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The Camp Setting for Promoting Youth Physical Activity: Systematic Observations of Summer Day Camps

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Abstract: The risk for youth obesity is higher during the summer than any other time of year. Summer day camps can be ideal settings for preventing obesity through reducing youth summer sedentary behaviors. However, little-to-no research has examined the role of camps for promoting youth physical activity (PA) and other healthy behaviors. This study begins to address the gap in research by conducting systematic observations of 4 summer day camps (2 highly-resourced and 2 low-resourced) to determine: 1) the degree to which camps engage youth in moderate-to-vigorous (MV) PA, and; 2) to what extent camps provide important physical and social-motivational features for promoting PA. Results indicate camps provide opportunities for youth to meet national recommendations of daily MVPA. However, there were differences in PA and motivational features by level of camp resources. This study helps inform practice and policy through identifying strengths and needs of camps for promoting PA.

Introduction

Recognized as the primary health threat for young people (Berenson, 2005; Levi, Vinter, St. Laurent & Segal, 2008; Marcovecchio, Mohn, & Chiarelli, 2005; Sinha, Fisch, Teague, et al., 2002), recent reports indicate that a national high of 34.2% of youth (39.5% of African American adolescents) are now considered overweight or obese (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Lack of physical activity (PA), defined as "any bodily movement produced by skeletal muscles that result in caloric expenditure," has been identified as one primary reason for the positive energy balance and the development of childhood obesity (DuRant, Baranowski, Johnson, & Thompson, 1994; Epstein, Smith, Vara, & Rodefer, 1991; Troiano, Briefel, Carroll, & Bialostosky, 2000). High levels of sedentary behavior, obesity, and related disease, have been found to be especially problematic among minority and low-income youth (Ogden et al., 2010) who have less access to safe and well-resourced communities and schools (Molnar, Gortmaker,

Bull, & Buka, 2004) and greater family barriers to participate in PA (Casey, Ripke, & Huston, 2005). To address the obesity epidemic, nation-wide initiatives (U.S. Department of Health and Human Services -USDHHS, 2008) imposed school-based mandates to increase youth PA opportunities including the endorsement of frequent and effective physical education (PE). However, despite these efforts, research has shown that 50 - 92% of youth still do not meet the national guidelines of 60 minutes of daily physical activity (PA) and PA declines as much as 50% between the elementary and middle school years (ages 6 to 16) (Nader, Bradley, Houts, McRitchie, & O'Brian, 2008; Troiano, Berrigan, Dodd, Masse, Tilert, & McDowell, 2008; USDHHS, 2008). As youth are becoming increasingly inactive, there is pressing need to develop strategies to increase children and adolescent motivation and engagement in PA.

Consequently, researchers have begun to look towards the time out-of-school as another ideal setting for promoting PA (e.g., Kelder, Hoelscher, Barroso, et al., 2005; Pate, Saunders, Ward, et al., 2003; Robinson, Killen, Kraemer, et al., 2003; Wilson, Van Horn, Kitzman-Ulrich, et al., 2011; Yin, Gutin, Johnson, et al., 2005). Many school-and community-sponsored OST programs feature physical recreation as one part of the 'curriculum' and represent a relatively healthy environment compared to the alternative OST arrangements (e.g., home alone) which typically includes excessive time spent in sedentary activities (e.g., watching TV). In turn, research has provided some evidence that participation in organized afterschool programs is linked with lower rates of obesity (Mahoney, et al., 2005; Elkins, et al., 2004) and, for some activities, higher levels of PA (Coleman, Geller, Rosenkranz, & Dzewaltowski, 2008).

Given the summer months represent the largest amount of consecutive out-of-school-time (OST) for the majority of American youth, and the time of the year when the risk for youth weight gain is highest (von Hippel, Powell, Downey, & Rowland, 2007), summer camps may be a critical resource for prevention of obesity and related disease. However, no studies to-date, have measured: 1) the degree to which youth engage in PA within the summer day camp setting, nor; 2) to what extent camp settings provide important physical and social-motivational features for promoting PA. The reported study was designed to address these gaps in research through conducting systematic observations of 4 summer day camps (2 highly-resourced and 2 low-resourced camps). This study contributes to our understanding of the strengths and needs of summer camp programs to effectively promote youth PA, and informs future intervention and youth programming policy.

