

## Barriers and Facilitators to Conducting Physical Activity Interventions in Children's Camps

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### ABSTRACT

**Background:** Previous research has sought to uncover various behavior factors that contribute to childhood physical activity, but have primarily relied on quantitative methods or within the context of schools. Summer day camps offered potential for increasing activity of youth, but research is required to determine how best to convert camp activity into outreach interventions.

**Methods:** The University of Georgia Institutional Review Board (IRB) approved all methods and procedures prior to the start of the study (STUDY00004692, MOD00005513). A total of 112 campers ages 9-13 participated in the data collection. This research used semi-structured interviews, surveys, and observations to explore campers' experiences with organized physical activity. Data was collected over four of the six weeks at a Georgia 4-H Camp at Rock Eagle during the summer session in 2017. This research used semi-structured interviews, surveys, and observations to explore overall camp experience, familial activities, and previous activity habits. This pilot study sought to identify and understand barriers and facilitators to organized physical activity in summer campers using their own narratives.

**Results:** The findings supported previously documented barriers such as perceived safety, peer influence, and environment as well as uncovering new barriers such as gender dynamics, bullying, and family participation in physical activity. Our survey indicated that "bad sportsmanship" was the most commonly reported barrier (23.6 %) with "boring" activity as the second highest (21.8%) obstacle. Conversely, interaction may facilitate activity as 39.8% of survey respondents noted "that the people playing the game" make it enjoyable. Typical family life also emerged as both a facilitator and a barrier to participation. Shared family interest in games emerged as a facilitator, while parents' busy schedules and sedentary lifestyle were reported as barriers.

**Conclusions:** These findings offer insight into conducting physical outreach interventions in settings as 4-H camps, Boys and Girls Clubs, YMCA, Church camps and even day camps operated by non-profit organizations. Future studies need to assess the generalizability of these findings to other 4-H camps and summer camps across the nation.

**Keywords:** 4-H Club, summer camp, qualitative, organized physical activity.

### INTRODUCTION

Obesity is affecting all populations across the United States and is now threatening the health of the country's children. The southern region of the United States has the highest prevalence of obesity of any region in the country at 32% (CDC, 2016; Hales et al., 2020) and the state of Georgia ranks even higher at a rate of 35% (Kuehn, 2018). Universities are striving to reach children through various outreach programs that have the potential to increase physical activity levels of youth and impact obesity rates. Physical activity in children can decrease fat mass, improve body composition, and lower waist circumference (Hills et al., 2011). Activity levels tend to decline as children get older, so it is especially important to intervene early and establish healthy habits in children (Troiano, 2007; Hesketh et al., 2017). Due to the often unstructured nature of the summer school holiday, children's Body-Mass-Index (BMI) increases at a much faster rate during the summer than during the school year (von Hippel et al., 2007). This result

is especially pronounced in African American, Hispanic, or children that are already overweight, suggesting that behaviors in the home environment such as high caloric intake, lack of physical activity, and sedentary behavior may result in energy imbalance and excess weight gain (von Hippel et al., 2007; Hesketh et al., 2017). This vulnerable period over the summer months offers both a challenge to resist this upward trend in weight gain as well as an opportunity for an intervention since most children are out of school. Numerous intervention studies have attempted to increase child or adolescent physical activity by implementing school-based interventions in physical education (Demetriou et al., 2019; Burns et al., 2016). Summer schools and summer camps have been successfully used as interventions to reduce adiposity among children (George et al., 2016; Tanskey et al., 2018; Weaver et al., 2019) and thereby may provide a means of increasing their physical activity. A summer day camp to increase activity was a central component of a pilot intervention among

youth aged 9-14 years and with a BMI z score  $>+1$  (George et al., 2016). These results are similar to another study in which a skill-building summer camp resulted in both short-term weight loss and long-term weight maintenance (Chen et al., 2016). Hickerson and Henderson examined the physical activity occurring in day and resident summer camps, and how activity levels differed in these camps, based upon demographic characteristics. They demonstrated that male gender, Caucasian race and normal body mass index were significant correlates of increased physical activity. They concluded that youth summer camps have the potential to provide many opportunities for physical activity during the summer months. The structure of camp programs allows for increased physical activity for all participants, despite demographic disparities (Hickerson & Henderson, 2014). Summer camp provides a programmed alternative that can facilitate engaging games and positive peer interactions, which can increase children's willingness to participate in organized activity (Zarrett et al., 2013). Many previous curriculum-based studies have reported positive results (Weaver et al., 2019) reaching youth by integrating more physical activity into established summer programs is a cost effective and highly desirable approach for community practitioners. Examples include Cooperative Extension Agents, local government supported community recreation programs, youth organizations, and summer school interventions.

