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PHYSICAL ACTIVITY AMONG YOUTH IN A WEEKEND RESPITE CAMP PROGRAM

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PHYSICAL ACTIVITY AMONG YOUTH IN A WEEKEND
RESPITE CAMP PROGRAM

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Masters of Science
Parks, Recreation, and Tourism Management

by
Kathleen F. Felton
December 2009

Accepted by:
Dr. Francis McGuire, Committee Chair
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ABSTRACT

The engagement in physical activity among 24 youths with disabilities was studied. Researchers examined the effects of age and gender of the youth, the parent's knowledge of physical activity recommendations, and parent's physical activity practices on physical activity engagement. Levels of physical activity participation through leisure time, work or chores, and sports were assessed. Analysis was performed to determine relationships between each of the variables and the youths' level of physical activity respectively. Results of chi-square analysis indicated that parental influence using current physical activity recommendations was correlated with the youth's level of physical activity participation through leisure. Results suggested parents can lead by example with a physically active lifestyle.

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CHAPTER I

Introduction

In the United States today, limited physical activity or a lack of physical activity, is acknowledged as a major health concern. With Americans presently participating in less physical activity than at any other point in history, recent decades have seen a significant rise in the number of health conditions associated with limited physical activity. Statistics suggest that specific health conditions associated with limited physical activity (eg. overweight or obesity) have reached all time highs (Hahn, R., Teutsch, S., Rothenberg, R., Marks, B., 1990 ; Francis, 1999).

This increase in the prevalence of these health complications has placed a strain on the nation's economy in the form of increased disability expenditures as well as higher healthcare costs. Researchers and educators have worked to better understand underlying causes of this inactivity phenomenon while trying to reverse this trend. However, the vast majority of these efforts have focused upon the general population while failing to recognize the circumstances and needs of individuals with disabilities (Rimmer, Braddock, & Pitetti, 1996).

Though the physical activity guidelines published in the nation's Healthy People 2010 (United States Department of Health and Human Services [USDHHS], 2000) report addressed individuals with disabilities for the first time, there remains a lack of information on the physical activity levels and concerns for individuals with disabilities. The purpose of this study was to learn more about the nature of physical activity among

individuals with disabilities. Increasing the amount of information available regarding physical activity for individuals with disabilities may help to increase the levels of physical activity participation among this population.

Background

Physical activity is said to be an essential component in reaching one's optimal level of health (Howley & Franks, 2003). Physical activity is defined as: "bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure" (Balady, Berra, Golding, Gordon, & Mahler, 2000, p.4). Numerous studies conducted in the last fifty years by exercise scientists have demonstrated the importance of physical activity in maintaining one's health, preventing disease, rehabilitation, and in overall quality of life. Specific connections have even been made to conclude that physical activity reduces the risk of all-cause and cardiovascular mortality and of coronary heart disease, obesity, hypertension, diabetes mellitus, as well as breast and colon cancer (Pate et al., 1995). Research has shown that people of all ages as well as individuals with chronic disease and disabilities benefit from participating in regular physical activity (Balady et al., 2000).

Until recently, activity recommendations for the general public have focused on the more regimented practice of exercise in an effort to improve or maintain health while failing to recognize those health benefits associated with regular participation in physical activity. However, recent publications from organizations such as the Centers for Disease Control and Prevention (CDC), the American College of Sports Medicine (ACSM) and the U.S. Surgeon General (USSG) have suggested the emphasis on formal exercise can

include a broader health perspective on the practice and importance of physical activity (Pate et al., 1995; USDHHS, 1996). The ACSM now recommends that individuals who have a sedentary lifestyle can significantly improve their health by including moderate amounts of physical activity in their routines (Balady et al., 2000). The USSG released a document stating that most Americans can improve their health and quality of life by including 30 minutes or more a day of moderate physical activity, such as performing yard work (USDHHS, 2000).

Despite recent government efforts designed to increase awareness of physical activity and its benefits, America as a nation remains largely sedentary. According to recent reports, more than 60% of American adults are not regularly physically active and 25% of all adults are not active at all (Balady et al., 2000, p.VII). Healthy People 2010 reported that 56% of adults with disabilities participate in no physical activity during their leisure time. The same document reported that 35% of adolescents also fell into the inactive category (USDHHS, 2000). This level of inactivity has had major implications, such as 869,724 deaths in the United States in 2004 as a result of cardiovascular diseases, accounting for over one-third of all deaths (American Heart Association [AHA] , 2008). It was estimated that in the year 2005 the cost of heart disease and stroke in the United States exceeded three hundred ninety-four billion dollars (Center for Disease Control and Prevention [CDC], 2008d). Because these complications as well as other costly conditions can be alleviated with regular physical activity, limited physical activity is cited as a major health problem in the United States today. Therefore, increasing

physical activity levels of Americans can potentially improve the health of our nation's residents (Hahn, et al., 1990; Francis, 1999).