Organized OST Programs and Youth Obesity

There has been some support for intervention strategies to increase youth PA during the school day (Pate, Davis, Robinson, Stone, McKenzie, & Young, 2006), however due to increasing demands on schools to provide basic education, and diminishing physical education programs, OST represents the greatest opportunity to increase youth PA. More than 68% of today's youth participate in at least one or more organized OST activities and many of these school-sponsored and community-based OST programs now offer healthy lifestyle and PA components as part of their curriculum (Bouffard, Wimer, Caronongan, & Little, 2006). In particular, youth development (YD) programs (e.g.,4-H, Boys & Girls Clubs of America, and Girls, Inc), which are uniquely characterized by their emphasis on providing youth highly safe, structured settings, positive mentors, and positive overarching goals, have begun to address youth health behaviors as a primary component of their programs. For example, the Boys and Girls club has a "health and life skills" component that focuses on good nutrition, regular physical activity, and improving overall well being and another component, "smart girls," to promote health, fitness, and self-esteem enhancement specifically to girls (Boys & Girls Clubs of America, 2010). Similarly, the "Healthy Lifestyles" component of the 4-H after school youth program guides

youth in "discovering the benefits to being fit as they practice making decisions and managing their health." This component aids youth and young families with limited resources to develop the knowledge, skills, attitudes, and behavior needed to improve their diet and physical activity levels, and includes fun activities for youth such as designing their own fitness plans and tracking their progress (National 4-H Council, 2010).

In turn, youth participation in organized OST activities such as sports, after-school community programs (YD programs), and extracurricular activities (school-based), has been linked with multiple indicators of positive functioning (e.g., Mahoney, Vandell, Simpkins, & Zarrett, 2009; Zarrett, Fay, Li, et al., 2009; Zarrett, Fay, Peltz, et al., 2007) including physical health (e.g., lower rates of obesity; Mahoney, Lord & Carryl, 2005a; Vandell, Pierce & Dadisman, et al., 2005). For example, Mahoney et al. (2005a) tracked a sample of disadvantaged children over a 3 year period (ages 5 to 8 years old) and found that, after controlling for earlier measures of BMI and demographic factors, those who participated in after-school programs (ASPs) showed less marked increases in BMI and significantly lower rates of obesity than similar children who did not participate in ASPs. The differences in obesity were particularly apparent for children who showed consistent participation in ASPs over time.

Similarly, in a cross-sectional study of 5484 low-income adolescents, Elkins, Cohen, Koralewicz, and Taylor (2004) found the number of athletic activities that youth participated in was associated with a significant reduction in the likelihood of being overweight or obese (except for football players). Lastly, using a well-validated and reliable observation tool (SOPLAY and SOFIT observational tools; McKenzie, Marshall, Sallis, & Conway, 2000a; McKenzie, Sallis, & Nader, 1991) in seven YD afterschool program sites, Coleman et al. (2008), found that PA is likely one mechanism by which OST programs foster a healthy weight in children/adolescents. Specifically, findings indicated children were spending approximately 47 minutes of their after-school time in active recreation and the level of MVPA of the active recreation time was comparable to, and in many instances, exceeded estimates for in-school PA programs (McKenzie, Catellier, Conway, et al, 2006; McKenzie, Marshall, Sallis, Conway, 2000b; McKenzie, Feldman, Woods, et al., 1995). Together these studies demonstrate that some afterschool (OST) settings are structured in a way to promote youth health and engagement in PA independent of intervention.

Summer Day Camps and Youth Obesity Prevention

Although we have some knowledge about the nature of the after-school setting for promoting PA and healthy weight, little-to-no research has looked at the degree to which summer day camps provide opportunities for youth engagement in PA. For the majority of American youth, summer vacation consists of about 23% of the calendar year and represents the largest consecutive period of out-of-school time. Despite popular notions of summer as a highly active time for youth, the risk for obesity is actually higher during the summer than the school year. For example, data from a large national data set indicated the rate of children's BMI increase during summer was more than double the rate during the school year (von Hippel, et al., 2007). Results also showed that the gaps in obesity between African–American or Hispanic children and their White counterparts are driven largely by BMI increases during the summer.

Researchers have speculated that the summer break from schools may result in less structured days for children leading to months of less physical activity and less healthy diet (e.g., Carrel, Clark, Peterson, Eickhoff, & Allen, 2007; von Hippel, et al., 2007), however, few studies have examined what activities youth engage in during the summer months or the characteristics/quality of those activities for promoting health (Jago & Baranowski, 2004;

Mahoney, et al., 2011). A study by Mahoney and his colleagues (2011) was the only published study elicited from an extensive literature search that examined the nature of youth summertime activities and its relation to youth health. Providing support for the active role that summer camps may play in youth obesity prevention, Mahoney et al. (2011) found that among a sample of 1766 adolescents (between the ages of 10-18; *M* = 14 years) summer care arrangements that included regular participation in organized OST activities predicted a subsequently lower BMI and risk for obesity the following school year compared to summer arrangements that did not include such participation (especially during early adolescence). In particular, a summer arrangement that consisted of primarily parent care (without organized activity) was linked to youth greatest risk for obesity. Coupled with evidence from previous research of the role of organized OST activities in promoting youth health during the school year, these findings suggest that organized summertime activities are critical for child and adolescent obesity prevention.