This pilot study was conducted at a Georgia 4-H Youth Development Camp operated by the University of Georgia Cooperative Extension Service. This unit is part of a nationwide system of networked county offices, land-grant universities, and local, state and federal governments, providing educational and experiential learning for youth through its 4-H programs (USDA, 2019). 4-H offers a unique summer camp experience aimed at providing children an opportunity for adventure, education, and fun during the summer break. Georgia 4-H Camps seek to offer a comfortable learning environment while teaching campers leadership, nutrition, conservation, and physical activity skills through hands-on games and activities (USDA, 2019). The pilot-study camp, Rock Eagle, offered a wide sampling of children throughout the state from a variety of socio-demographic backgrounds. There is minimal research with children, which investigates possible barriers to physical activity in the camp setting, particularly as it relates to their individual experience. The purpose of this study will be to provide information to help communities and camps to properly format outreach interventions, paying particular attention to individuals' stated limitations, and thus increase activity by all.

## METHODS

This research used semi-structured interviews, surveys, and observations to explore campers' experiences with organized physical activity. Data was collected over four of the six weeks at a Georgia 4-H Camp at Rock Eagle during a summer session. The University of Georgia Institutional Review Board approved all methods and procedures prior to the start of the study (Study00004692, MOD00005513).

Participants were recruited through random sampling after prior written parental consent. Descriptive observations of camp-organized activities and campers' behaviors were used to design the interview and survey questions. Interviews were conducted with campers who were disengaged with the main activity and discussed overall camp experience, familial activities, and previous activity habits (Appendix A). Interviews followed a semi-structured format, lasted approximately 20-30 minutes, were audio recorded, and transcribed verbatim. Exclusion criteria included campers with physical disabilities or injuries preventing them from engaging in organized activity.

A qualitative survey was used to identify activity trends among the larger majority of campers. Cabins were randomly selected to participate in a short questionnaire that mirrored the topics of the semi-structured interviews (Appendix B). Surveys were administered on the final day of camp and included open-ended questions to which campers responded in writing. Interview and survey analysis followed the constant comparative method (Grove, 1988) and emerging trends were documented as findings.

## RESULTS

A total of 112 campers ages 9-13 participated in the study (interviews:  $n=8$ , 75% female, 25% male; survey  $n=104$ , 62% female, 38% male) (Table 1).

Emergent findings from interview and survey data were separated into the following categories: physical factors, personal interaction, and familial experience (Figure 1).

Physical factors appeared to serve primarily as a barrier to physical activity as some interview participants did not participate due to boredom, climate, or fear of injury. Personal interaction among campers also was a barrier to participation as an individual's personality or bullying from other campers would diminish their desire to engage (Figure 2).

Surveys mirrored this response, as "bad sportsmanship" was the most commonly recorded barrier to participation (23%). Gender dynamics were referenced as both a facilitator and barrier to activity in interviews. A portion of campers noted co-ed games as "more fun" while others mentioned they preferred playing only with their own gender. Interaction may also facilitate activity as 39.8% of survey respondents noted that the people playing the game make it enjoyable and interview participants echoed the importance of peers in their daily lives and activity outside of camp (Figure 3).

## DISCUSSION

These findings reinforced similar themes previously identified such as perceived safety, peers, and environment (Pawlowski et al., 2016) and presented new ideas such as the influence of bullies, gender dynamics, and family participation in physical activity. Our study identifies modifiable factors that an outreach intervention in a camp setting may address to increase participation in physical

activity. Examples include restructuring the schedule to allow campers to change into activity-appropriate clothing and offering alternative activities for campers who prefer smaller groups or who are sensitive to the sun. The camp may also provide counselor training in behavior surveillance, injury prevention, and intervention in negative peer interaction. Outreach professionals may also utilize positive peer interactions by incorporating activities designed to familiarize campers with one another.

The sample was limited by parental consent, access to summer camp, and the selection of counties attending Camp Rock Eagle. Data collection was influenced by participants' comprehension of questions and illegible handwriting on some surveys. The random selection of survey participants represents a limited number of races, ethnicities, and socioeconomic statuses, but represents the distribution common at this camp. These findings do not consider the effect of sociodemographic factors, which may limit physical activity in the home (Hickerson & Henderson,

(2014; Wilk et al., 2018). However, this study does offer suggestions to modifiable risks in the camp setting and contributes to the knowledge base of best practices for training outreach professionals and community members conducting these interventions.