The National Institutes of Health (NIH) reported that approximately 40 million Americans have a chronic disease or disability that restricted their activities of daily living. Individuals with disabilities are at higher risk for developing health complications than the general population. Healthy Children 2010 reported that individuals with disabilities are less physically active than individuals without disabilities (USDHHS, 2002). Because of the increased risk for developing health complications associated with limited physical activity, increasing physical activity among individuals with disabilities should be a national priority (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2004). Current information exists regarding physical activity levels among adults with disabilities who reside in urban areas; however there is a lack of information about individuals in rural areas as well as for youth with disabilities. Various barriers have been identified as limiting physical activity levels for individuals with disabilities including lack of knowledge, transportation, and accessible facilities (Rimmer et al., 2004; Rimmer, et al., 1996). This information has been primarily reported for adults with disabilities, thus creating a deficit in knowledge about youth with disabilities. The knowledge individuals or their parents/guardians possess on the specific physical activity recommendations for themselves or their child with respect to their disability is unclear. In addition, specific levels of physical activity present in youth and adults with physical and mental disabilities and where they are participating in physical activity remains largely unknown.

Purpose Statement

Limited physical activity is a problem that plagues our nation, for the general population and particularly for the individuals with disabilities. Individuals with disabilities are at an increased risk for being physically inactive, and therefore developing health complications associated with limited physical activity such as obesity and type 2 diabetes. The purpose of this study was to learn more about physical activity participation among youth with disabilities. Specifically this study acquired information on the levels of physical activity participation among youth participants in a weekend respite camp, the avenues through which campers were participating in physical activity, the knowledge their parents and guardians possessed on physical activity recommendations, and whether or not the parents/guardians abided by the physical activity recommendations for adults. This study also analyzed whether relationships existed between the age of the camper, the gender of the camper, the parent or guardians' knowledge of physical activity recommendations, as well as the parent or guardians' physical activity participation and the campers' level of physical activity participation. The data collected for this study was acquired using a physical activity questionnaire, administered once, to the parent or guardian of the youth.

Research Questions

1. How often do youth with disabilities participate in physical activity outside of the weekend respite camp?
2. What types of activity (e.g. leisure, sports, work/chores) provide youth with disabilities with physical activity?

3. Are parents/guardians of youth with disabilities aware of the current physical activity recommendations for themselves and their campers?
4. Are parents/guardians of youth with disabilities following the current physical activity recommendations for themselves?
5. What is the relationship of the following factors (i.e. age, gender, knowledge the parent/guardian possesses about physical activity recommendations, parent/guardian's abidance by adult recommendations) and the youth with disabilities level of physical activity participation?

Significance

Low levels of physical activity or limited physical activity have been linked to a number of serious health conditions that can lead to more health concerns. Conditions such as obesity, diabetes mellitus, certain types of cancer, high blood pressure, heart disease and others that negatively affect the quality of life of the individual have been shown to be associated with a sedentary lifestyle, but can often be alleviated or avoided with regular physical activity. Given the low observed rates of physical activity among the population of individuals with disabilities and the negative effect those levels of physical activity can have on the individuals' health, his or her family members, co-workers and tax payers it is apparent that we should be concerned with learning more about physical activity among individuals with disabilities. This increased awareness and knowledge of the present practices, barriers and facilitators has the potential to empower health care providers, physical educators, therapeutic recreation specialists, as well as others to better provide physical activity information and services to this population. The

improved provision of services may help to increase the physical activity levels among individuals with disabilities, decrease the prevalence of health complications experienced because of limited physical activity, and increase the quality of life and potentially the level of independence of individuals with disabilities.

Delimitations

The population studied was delimited to:

1. Individuals living in a state located in the southeastern U.S.
2. Youths between the ages of 7 and 19 years of age.
3. Youth participants in a weekend respite camp provided by a university sponsored recreation program.

Outline of Chapters

This thesis is divided into five chapters. Chapter one serves as an introduction, providing background information on the topic being studied, highlighting the significance of, and reporting the research questions and delimitations for the study. Chapter two is a review of current literature pertaining to the topic of the study. Chapter three covers the methods and procedures used in this study as well as a description of the study participants, information on the data collection instrument used, and the data analysis process. Chapter four highlights the results of the statistical analysis of the data collected. Chapter five includes a discussion of the findings, the implications of the results, possible limitations of the study, and ideas for further research.

CHAPTER II

LITERATURE REVIEW

Introduction

The present study examined physical activity participation among youth with disabilities who participate in weekend respite camps, specifically the avenues through which campers were participating in physical activity, the knowledge their parents/guardians possessed on physical activity recommendations, and whether or not the parents/guardians abided by the physical activity recommendations for adults. This study analyzed whether relationships existed between the age of the camper, the gender of the camper, the parent or guardians' knowledge of physical activity recommendations, as well as the parent or guardians' physical activity participation and the campers' level of physical activity participation. This chapter includes foundational literature for this study gathered from text books, printed and electronic academic journals, and webpages such as those of the U.S. government and national health organizations, such as the American Heart Association.

