates of their camp physical activity participation. A social ecological framework was used to analyze the relationship between camper physical activity participation and individual, social, physical environment, and organizational factors (see Figure 1).

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Figure 1. Social Ecological Model for Physical Activity in Camps



METHODS

PURPOSIVE SAMPLE

Eight (8) camps: 4 resident camps and 4 day camps in North Carolina with children in attendance for one camp week (i.e., 5–6 days)

- Campers aged 8–12 years old

SAMPLE CHARACTERISTICS

277 Campers

- Day Campers: 154 campers, average age = 10 years, half male and half female, almost equal minority/non-minority, 68 percent normal BMI and 32 percent at risk or overweight
- Resident Campers: 123 campers, average age = 11 years, half male and half female, minorities comprised 1/4 of sample, 64 percent normal BMI and 36 percent at risk or overweight

DATA COLLECTION TECHNIQUES

Pedometers (step counters) were worn by campers during waking hours or hours at camp in the case of day camps. Step counts were also recorded for selected counselors.

(Note: Counts were also included for activities not recorded by pedometers such as swimming.)

- Camper questionnaire about physical activity participation, Body Mass Index (BMI), demographic information
- Camp Physical Environment Audit and program data/observation information

DATA ANALYSIS TECHNIQUES

1. Step count as independent variable
2. Selected individual characteristics, social relationships, physical environment, and organizational aspects as dependent variables
3. Descriptive, bi-variate, and multiple regression statistics used for analysis

Research continued from page 20

Study Findings

This research study established a baseline for physical activity in camps using pedometers. Day campers averaged 11,916 steps per camp day, while resident campers averaged 19,699 steps. The primary reason for step count difference between the two groups was the number of hours the pedometers were worn (i.e., day campers only wore them during camp, which comprised about eight hours compared to resident campers who wore them all day). During both day and resident camps, children met or exceeded daily physical activity guidelines recommended by the USDHHS.

Individual-level variables significantly contributed to explaining campers' step counts for both resident and day camps. Similar to research in other settings, female gender and minority (i.e., non-white) race were significant and negative correlates of resident and day camper physical activity. Body Mass Index was significant in day camps, but not in resident camps. Therefore, girls and minorities as well as campers with a high BMI were less active than boys, white children, or normal BMI campers (for day camps).

Social variables also significantly contributed to explaining variance in camper step count in day and resident camps. Peer group step count explained the majority of the variance in camper physical activity at the social-level. In other words, as might be expected, campers were more active if their peers (i.e., self-reported camp friend groups) were also active.

The physical environment contributed to the explanation of step count variance at resident camps, but not at day camps. At resident camps, a greater number of activity areas (e.g., climbing walls, lakes, ropes courses) resulted in more physical activity from campers. The strongest physical environment correlate at resident camps was the distance walked in between activity areas. Longer distances between areas used for programming resulted in more walking for resident campers (i.e., more physical activity).

Although a model including all individual, social, physical environment, and organizational variables indicated that the day camp physical environment did

not significantly contribute to the explanation of day camper physical activity, some evidence from bi-variate tests suggested that it may have an impact. Larger indoor facilities with more activity areas (e.g., sport courts, swimming pools), as well as larger outdoor spaces, may be associated with more day camper physical activity.

Organizational variables significantly contributed to the explanation of

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variance in resident camps, but not at day camps. Both camper-staff ratio and the frequency and intensity of physical activity programming were significant at resident camps. A larger staff with fewer campers resulted in more physical activity for the campers. The programming at resident camps was especially associated with camper physical activity. Activities that were programmed to influence more energy expenditure facilitated more resident camper physical activity. In other words, if the camp organization focused on including more activities (i.e., intentional programming) that resulted in high levels of physical movement, the campers were more likely to be active at resident camps.

Implications for Camps

The results from this study indicated that the summer camps studied were contributing to campers meeting or exceeding the USDHHS-recommended amount of physical activity each day. These results were related to the social ecology of the camp including the individual, social, physical, and organizational structure. Intervention techniques were not used in this study so camps provided their usual activities without any modifications to increase physical activity. Therefore, the assumption that summer camps are a

place where physical activity inherently occurs may be partially true. However, as the results demonstrated, the physical structure of the camp as well as the intentional programming of activities that encourage physical activity will likely influence camp physical activity participation. Several recommendations are offered:

- Females, minorities, and overweight children were less likely to be active than their counterparts. Soliciting and including activities that cater to the interests of each individual may encourage them to be more physically active during the camp week.
- Mixed evidence suggested that staff presence and physical activity may also be associated with campers' physical activity. Providing training sessions and incentives to encourage physically active counselors may result in more physically active campers.
- If outdoor facilities are available, they should be used. Outdoor environments provide more space for physical activity programs and walking. Heat is an issue during the summer months, but shade areas and water consumption can be used as buoys for time spent outdoors.
- During camp there is ample time to program for multiple outcomes. Physical activity is just one outcome that can occur in summer camps, and it should be balanced with other activities.

Overall, camps are a place where children can participate in adequate amounts of physical activity while learning new skills and activities. The unique physical environment including lakes, swimming pools, climbing walls, gymnasiums, sport fields, and natural surroundings should be used to stimulate camper physical activity. Strategies and programming can be designed to limit inhibitors to camp physical activity such as typical individual-level disparities (e.g., gender, race, BMI) and physically inactive peer groups. Continuously evaluating camp physical activity strategies can result in identifying the best opportunities for physical activity

encouragement. The positive opportunities for physical activity in camps can then be communicated to the public and used in advocacy for recommending camps as places for children to visit and be active during the summer.

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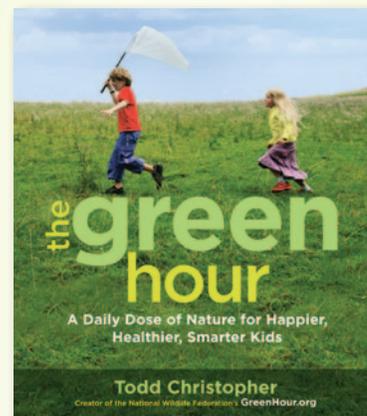
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