Previous research has identified general barriers to physical activity but has primarily investigated habits of younger children or interventions in the school environment. These studies are often quantitative and do not consider the summer school holiday. Our study used an innovative design that offers the rich, narrative data from qualitative research alongside the larger data set often characteristic of quantitative surveys. The qualitative methods were triangulated using results from observations, interviews, and surveys to give a voice to multiple sources. This allowed the participants the autonomy to formulate personalized thoughts and ideas and aimed for understanding as opposed to simply classifying.

Table 1  
*Characteristics of Study Participants*

Characteristic	Interview (n)	Percentage (%)	Survey (n)	Percentage (%)
Total	8		104	
<b>Sex</b>				
Male	2	25	39	37.5
Female	6	75	65	62.5
<b>Age</b>				
9	1	12.5	0	0
10	2	25	19	18.28
11	5	62.5	44	42.31
12	0	0	35	33.65
13	0	0	6	5.77
<b>Race/Ethnicity</b>				
Black or African American	1	12.5	8	8
Hispanic	0	0	7	7
White	7	87.5	83	80
Other	0	0	6	6

Figure 1  
Emergent findings from interview and survey data

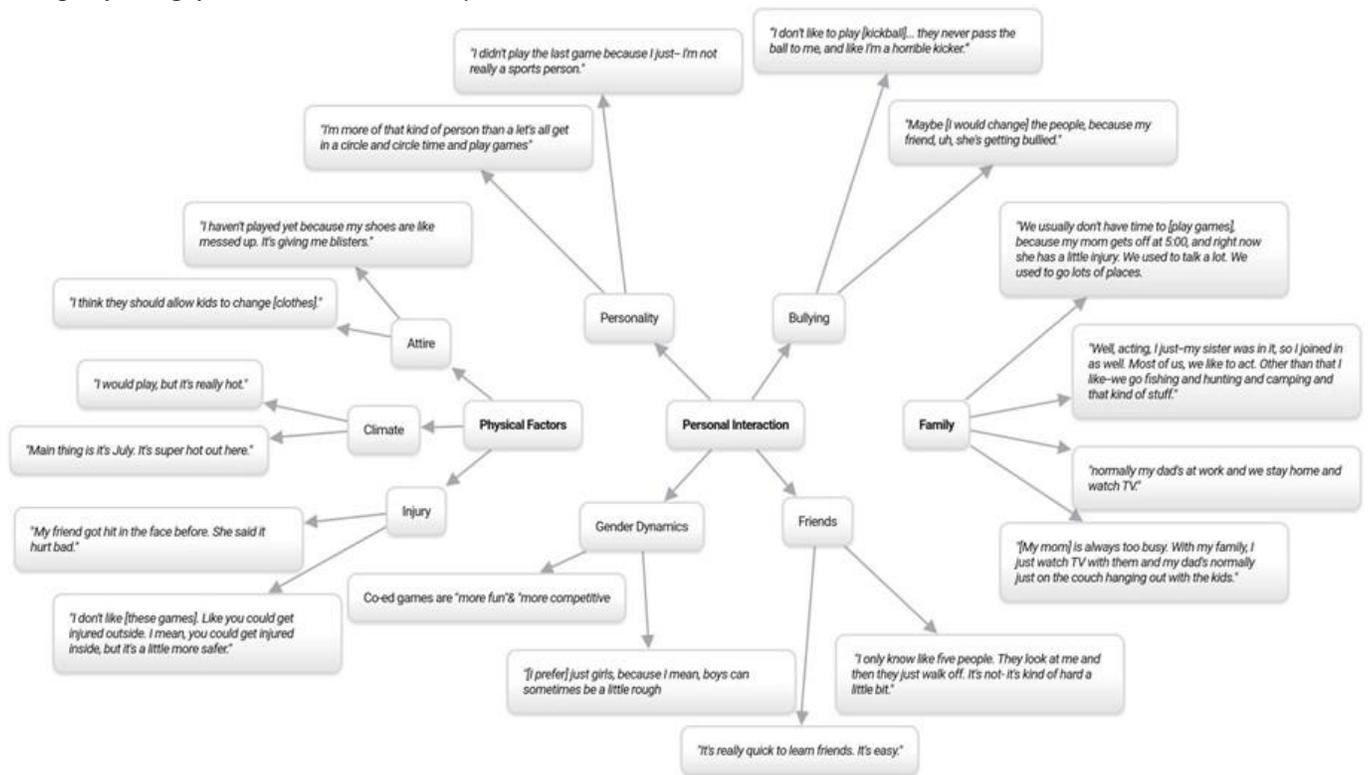


Figure 2  
Top Nine Survey Responses to "What makes you not want to play a game?"