Physical Activity

By definition, physical activity is activity an individual performs that causes his or her body to utilize more energy than the body requires at rest. Applying this universally accepted definition, physical activity can describe washing dishes, making the bed, walking the dog, playing basketball, running track, riding a bicycle to school or work, and countless other activities. Research has shown that people maintain and improve their state of health and reduce the risk of developing various health

complications by participating in regular physical activity (CDC, 2008a;USDHHS, 2008b; Sothorn, Loftin, Suskind, Udall, & Blecker, 1999).

Despite the numerous benefits associated with the practice of physical activity, low physical activity levels are a major public health concern (Dubbart, 2002). Limited physical activity has been specifically identified as a risk factor for developing health complications such as colon cancer, coronary heart disease, depression, hypertension or high blood pressure, and Type II diabetes mellitus among others (Fletcher, et al., 1996; Pate, et al, 1995). Recent reports show approximately 50 million adults in the United States are affected by hypertension (Chobanian, Bakris, Black, Cushman, Green, & Izzo, 2003). Other records indicate that approximately 18 million Americans may experience diabetes, with an increase in diagnoses predicted over the next few decades (Hogan, Dall, & Nikolov, 2003; Minshall, Roze, & Palmer, 2005). These circumstances have led to development of public health recommendations on physical activity. The USDHHS and the CDC have issued specific guidelines for both adults and children (CDC 2008b).

Current adult recommendations state that some physical activity is better than no physical activity, and health benefits can be obtained with even low levels of physical activity. Ideally, adults should perform a minimum of 150 minutes a week of moderate-intensity aerobic physical activity such as walking at a brisk pace, or 75 minutes a week of vigorous-intensity aerobic physical activity such as jogging, or an equivalent combination of these two types. Aerobic activity requires repetitive movements of large muscle groups of the body, and improves the level of functioning of the cardiovascular system. Aerobic physical activity should be performed in at least 10 minute sessions, and

should be spread throughout the week. To gain greater benefits, adults can increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or another equivalent combination. Muscle-strengthening activities that are moderate or high intensity and involve all major muscle groups should be performed 2 or more days a week (USDHHS 2008a; CDC 2008b).

Physical Activity for Youth

Physical activity is associated with improving the health of youth. Research across various disciplines supported the inclusion of regular physical activity as a tool for prevention of chronic disease and the enhancement of overall health among youth (Sothorn, et al., 1999).

The negative ways in which limited physical activity can affect the youth's health make it a critical public health concern. The existence of guidelines for the practice of physical activity among youth along with specific objectives included in the USDHHS Healthy People 2010 report which address increasing the number of youth involved in regular physical activity exemplify the importance of this matter (USDHHS, 2000). Existing guidelines for children and adolescents suggest that the individual accumulate 60 minutes or more of physical activity every day, or 420 minutes per week, with the majority of that time being comprised of aerobic activities. This aerobic activity should be of moderate or vigorous intensity, with brisk walking serving as an example of moderate and running being an example of a vigorous activity. At least 3 days each week should include aerobic activity of vigorous intensity. In addition, activities to strengthen

muscles and bones should be included at least 3 days a week as part of that 60 or more minutes per day (*CDC, 2008b*).

Statistics indicate youth are not participating in the amount of physical activity suggested by the current guidelines (Sallis, Prochaska, & Taylor, 2000). Over the last several decades the prevalence of obesity among both children and adolescents has increased in most Western countries (Fogelholm, Nuutinen, Pasanen, Myohanen, & Saatela, 1999). Obesity among children and adolescents in the United States is said to have increased at an alarming rate (USDHHS, 1996). This trend is associated with the decrease in physical activity among youth (Strauss, Rodzilsky, Burack, & Colin, 2001).

Research indicates that risk factors for developing chronic diseases can be present in childhood (Sirard & Pate, 2001). Lack of physical activity is recognized as an important determinant for the development of chronic disease and physical activity has been shown to decrease during adolescence (Twisk, 2001). Research has also indicated that low levels of physical activity during childhood may predispose youth to leading sedentary lifestyles later in life (Telama, Yang, Laakso, & Viikari, 1997). Although the consequences of leading an inactive lifestyle are not typically seen until later in life, it is important to encourage physical activity participation among children and youth because lower levels of activity early in life have been linked to increased risks for developing health complications (USDHHS, 1996). In order to stave off the development of lifestyle related risk factors, early prevention programs may be a viable solution (Sirard & Pate, 2001).

Physical activity has been shown to be an important part of the developmental process for children (Damiano, 2006). Exercise has been shown to help in alleviating depression (Dunn, Trivedi, Kumpert, Clark, & Chambliss, 2005). Results from a study involving over 10,000 high school aged students suggested that boys and girls who were physically active were at a lower risk for suicidal behaviors than their physically inactive peers (Brown et al., 2007).