Within the U.S., camp programs serve an estimated 12 million campers each year (Bialeschki et al., 2007). Similar to after-school YD programs, most camp programs have a mission and curriculum that focuses on providing supports and opportunities necessary to promote the healthy physical, social, and achievement-related development of participating youth. Moreover, day camps typically offer sustained experiences for extended periods of time (1 to 8 weeks, 6-8 hours per day), making it a highly influential setting for establishing and reinforcing youth healthy behaviors. For example, camps can provide healthy activities that are structured and guided for children during the summer. However, with limited research on the role of camps for promoting youth PA and other healthy behaviors (Jago & Baranowski, 2004; Welk & Schaben, 2004), the extent to which these OST settings may affect adolescent health remains largely unknown. This study begins to fill this knowledge gap by systematically observing the amount of PA youth engage in within various summer day camps. Given participation in moderate-to-vigorous PA (MVPA) is likely to be highly dependent upon the physical environment (e.g., whether area is usable for PA), how the PA subject matter is delivered (e.g., structured vs. unstructured, clarity of rules), the behaviors and attitudes of the counselors delivering it, and characteristics of program youth, this study also evaluates each camp setting for the extent to which it provides key physical and social motivational features for promoting youth PA.

Mechanisms for Promoting Youth PA in Camp Settings

An integration of Self-Determination Theory (SDT; Ryan, & Deci, 2000) within a (social-ecological) systems framework (Bronfenbrenner, & Morris, 2006) form the study's conceptual framework for assessing the camps' PA-related motivational climate. According to a systems perspective, development occurs as the result of a system of interactions within the individual and between the individual and their complex environments over time. From this perspective, individuals have needs that require appropriate responses from their social contexts in order to support healthy development. In the case of PA, youth will opt to engage or disengage depending on whether these needs are met. Previous research suggests that a culturally sensitive environment, that ensures youth physical and emotional safety, access to adequate space, equipment, positive peers, and supportive and competent adult leaders, will support youth continued engagement (e.g., Eccles & Gootman, 2002; Zarrett, Skiles, Wilson, & McClintock, 2012).

Moreover, Self Determination Theory (SDT) asserts that among the most basic human motivational needs are individuals' socio-emotional needs for achievement (competence), relatedness, and autonomy. Based on this theoretical perspective, effective programs for fostering youth intrinsic engagement in PA are social contexts:

1) that provide intellectually and physically challenging experiences that interest youth and where youth can demonstrate their abilities (i.e., competence);
2) where youth feel accepted and a sense of belonging to a socially recognized and valued group (i.e., relatedness); and
3) where it is safe to share their ideas, explore their identities and interests, and where behavior is self-determined and not guided by external incentives (i.e., autonomy).

Previous PA-based interventions indicate that the integration of perceived choice, self-initiated behaviors, and sense of belonging, are instrumental in increasing youth intrinsic motivation, effort, and persistence for engaging in PA (Wilson, Evans, Williams, et al., 2005; Wilson, Griffin, Saunders, et al., 2009; Zarrett, et al., 2012). Research focused on motivation for sports participation has also identified perceived competence, enjoyment, social connectedness, and degree of outside pressure as primary motives for pursuing or dropping out of sports (Brustad, Babkes, & Smith, 2001; Fredricks, et al., 2002; Patrick, et al., 1999; Weiss & Petlichkoff, 1989; Weiss & Williams, 2004). Characteristics of OST settings that are thought to increase participation and support the need for relatedness, autonomy, and competence include:

1) adult leaders who are responsive and supportive;
2) opportunities to develop relationships with peers;
3) challenging and interesting tasks; and
4) opportunities to be involved in decision making (Anderson-Butcher, 2005; Lauver & Little, 2005; Weiss, et al., 2005).

In the present study, we systematically observed summer camp settings to determine the degree to which they provide these physical and social resources needed for fostering youth motivation to engage in PA (see Table 1 for a detailed description of the physical and social motivational program features assessed).

Goals of the Present Study

Although summer is a critical time for youth obesity prevention, there is a paucity of knowledge concerning what activities youth engage in during the summer months and the characteristics/quality of these activities for promoting youth health. In particular, researchers have asserted that day camps are an ideal OST setting for reducing the sedentary behaviors of youth during the summer, but these assertions have not yet been tested empirically. The goal of this study is to begin to address this gap in research by examining the proportion of instances across each camp day in which youth are observed participating in MVPA, and the degree to which this OST setting includes important physical and social motivational features for promoting PA. This study will contribute to our understanding of the strengths and needs of summer camp programs, informing future intervention and policy.