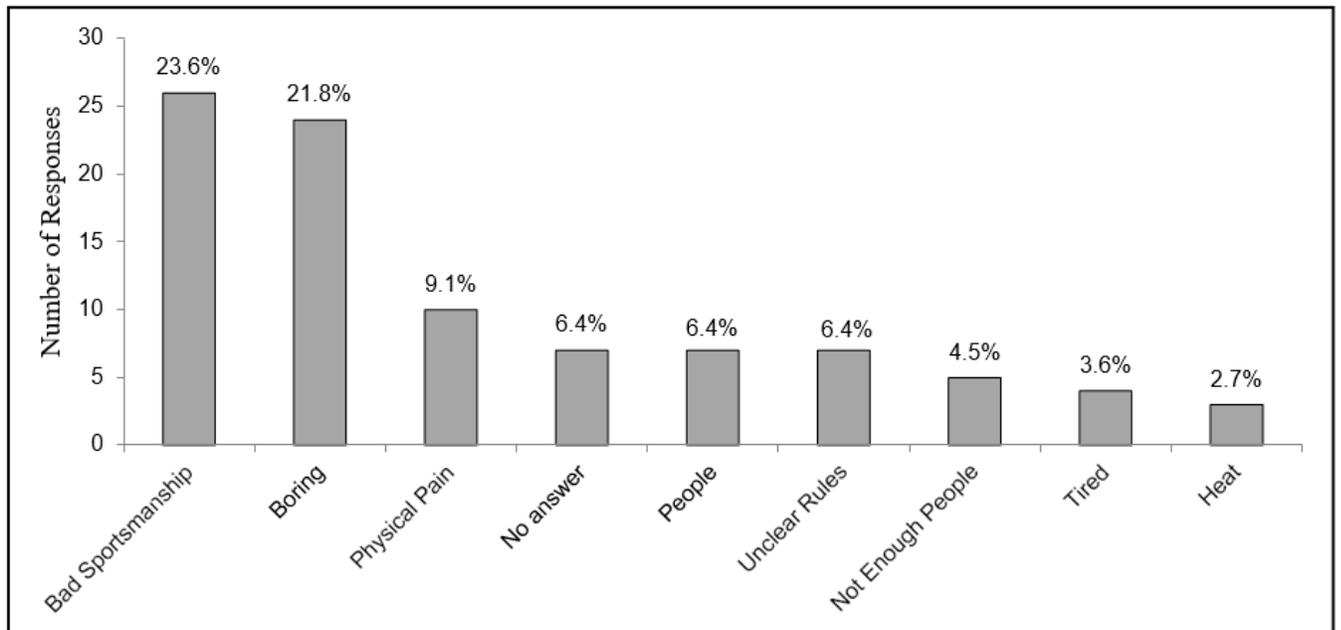
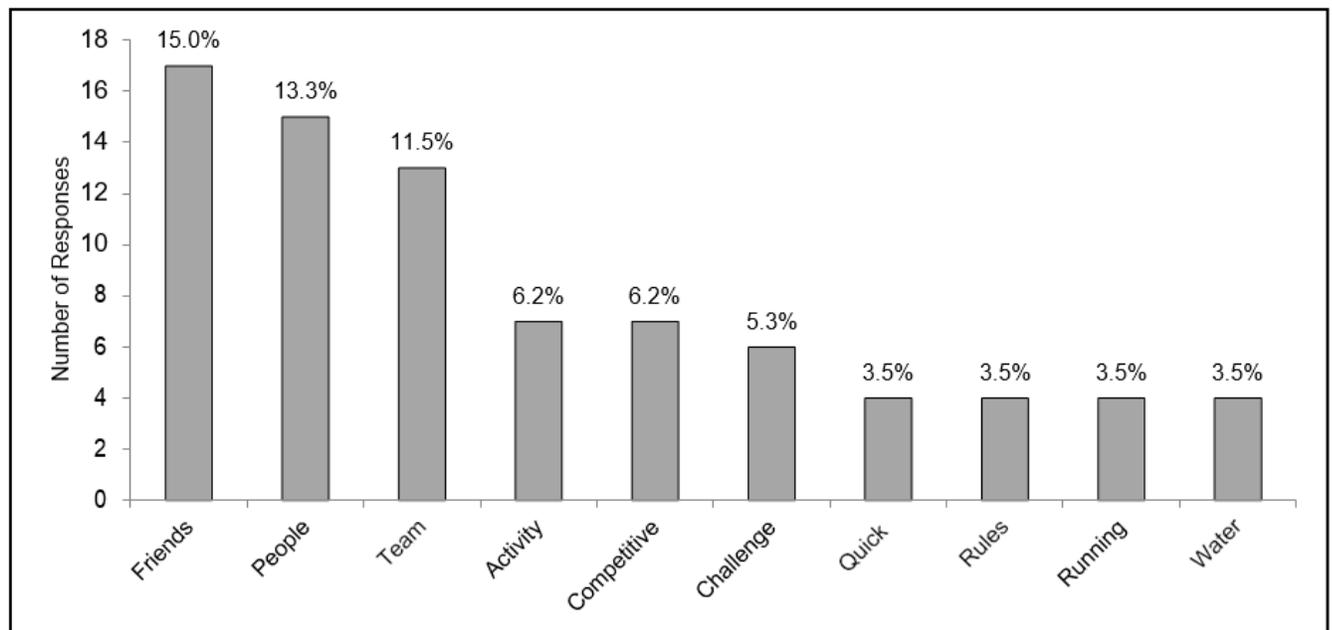