During a school day children usually have recess and physical education classes, two separate times during which children would have the opportunity to participate in physical activity. However, not much is known about the contribution these periods actually make to daily physical activity levels (Wickel & Eisenmann, 2007). Although recess has been traditionally viewed as a block of time during which youth could potentially meet, or partially fulfill daily activity recommendations, a recent study by Ridgers and associates used accelerometer technology to discover that almost 75% of the recorded recess time was actually spent participating in low intensity activities (Ridgers, Stratton, & Fairclough, 2005). According to Ridgers' results, the majority of recess time is doing nothing to help youth meet physical activity guidelines.

Katzmarzyk and Malina (1998) reported that among a group of youth studied, participating in youth sports actually accounted for about 20% of the total calories expended over the course of a day. Tudorlocke and associates (2001) recognized the importance of promoting physical activity among children but goes on to state that the efforts that have been made have traditionally focused on physical activity that would be performed at school, paying far less attention to that performed outside of school. As a

result of this narrow focus, practices such as children riding their bicycle or walking to school have been left out as a means of children participating in physical activity.

Overall, findings suggest physical activity participation is crucial to the health of youth, a term used to collectively describe both children and adolescents. The term children refers more specifically to individuals between 6 and 11 years of age, while adolescents refers to those individuals between 12 and 19 years of age (USDHHS, 1996). Many questions remain as to what exactly influences physical activity levels. Knowledge of what affects physical activity participation in youths is necessary in order to prevent some of the conditions associated with limited physical activity, and to help develop more effective physical activity interventions (Sallis, Prochaska, & Taylor, 2000; Strauss et al., 2001).

Effects of Youth Age and Gender, and Parental Knowledge and Behavior on Youth Physical Activity Participation

In the late 1990s a review of published research related to factors thought to affect physical activity among children and adolescents was performed (Sallis et al., 2000). After reviewing 108 studies, a number of different variables affecting physical activity levels among these two age groups were seen. The researchers identified 40 variables reported to affect physical activity among children, identified in this review as those between the ages of 3 and 12. Forty-eight variables were identified for adolescents, identified in this review as those between the ages of 13 and 18. Among these variables,

results showed over half of them to be significantly significant with several of them being repeatedly correlated with physical activity levels (Sallis et al., 2000).

In the review published by Sallis and associates (2000) physical activity levels among children appeared to be influenced by the gender of the child, with males being more active than females, previous physical activity experiences, access to programs and facilities, and time spent outdoors. Parental overweight status and perceived barriers were also shown to be significant factors. Among adolescents, gender, age, previous physical activity, community sports, sedentary behavior after school and during the weekends, the support of a parent, direct help from parents to be physically active, and opportunities to exercise were all found to be significant variables. Males were shown to be more physically active than females, older adolescents less active than their younger counterparts, and sedentary behaviors to be negatively correlated with physical activity levels. Findings from this review indicate that physical activity can improve the health of youth; however youth are not currently participating in the recommended amounts of physical activity. For this reason, efforts to increase physical activity levels among youth need to be made. To help ensure that these efforts are effective, we must learn more about influencing factors that exist for physical activity among young people. Further research is needed (Sallis et al., 2000).

Age and Gender of Youth

Strauss and associates (2001) completed a study with 92 children between the ages of 10 and 16 to learn more about the effects of psychosocial factors on physical activity levels. Researchers collected physical activity data using accelerometers.

Participants wore accelerometers for one week. Participants completed a physical activity questionnaire to assess psychosocial factors thought to affect the practice of exercise in children. The parents of participating children completed questionnaires to determine time children spent engaged in sedentary activities. Data indicated that relationships appeared to exist between age and gender with regard to physical activity levels ($p \leq .01$). In addition, after the age of 13, boys had significantly higher levels of physical activity participation than the girls. A significant decline in physical activity levels was observed for the girls, between the ages of 10 and 16. In addition, researchers found that the children studied spent over 10 hours a day involved in sedentary activities.

In light of the guidelines that currently exist for physical activity among youth, Pate and associates (2002) performed a cross-sectional, observational study on a group of 375 children and adolescents in grades 1 through 12, to determine the number of children and adolescents meeting physical activity guidelines advocated by the CDC. Data were collected by having participants wear an accelerometer for seven consecutive days. Results indicated that boys participated in more physical activity than girls, with the greatest difference in grades 10 through 12. Age and physical activity levels were observed to be strongly, inversely related. As related to physical activity objectives outlined in the Healthy People 2010 report (USDHHS 2000) it was found that more than 90% of the participants met the objective which indicates 30 minutes of moderately intense physically activity be performed 5 or more days per week. However, less than 3% of the participants satisfied the requirements set forth by a second objective, which

recommended 20 or more minutes of continuous, vigorous physical activity be participated in three or more days per week.