Methods

Participants

Four youth recreational summer day camps located in the greater Columbia area of South Carolina were targeted to participate in the project. Two of the day camps were considered low-resourced camps, having less resourced facilities and equipment, minimum enrollment fees ($50-$60 per week) and serving an underserved population of youth (defined by both minority status and low SES). Although both camps provided resources for children and adolescence from K through 12th grade (Age Range: Camp 1 = 5 to 17 years old; Camp 2 = 6 to 12 years

old) the majority of youth were in the 4th-5th grade (*M*=10 years old; 84% African American, 9% European American; 7% Hispanic or other). The other two day camps were considered high resourced camps with state-of-the-art equipment, playgrounds, and large outdoor areas, and considerably more expensive enrollment fees ($175-$225 per week). These camps served a primarily middle-class sample of youth from a range of ethnic backgrounds (25% African American, 58% European American; 17% Hispanic or other). For one of these camps, we observed children from K-6th grade (Camp 3: *M* = 8.5 years old; range = 6-11 years old). The other high resourced camp served children K-6th grade, however we only observed children in Grades 2 and 3 (Camp 4: *M* = 8.5 years old; range = 6-11 years old). All camps were overrepresented by male participants (Total Female =36%; Camp 1=27%, Camp 2=38%, Camp 3 = 36%, Camp 4 = 42%). Inclusion criteria for the camps were as follows: 1) full day camps (8-4pm); 2) offered all summer (at least 2 months); 3) had a physical activity component, and; 4) was founded on a youth development framework.

Procedure

All camp youth between the ages 6-18 were asked to participate in the study. Participation in the study required passive parent consent (letters describing the study were distributed to parents for parent (dis)approval) and youth signed assent. Youth height, weight, date of birth, race, and sex were collected at the beginning of the study. Youth were also asked to fill out a short survey that asked about their perceptions of the camp (e.g., enjoyment of activities, opportunities for PA), and perceptions of the camp staff (e.g., "I feel the staff care about me"). Teams of two coders visited each of the four summer camps and observed daily activities (e.g. sports, lunch, field trips, crafts, free play) at each camp for 4 full days across a one-to-two week period (average number of program hours observed= 17 hours, range = 16 to 18 hours; average # of observations each day =19). On 15-20 minute intervals throughout each day of observation, each summer camp was assessed on level of youth PA (e.g., sedentary, walking, vigorous), type of activity offered (e.g., roller skating, basketball), physical features of the setting (e.g., access to safe, usable areas, equipment), eight staff interaction components (e.g., encourages child, demonstrates activity), and six social climate components (e.g. inclusion, clarity of rules, fun). Interrater reliability (*r*) of .97 across all coding pairs indicated high levels of agreement. For the present study, we report findings from data collected from these systematic observations (see Table 1 for a detailed summary of camp features assessed).

Table 1

Constructs of the SOPLAY and MCOT-PA Systematic Observational Assessment

Camp Context Constructs	**Description**
Conditions	**Physical conditions of the facility for PA**
Accessible	Youth are able and allowed in the space (e.g., door unlocked)
Usable	Area is usable for physical activity (sufficient space, not too wet or windy)
Supervised	Program staff are present
Organized	Organized PA is being held in the space
Equipment	Removable PA equipment is available (e.g., balls, jump ropes)
Activity	**Levels of youth PA**
Sedentary	(e.g. lying, sitting, standing still)
Walking	(e.g., walking, shifting weight from foot to foot)
Vigorous	(e.g., running, sit ups, climbing, etc.)
Climate	**Social motivational features of the setting for PA**
Clarity of Rules	Youth understand activity rules and are able to follow them
Autonomy/Choice	Youth have opportunities to make choices and voice opinions (e.g., activity options are available, participation is not mandated)
High Engagement	Activity is optimally challenging and fun (e.g., skill level appropriate; youth are smiling, squealing, laughing or "in the zone")
Inclusion	Most youth are allowed, able, and willing to participate in the activity (e.g., no youth are discouraged from participating, the majority of youth are interested and participate)
Positive Interactions	Youth demonstrate enjoyment interacting with peers (e.g., helping each other, working together as a team, encouraging one another)
Bullying	Youth are mean to one another (e.g., pushing, yelling, teasing or making fun of one another)
Interaction	**Staff behaviors**
Promotes PA during program	Staff prompts or directs physical activity (e.g., "roll the ball, don't bounce it", "go ahead")
Increases activity engagement	Staff encourages increased intensity of *PA* (e.g. "go, go", "hustle")
Praises or reinforces PA	Staff uses verbal or physical praise to encourage PA(e.g. "nicely done on that move", gives a high five)
Promotes *out-of-program* physical activity, fitness, or motor skills	Staff reminds or encourages PA outside of the program (e.g., practice that skill at home, you can play this game with your neighbors)
Other-task (disengaged)	Staff is disengaged (e.g., on their phone, back turned to youth while talking to someone else)
Demonstrates fitness	Staff models PA behavior (e.g., shows a new skill, plays game with youth)
Observes	Staff watches youth activity
General Interaction	There IS staff engagement, but it is not related to PA (e. g. management)