Figure 3  
 Top Ten Survey Responses to “What makes a game fun?”



This study builds upon previous quantitative research by uncovering additional barriers to organized physical activity among campers and identifying areas for staffing and facility improvement in conducting outreach interventions with this age group (Hickerson & Henderson, 2014; Pawlowski et al., 2016; George et al., 2016; Chen et al., 2016). The findings offer insight and best practices for outreach intervention programs being conducted in the youth camp environment such as 4-H camps, Boys and Girls Clubs, YMCA, church camps and even day camps operated by non-profit organizations.

### Public Health Implications

The results were significant because the finding identified modifiable factors that the camp should address to increase participation in physical activity of the summer campers. These findings can be used to understand the underlying factors that contribute to childhood inactivity or serve as barriers to engage in physical activity.

Future research should explore the consistency of these findings with summer camp programs in Georgia and across the nation, and investigate similar physical activity factors to determine the generalizability of the current findings. Other potential areas for investigation include determining best intervention outreach practices, conducting a program evaluation of leader training, and eventually designing widely accessible outreach intervention programs conducted in the youth camping environment.

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## Appendices

### Appendix A. Interview Guide

#### Interview Questions

#### Intake Survey:

Pseudonym \_\_\_\_\_

Age \_\_\_\_\_ Gender Affiliation \_\_\_\_\_

Race/Ethnicity \_\_\_\_\_

County of residence \_\_\_\_\_

Height \_\_\_\_\_ Self-Reported Weight \_\_\_\_\_

Priority audience: 10-13 y olds

#### Interview Script:

#### Camp setting

1. Tell me what camp is like to you?

a. Probes: activities (like/dislike); attended camp before; expectations; etc.

#### Home life

2. Backing up to before summer started and you were in school: walk me through a typical day for you from the time you wake up to when you go to bed.

3. Walk me through a typical weekend day for you?

a. Probes: specific activities, parents activities, habits

#### Organized Physical activity

4. What is this game about/tell me what it's like?

a. Probes: help me understand why you chose to sit out; played before/familiar with game; preferred interests

### Appendix B. Survey Guide

#### Questionnaire

Age \_\_\_\_\_ Gender Affiliation \_\_\_\_\_

Race/Ethnicity \_\_\_\_\_

County of residence \_\_\_\_\_

First time at camp? (circle) YES or NO

#### Camp Setting

1. What are your favorite activities at camp?

2. What do you not like about camp?

#### Home Life

3. During the school year, what would you and your family do when you got home?

4. What would you and your family do on a typical Saturday at home?

#### Organized Physical Activity

5. What makes a game fun to you?

6. Where did you learn to play your favorite games?

7. What would make you not want to play a game?

8. If you could design a new activity for camp, what would it be like?

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