Using a cross-sectional sample of 107 children between the ages of 6.5 years and 13 years of age, a small sample of the participants involved in a longitudinal study on childhood obesity, one research effort studied the impact sociocultural factors had on physical activity among children. (Lindquist, Reynolds, & Goran, 1999) Using multiple regression analyses the researchers found several trends in the data. The girls in the studied reported spending approximately 13% less time performing exercise activities than the boys. More time was spent participating in team sports by the older children. When tested, the boys in the study were found to have a higher level of physical fitness than the girls. After analyzing the different data researchers acknowledged that multiple factors affect physical activity levels – they suggest that no one reason can be named responsible (Lindquist et al., 1999).

Among studies which analyzed the factors affecting physical activity among children the variables of age and gender came up repeatedly as being correlated with physical activity participation. Several studies reported boys as being more active than girls, particularly after the age of 13 or older (Troost, Pate, Ward, Saunders, & Riner, 1999; Strauss et al., 2001; Pate et al., 2002; Lindquist et al., 1999). According to study results, physical activity levels for both boys and girls was shown to decrease with age (Sallis et al., 1999).

Parental Knowledge and Behavior

A study involving 370 girls and 362 boys in public schools analyzed psychological and social variables that could be changed relating to physical activity among this group in an effort to learn more about why physical activity levels among children decrease as they get older (Sallis, Alcaraz, McKenzie, & Hovell, 1999). This study also showed a decrease in the physical activity levels of these children as they moved through the fourth and fifth grades. Researchers found a positive correlation between the physical activity levels of these children and the act of parents actively transporting the children to a place where he or she can play a sport or participate in physical activity. The analysis also indicated that boys whose parents were physically active were more likely to participate in physical activity as well (Sallis et al., 1999).

A study performed in a southeastern state, using a cross-sectional sample of sixth-grade students from 4 different public middle schools attempted to identify psychosocial and environmental correlates of physical activity (Troost, et al., 1999). Accelerometers were used to objectively measure the amount of physical activity participated in by the students. The participants completed a questionnaire used to measure demographic, environmental and psychosocial factors thought to affect physical activity levels. Results suggested that the boys studied engaged in more physical activity than the girls. Among the boys, their parents' levels of physical activity participation and being involved in physical activity organizations in the community were both positively correlated with the boys' level of physical activity participation. Among the girls, beliefs associated with outcomes of physical activity involvement and access to fitness equipment at home were significantly correlated with physical activity involvement. The design of this study does

not enable causal relationships to be determined from the data; however, researchers suggested that findings supported the notion that having physically active parents encouraging children to participate in physical activity, and parents facilitating children's involvement in physical activity organizations within the community are viable ways to increase physical activity levels among children (Trost et al., 1999).

Fogelholm, Nuutinen, Pasanen, Myohanen, and Saatela (1999) performed a cross-sectional study with 271 children that examined patterns between the physical activity levels of children and their parents and the frequency of obesity among those children. Using a combination of a 3-day physical activity record, a physical activity questionnaire and one question on the amount of physical activity participated in regularly researchers assessed the amount of physical activity in which the children and their parents were participating. Using the relative weight of the children and the BMI of their parents', researchers classified the children and adults as being obese or of normal weight. The results of the study indicated that limited physical activity among parents was positively correlated with child inactivity. Obesity among children was negatively correlated with regular physical activity. Obesity among parents was positively correlated with obesity among his or her children. Based upon the findings of the study researchers advise parents who are concerned about limited physical activity levels among their children to be aware of the example their own lifestyle is setting for their children.

A cohort study that focused on 2913 children in the United States deemed to be of normal weight or obese (with the term obese referring to a BMI of greater than the 95th percentile for the age and gender of each child) sought to learn more about the impact of

the home environment on the development of obesity among children (Strauss & Knight, 1999). By following these children for a period of 6 years the researchers looked at factors such as the marital status of the child's parents, the level of education received by the child's mother, the family income and more. Regression analysis revealed that the Body Mass Index (BMI) of the mother was significantly correlated with the child's body weight. The children whose mothers had a low BMI were shown to be at a substantially lower risk of being obese than the children whose mothers were classified as being either overweight or obese. Research results also suggested that children raised in households that provided low or average levels of cognitive stimulation were at an increased risk of becoming obese than those children living in households providing higher levels of cognitive stimulation (Strauss & Knight, 1999).

The CDC recognizes the influential role parents have in the physical activity participation of his or her child in their current physical activity guidelines. The guidelines encourage parents to be physically active, setting an example for their children. Parents knowing the physical activity guidelines for children and adults and working to ensure that they are both followed is advised. Helping children to be active every day by making physical activity a family affair and providing access for your child to participate in unstructured play or more formally organized sports are also suggested (CDC 2008c).