Study Measures

PA Observations. Each program session was evaluated for the potential for PA using the System for Observing Play and Leisure Activity in Youth (SOPLAY) (McKenzie, 2002; McKenzie, et al., 2000a). SOPLAY was designed to obtain observational data on the number of students and their physical activity levels during play and leisure opportunities in a specified activity area. For the present study, area scans/observations were recorded for youth PA (e.g., sedentary, walking, vigorous), area accessibility (e.g., not locked), area usability (e.g., not excessively wet or windy), presence of supervision (e.g., program leader available to direct students and to respond to emergencies), presence and classification of organized activity (including what type of activity is offered in the area observed), and equipment availability (e.g., balls, jump ropes). Although no field-based validity study of the SOPLAY measure has been conducted, validity of the activity codes used by SOPLAY has been established through heart rate monitoring (McKenzie, et al., 1991; Rowe, Schuldheisz, & van der Mars, 1997).

Observation of the Camp Motivational Context. The social motivational climate of summer camps was assessed using the Motivational Climate Observation Tool for Physical Activity (MCOT-PA), an extension of the SOPLAY protocol that was developed by the authors. The MCOT-PA includes eight staff interaction components (e.g., encourages child, demonstrates activity), and six climate components (e.g. inclusion, clarity of rules, fun) to assess key social contextual features of youth settings derived from previous research and the theoretical foundations of systems theory and SDT. For example, the climate components assess the degree to which the setting: 1) involves activity choices which emphasize cooperative team-based goals (e.g., inclusion); 2) provides challenging, mastery-focused activity opportunities (e.g., high engagement), and; 3) incorporates students' choice and input/feedback (e.g., autonomy). The staff interaction component assesses staff behaviors that foster youth high engagement and cooperative play (e.g., verbal prompts, participating with youth in the activity), encourage and assist youth to feel competent/confident in the activity (e.g., praise), and allow all youth to have input and feel respected and valued in the process (e.g., appropriate discipline). See Table 1 for a description of all SOPLAY and MCOT-PA constructs.

Results

Descriptive analyses were used to assess the proportion of observed instances of PA (sedentary, moderate, and vigorous) and social-motivational climate features across and between camp settings. Univariate Analysis of Variance (ANOVA) examined differences in these constructs by level of camp resources (high resourced and low resourced).

Physical Activity. Across camps, youth were sedentary 72% of the observations, with the remaining 28% of instances involved in MVPA (moderate=13.8%; vigorous 13.8%). Observations indicated that males were slightly more active than females (Male MVPA =30%; Female MVPA = 23%; see Table 2).

Analysis of variance indicated high resourced camps had significantly higher levels of MVPA than low resourced camps [$F(1, 328)=9.01$, $p<.01$]. Differences were largely due to variations in males MVPA across camps [$F(1, 328)=12.02$, $p=.001$], where the observed proportion of males engaged in MVPA within low resourced camps was significantly less than that of males in high resourced camps. Females MVPA did not significantly differ across high-and low-resourced camps.

Table 2

Percentage of Observed Instances Spent in Moderate-to-Vigorous Physical Activity for Each Camp and Across Camps

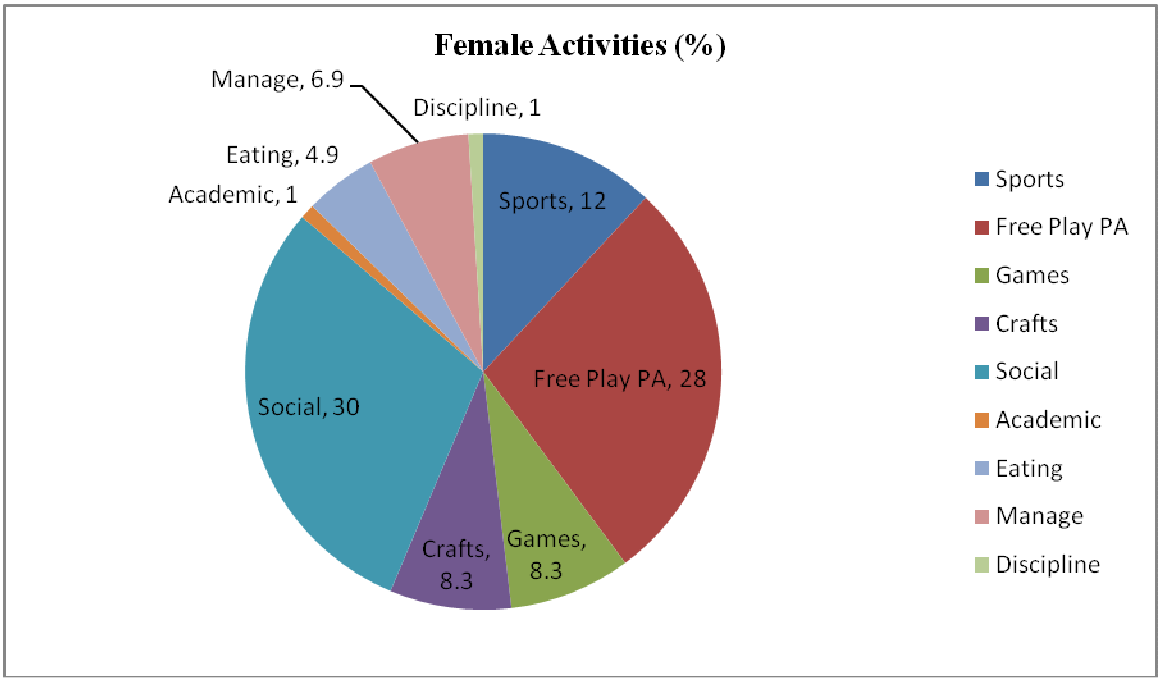
	Percent (%) of total observations				
	Under-resourced		Resourced		
Level of PA	CAMP1	CAMP2	CAMP3	CAMP4	Across Camps
Females					
Sedentary	76.5	82.6	71.6	69.5	76.6
Moderate	8.5	6.9	18.0	21.9	11.7
Vigorous	10.4	10.5	10.4	8.6	11.8
Males					
Sedentary	70.4	82.1	59.9	66.0	70.0
Moderate	9.1	9.2	27.3	18.3	15.1
Vigorous	29.1	8.7	12.7	15.6	14.9
Combined					
Sedentary	72.6	82.3	64.2	66.7	72.3
Moderate	8.9	8.2	23.9	19.1	13.8
Vigorous	18.6	9.5	11.9	14.2	13.8

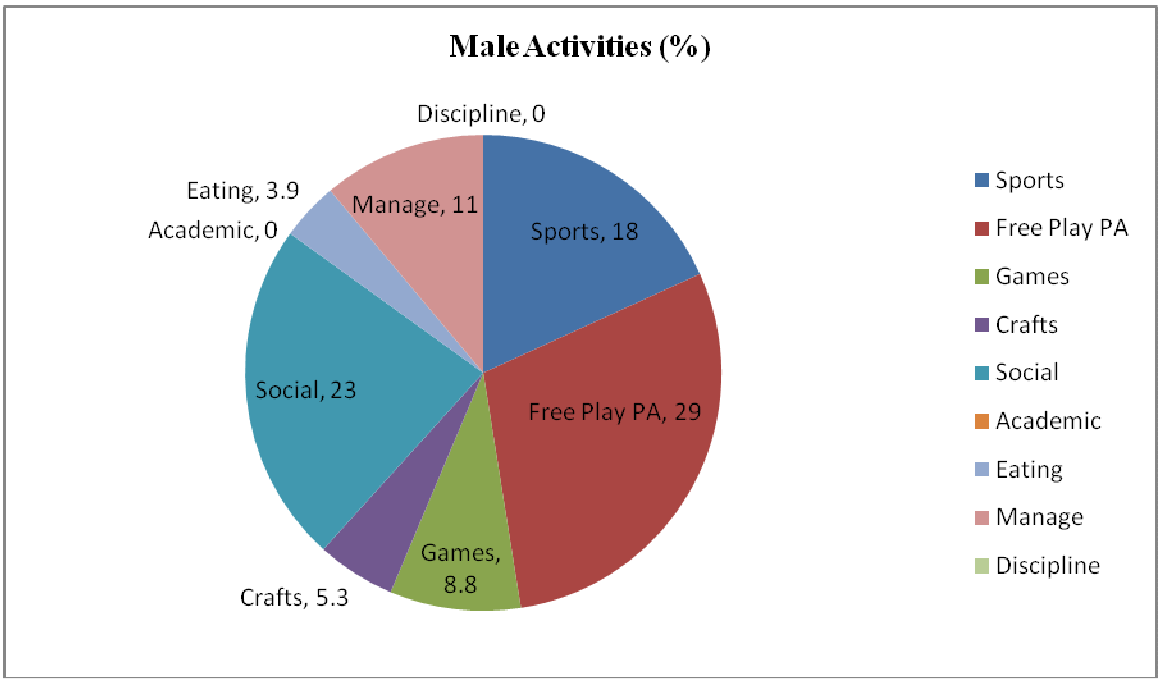
Physical Conditions of Camp Facility. Assessment of the physical features of the camp setting indicated that areas dedicated to supporting PA were highly accessible (99%) and usable (100%) across camps. The majority of these areas were also supervised by program staff (95%) and provided youth PA equipment (88%; e.g., jump ropes, balls) in addition to the "built" structures of the building (e.g., pool, basketball hoops). Average outdoor temperatures during the time that each camp was assessed were similar and ranged from 78-96 degrees Fahrenheit.