The data presented in this section suggest that numerous factors have been associated with physical activity patterns among youth. Data gathered in previous studies suggest parental involvement and parental physical activity habits, which would require

parental knowledge of physical activity, have been correlated with the physical activity levels of youth (Fogelholm et al., 1999; Sallis et al., 1999; Trost et al., 1999; Strauss et al., 2001; Pate et al., 2002; Lindquist et al., 1999). Study results showed parents' limited physical activity levels to be positively correlated with his or her child's limited physical activity level (Fogelholm et al., 1999). Higher physical activity levels were seen among those children whose involved parents transported them places to participate in physical activity (Sallis et al., 1999). Also, higher levels of intellectual stimulation in the home were shown to positively influence the physical activity levels of the children in those homes (Strauss & Knight, 1999). A review article on the prevention of obesity in children and adolescents, a health condition commonly associated with limited physical activity, identified families and schools as being the two key factors for preventing obesity in this population (Dietz & Gortmaker, 2001). However, the authors of these studies reveal that the extent to which these factors relate to physical activity levels among youth is not known, calling for more research to be performed on this topic. The present research study is an answer to this call.

Physical Activity Among Individuals with Disabilities

A physically active lifestyle is recognized as a vital part of preventing health conditions such as heart disease and improving the health of an individual (Marks & Heller, 2003). However, it is apparent that low physical activity levels are a public health concern of the present (Dubbert, 2002). Much research has been done to gather evidence relating physical activity to positive health outcomes among the general population, while far less information has been gathered on issues facing people with disabilities and

physical activity (Temple, Anderson, & Walkley, 2000). Only a few researchers have focused on the health of people with disability “beyond descriptions of mortality and morbidity” (Sutherland, Couch, & Iacono, 2002).

This disparity can be seen in public health initiatives, where programs designed to increase physical activity among the population have been implemented but are typically designed to target the general population. This trend has resulted in individuals with disabilities being neglected, though these individuals are said to comprise a large and growing population, whose health needs should be addressed (Lollar, 2002). It has been reported that health promotion programs have failed to target individuals with intellectual or developmental disabilities to the extent to which they have the general public, resulting in poorer health outcomes for these individuals (Marks & Heller, 2003).

Research that has been conducted with individuals with disabilities has demonstrated that a lack of physical activity is a behavioral risk for the health of these individuals (Emerson, 2004). Findings suggest that disability is actually a risk factor for developing other health-related problems such as low levels of physical activity and even obesity (USDHHS, 1999). Reports, such as a survey performed by the North Carolina Department of Health and Human Services (2001), produced figures showing individuals with disabilities to be more likely to smoke and be overweight, and less likely to be physically active than individuals without disabilities. In a study performed by Beange and associates (1995), it was noted that the majority of the participants in their sample of adults with developmental disabilities were physically inactive and overweight. A group of researchers who reviewed previous studies to analyze the involvement of a group of

427 children with physical disabilities in physical activity noted an alarmingly low level of participation among this population (Law et al., 2006). While participating in regular physical activity and achieving health benefits associated with this practice is recognized as an important issue for people with an intellectual disability who want to maintain healthy and productive lives (Temple, Anderson, & Walkley, 2000).

Awareness of this dilemma is increasing, as the needs of individuals with disabilities are mentioned in the Healthy People 2010 report, part of a series of public health initiatives. Included in this report is the objective of improving the accessibility of health and wellness programs to this population (Lollar, 2002; USDHHS, 2000). Current recommendations on physical activity for children and adolescents with disabilities have also been released. These recommendations advise parents/guardians to work with the child's health care provider to identify the types and amounts of physical activity appropriate for them. It is suggested that these children meet the guidelines for children and adolescents when possible, or participate in as much activity as their condition allows. Further, children and adolescents with disabilities should avoid being inactive (USDHHS, 2008b). It is apparent that the practice of physical activity among this population is important, and the prevalence of limited physical activity among this population is a problem. However, it is also clear that further research is required in order to learn more about a solution (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2004).

In spite of the scarcity of specific data available on physical activity for individuals, particularly youth with disabilities, physical activity is believed to provide positive outcomes for those who participate. The inclusion of physical activities in

established rehabilitation and recreation programs can be viewed as a testament to this philosophy. Activities such as team sports, Tai chi, dance, yoga, exercise and aquatics are being implemented in Therapeutic Recreation practices to help improve the physical and psychological health of clients with disabilities (Shank & Coyle, 2002).

In an effort to answer some of the questions surrounding physical activity for individuals with disabilities, there are researchers performing studies in which numerous types of physical activities are implemented with individuals with different disabilities. The results are being reported with regards to various aspects of health. One such study focused on individuals between the ages of 14 and 18 who had been diagnosed with spastic diplegic cerebral palsy. Researchers implemented a twelve week long program involving strength training and aerobic exercise. When comparing pre-test and post-test data, results suggested that the physical training had a positive effect on the physical health of the participants involved. Results indicated that the physical activity had worked to increase the motor abilities of those individuals who participated in the training program (Unnithan et al., 2007).

A study by Cherng and associates (2004) which focused on a group of 14 children between the ages of 3 and 11 diagnosed with spastic cerebral palsy, looked at the effects of a 16 week therapeutic horseback riding program. Results of the study suggest physical activity in the form of therapeutic horseback riding may have positive outcomes for these individuals, specifically with regards to gross motor function.