Motivational Climate. Assessment of the social contextual (climate) features indicated that all four camps were highly supportive of youth *autonomy*, with 65.7% of the observations consisting of some type of autonomous activity. However, much of this autonomy involved unstructured games and activities, with *organized activities* observed only 27% of the time. In particular, organized competitive sports activities were not as frequently observed (18% of male observations, 12% of female observations) as free play PA (29% of male observations, 28% of female observations; see Figure 1 for observed instances of activity types for males and females across camps). Across camps, youth were *highly engaged* in physical activities in 25% of the observations, and demonstrated they understood the rules of the activities 24% of the instances (*clarity of rules*).

Figure 1

Distribution of observations across activity types for male and female campers





Positive interactions between youth during PA (e.g., youth encouraged one another) were observed 14% of the instances and 20% of the camp activities observed included PA games that were *inclusive* of all campers (e.g., involved teamwork, the majority of youth participated). See Table 3 for variations in observed instances of social climate components by camp.

Table 3

Summary of Observations of Motivational Climate for Promoting Physical Activity

		Percent (%) of total observations					
		Resourced			Under-resourced		
Climate		CAMP1	CAMP2		CAMP3	CAMP4	Across Camps
Clarity of Rules		13.4	46.8		23.2	16.1	24.0
Autonomy		66.3	45.6		72.5	82.3	58.7
Organized PA		27.7	46.8		17.4	11.3	28.0
High Engagement		24.3	19.0		36.2	21.0	24.9
Inclusion		20.1	13.9		30.0	16.1	19.8
Positive Youth Interactions		6.7	15.2		27.5	12.9	14.3
Bullying		1.0	0		0	0	0

Staff Behaviors. Observations across camps indicated that staff were consistently present and interacted with the campers regularly throughout each day (31% of general interaction). In fact, there were very few instances where staff were observed engaging in behaviors that were not focused on the campers and their wellbeing (e.g., reading newspaper, talking on cell phone; 1.3%). However, we observed minimal interaction related to promoting youth physical activity. The most common staff behavior was "observing" physical activity (56%), followed by demonstrating or participating in the physical activity with the campers (10%). We observed very few verbal cues to initiate, increase, or praise physical activity (2%). See Table 4 for staff interactions by camp.

Table 4

Observations of Staff Behaviors for Promoting Youth Physical Activity

		Percentage (%) of total observations					
		Under-Resourced			Resourced		
Staff Code		CAMP1	CAMP2		CAMP3	CAMP4	Across Camps
Promotes PA		0	2.5		4.3	0	1.6
Promotes Increases in PA		0	0		1.4	0	0.3
Praises PA		0	0		0	0	0
Promotes Outside PA		0	0		0	0	0
Other-Task (disengaged)		3	2.5		1.4	1.6	1.3
Demonstrates Fitness		9	15.2		5.8	11.3	10.3
Observes		43	58.2		52.1	77.4	55.8
General interaction		45	21.6		35	9.7	31

There were few significant variations in the motivational climate of high- and low-resourced camps. We observed more organized PA at low resourced camps than high resourced camps [$F(1, 328)=18.22$, $p<.001$], but greater autonomy [$F(1, 328)=13.07$, $p<.001$] and more frequent positive interaction among youth [$F(1, 328)=7.22$, $p<.01$] at the high resourced camps than the low resourced camps. Staff of high resourced camps also observed youth PA somewhat more frequently than staff of low resourced camps [$F(1, 328)=6.45$, $p<.05$].

Discussion

Given the summer months are particularly risky for youth weight gain/obesity (von Hippel, et al., 2007), access and participation in organized activity settings, like summer day camps, can

be critical for minimizing summer sedentary behaviors and maintaining a healthy weight (e.g., Jago & Baranowski, 2004; Mahoney et al., 2011). With approximately 30% of our observations across each camp day consisting of youth participation in MVPA, our findings support researchers' and practitioners' claims that summer camp settings provide adequate opportunities for youth to meet the nationally recommended 60 minutes of daily MVPA. However, a minimal proportion of youth MVPA was dedicated to engagement in vigorous activities across the camps assessed. While engaging in adequate amounts of moderate-PA contributes to maintaining a healthy weight, vigorous activities are more effective for promoting cardiovascular health (Swain & Franklin, 2006). Future research and practice will need to focus on what types of activities will provide the greatest opportunities for youth to engage in more vigorous PA.

Moreover, these descriptive analyses are at the group/camp level and do not represent variations in individual participants' activity expenditures. It is likely that some youth had participated in high amounts of MVPA where others were consistently sedentary. The low percentage of observations that included "inclusive" activities indicates that this might be an issue. Offering more activities that foster cooperative team-based goals, and/or a variety of activities to address the wide range of interests of participating youth (e.g., increased guided choice), may help increase participation of all youth.

Although we cannot draw conclusive evidence from the small sample of 4 camps, these descriptive data provide an initial understanding of the potential needs and resources of high- and low-resourced camps. There are a number of possible explanations for the higher MVPA found in high resourced camps in comparison to the low resourced camps. For instance, although we did not find significant differences in the degree to which high and low resourced camps provided 'removable' equipment (e.g., jump ropes, balls), there were noticeable differences in the stationary equipment accessible to these camps (e.g., basketball hoops, play structures) that were not accounted for by the observation tool. For example, although all camps had access to an open outdoor area (grassy field), only one of the low-resourced camps had access to a playground structure and other park features. The high resourced camps had access to state-of-the art outdoor playgrounds and Camp 4 had an extensive *indoor* playground/climbing structure. Given temperatures averaged in the low-to-mid-90s across camps, the indoor play structure was a highly effective resource for promoting youth MVPA without having to be concerned about sun/heat exposure. Similarly, all camps had access to a gymnasium, however the limited size of Camp 2's gymnasium made it more challenging to include all campers in any given activity and poor air circulation within the gymnasium of Camp 1 resulted in a less appealing environment to engage in MVPA. However, it is important to note that the low-resourced camps had fairly effective solutions to compromise for these limitations. Camp 1 offered various off -site field trips throughout the week that promoted MVPA (e.g., roller skating, swimming) and Camp 2 offered the most organized activities where they could more effectively manage the allocation of space.

Limitations and Future Directions

The current study simply provides a descriptive lens in which we can gain an initial understanding of the physical and social motivational climate of summer day camps, and the degree to which these settings promote youth PA. As a next step we will assess how these motivational features, in combination with one another, act to foster or inhibit youth PA. Together, this research will help identify the characteristics that are essential for all camps to optimally promote youth PA that can inform policy and practice. Further research is also needed

to determine how climate components may function differently depending on the resource level of the camp, and the characteristics of participating youth (e.g., developmental age, interests, values). For example, our preliminary analyses suggest that high- and low-resourced camps do not differ in regards to the relation of autonomy-granting and youth PA (higher levels of autonomy were related to more frequent MVPA for both), but do differ in the direction in which organized activity is linked to MVPA, with more frequent organized activity related to higher MVPA in low resourced camps, and lower levels of MVPA in high resourced camps [$F(1, 328)=4.69$, $p<.05$].

Lastly, there are likely to be additional important physical and social motivational factors within the camp setting for promoting youth PA that are not currently included in the MCOT-PA. For example, we anticipate that youth MVPA may vary by the extent to which the PA options offered in the setting are competitive (vs. mastery or task-oriented). The traditional versions of many competitive PA games are structured in a way that campers have to wait on the sidelines for their turn or can be eliminated from the game in an unsuccessful round, resulting in higher levels of sedentary behavior and possible discouragement and disengagement from the activity for less-skilled youth altogether. Future MCOT-PA assessments will include a "competitiveness" construct in order to examine the nature of competitive games for promoting youth MVPA.

Conclusions

Given the increase in funding for new summer activities as part of the American Recovery and Reinvestment Act of 2009, we are at a critical point for informing the design and implementation of summer camps that promote youth health (U.S. Department of Education, 2009). The descriptive findings of the present study, albeit a small sample, suggests that summer day camps can be a key antidote to the increases in sedentary behavior of youth during the summer months. By nature, most camps provide opportunities for physical activity, but more can be done to encourage physical activity through staff training, program scheduling, and program activities at camp. Further research is needed to advance our understanding of what factors are essential for ensuring that we provide the healthiest and most physically active environments for children and adolescents at camp.

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