A qualitative study was performed with 21 children between 10 and 17 years of age in which information was gathered with regards to the children's perceptions of their

own involvement in physical activity (Taub & Greer, 2000). The information was obtained through in-depth, semi-structured interviews. Participants were asked about their past involvement in physical activity, as well as how physical activity has been a part of his or her life, and their view on the reactions of others to their involvement. Findings suggested that among this group of children with disabilities, physical activity served as a way through which more social interaction time could be enjoyed with peers. This opportunity was perceived as normalizing experience, leaving the children with a sense of competence and value. Researchers concluded that physical activity for this population is a means through which participants develop a sense of empowerment over one's own life. The nature of these findings lead authors to suggest better access be granted to this population in the areas of physical activity participation, in order to reap these benefits on a much larger scale (Taub & Greer, 2000).

Fragala-Pinkham and associates (2006) sought to learn more about the feasibility of implementing a community-based fitness program for children with disabilities. Following a quasi-experimental study design, 28 children, whom had been diagnosed with either a developmental disability or a neuromuscular disability, participated in a community-based fitness program. The program was held twice a week for 16 weeks and incorporated aerobic, strength, and flexibility training. Participants were assessed in a pre-test and post-test, during which muscular strength, overall fitness level, and functional mobility were measured. With an average program attendance of over 75%, and no reported injuries researchers deemed the implementation of such a program to be practicable. Improvements in the three above mentioned outcome measurements suggest

programs like this one should be made available for children with disabilities. The authors suggest that further research be performed and more information be collected on this type of physical activity programming for this population.

Due to the lack of research and attention on this subject in the past, numerous questions remain surrounding physical activity for individuals with disabilities. In an article discussing exercise prescription for individuals diagnosed with Duchenne Muscular Dystrophy (DMD), identified as the most severe and fatal types of Muscular Dystrophy, the authors agree that exercise has the ability to improve physiological functioning (Grange & Call, 2007). However, as the authors point out, exercise is most effective when prescribed properly. Though it is believed that a physical activity or exercise program could help to improve the level of physical functioning of those individuals diagnosed with DMD there is a lack of research on the exact effects of physical activity or exercise interventions on this population especially with regards to parameters such as frequency or intensity (Grange & Call, 2007).

Literature on physical activity among individuals with disabilities suggests that there is a paucity of information available (Temple et al., 2000; Sutherland et al., 2002). While research data suggests participation in specific types of physical activity is beneficial for individuals with disabilities, numerous questions remain as to the specifics of prescribing such activities for this population (Taub & Greer, 2000; Grange & Call, 2007). The lack of information on this topic is recognized as a problem which needs to be addressed (Lollar, 2002; Marks & Heller, 2003). The data gathered in the present study does provide additional information on this topic.

Measuring Physical Activity in Youth

Choosing an appropriate tool, which will accurately measure physical activity is necessary when trying to determine true physical activity levels, or looking at associations between physical activity and health (Sirard & Pate, 2001; Treuth, Hou, Young, & Maynard, 2005). There are a number of different methods used to measure physical activity, however most of these methods were not created for children, particularly children with disabilities (Dubbert, 2002; Treuth, et al, 2005). Sirard and Pate (2001) published a review article on physical activity assessments designed specifically for children and adolescents. In their article the authors name these methods, dividing them into three categories: primary measures, secondary measures, and subjective measures.

Primary methods, said to be the industry standard, include indirect calorimetry, direct observation, and doubly labeled water (DLW). Employing the indirect calorimetry or the DLW technique both require extremely expensive, highly specialized equipment, such as non portable gas analysis equipment and radio-labeled isotopes respectively. Specialized staff, trained to use the equipment, and a large commitment and the chance of discomfort for the study participants is also needed. These requirements make these methods impractical for many research studies. Direct observation, a third primary method, is said to be an appropriate tool for measuring physical activity. However, direct observation demands a great time commitment from the researcher, and may be uncomfortable and highly inconvenient for the study participants (Sirard & Pate, 2001).

Secondary or objective techniques include pedometers, heart rate monitors, and accelerometers (Sirard & Pate, 2001; Dubbert, 2002). These methods help to prevent physical activity being inaccurately reported by a study participant, are less expensive and invasive than the listed primary methods, and have been tested against primary methods to successfully demonstrate their accuracy. However, equipment cost and availability is an issue, and each of these methods presents its own limitations. The pedometer is restricted to just counting steps taken, without the ability to record the intensity of the steps taken or any other bodily movements performed. Accelerometers are capable of recording body movement beyond those simply performed by walking as well as the intensity of those movements. Limitations do exist on their ability to accurately measure activities during which there is limited movement of the torso. Heart rate monitors represent a method which demands less commitment from the program participants, and has been shown to accurately assess physical activity levels. However, stimulants such as caffeine, environmental stressors, and certain medications can all affect an individual's heart rate, and thus the physical activity measurement (Sirard & Pate, 2001).

The third class of measures used is called subjective methods and includes self-report questionnaires, interviews by a researcher, proxy-reports, and diaries. No specialized equipment is required for implementing these methods, making them more feasible for many research studies. Self-report questionnaires provide a low cost method of acquiring physical activity levels, without placing much of a burden on study participants or being overwhelming for the researchers. Self-report questionnaires rely on

the participant to accurately report physical activity participation. This method has the potential to be difficult for children given cognitive limitations and social pressures regarding physical activity. However this method has been widely used and has been shown to be effective, particularly for studies in which other methods would not be appropriate or practicable. Interviews may help to increase the validity of the information gathered through this method of self-reporting, though another form of bias may be introduced in the form of the researcher. Using proxy-reports can help researchers avoid the effects of recall errors on the part of the children being studied by having the child's parent provide the responses. Research has demonstrated this method to produce acceptable results. The method of using diaries is more appropriate for use with the adult population than with children because of the participant commitment required to properly keep the diary, and concerns over the accuracy of the record (Sirard & Pate, 2001).

Differences observed between physical activity levels reported through objective measures and those reported on self-report questionnaires may suggest that self-report measures result in exaggerated physical activity levels, leading some researchers to suggest direct observation be the technique of choice when measuring physical activity among any population (Pate et al., 2002; Sirard & Pate, 2001). However studies have used both a self-report measure and direct observation and have seen the two correlate over 85% of the time (Sirard & Pate, 2001).

Each method of assessing physical activity among children has its own strengths and weaknesses. From the primary methods, to secondary methods, to subjective measures, no one measure is appropriate for all populations or all types of study. A

researcher should examine each of the available measures as well as the limitations presented by his or her study. The researcher must then choose the one that will most accurately address the issues most pertinent to the purpose of his or her study (Dubbert, 2002).

The present study used one of the subjective methods of assessing physical activity in children currently available, a self-report questionnaire entitled the Fels Physical Activity Questionnaire for Children (Treuth, et al., 2005). This questionnaire was adapted from the Baecke questionnaire, a self-report questionnaire designed to measure habitual physical activity in adults. The Fels questionnaire was designed for children and used in the Fels longitudinal study to measure habitual physical activity among individuals in the study between 8 and 18 years of age (Treuth, et al., 2005; Wisemandle, Maynard, Guo, & Siervogel, 2000).

The Fels questionnaire for children consists of eight questions targeting regular physical activity habits. The questions inquire as to sports participation, inside of school and outside of school, leisure time physical activity, and physical activity performed through work or chores. Some of the questions require the participant to provide the actual activity being performed, enabling researchers to objectively determine the intensity of each activity using a physical activity reference chart. This chart, found in many health and fitness textbooks, lists each type of physical activity, along with a number representing the metabolic equivalent, or the amount of energy required to perform that activity (Howley & Franks, 2003). Referencing such a chart, and entering the appropriate value into the Fels' scoring system enables researchers to calculate a level

of physical activity participation for each of the three areas, sports, leisure, and work or chores, which are added together to determine a total physical activity score. The existence of these specific scores set the Fels questionnaire apart from many other physical activity questionnaires for children, making it appealing to those researchers who seek to view physical activity participation in this way. The questionnaire, in its entirety, along with its scoring system can be viewed in the article published by Treuth and associates (2005).

A study done to assess the validity and reliability of the Fels physical activity questionnaire for children was reported by Treuth and associates in an article they published (2005). Performed through the Johns Hopkins Bloomberg School of Public Health, the study included a cross sectional sample of 90 boys and 130 girls between 7 and 19 years of age residing in a rural region of eastern Maryland. The study participants were elementary, middle and high school students, and the study was administered through physical education classes. The study took 6 days to complete. The researchers had the participants complete the Fels questionnaire on the first day, before installing the accelerometer, and on the last day, after removing the accelerometer. The participants were told to wear the accelerometer at all times, except while bathing or swimming. When calculating the results of the study, reliability was assessed by comparing the two questionnaires, administered six days apart, through Microsoft Excel, and further statistical analyses. Upon calculation, the reliability of the questionnaire ranged from .62 to .71 for the total physical activity score for elementary, middle, and high-school aged students, deeming it moderately reliable for this population. The validity of the

questionnaire was assessed by comparing the accelerometer report with the completed Fels questionnaire, and found to be acceptable for use when using the total physical activity score.

The use of the Fels questionnaire, a subjective measure, for this study appropriately reflects the access the researchers had to the study participants as well as the level of involvement available to the researchers. The data the chosen method enabled this study to gather contributes needed information to the body of knowledge regarding physical activity participation among youth. Specifically, the present study extends existing knowledge about the effects of physical activity and physical activity knowledge about youth who attend weekend respite camp.

CHAPTER III

METHOD

Introduction

The purpose of this study was to learn more about the nature of physical activity among individuals with disabilities. Specifically, there were 5 research questions posed: How often do youth with disabilities participate in physical activity outside of the weekend respite camp? What types of activity (e.g. leisure, sports, work/chores) provide youth with disabilities with physical activity? Are parents/guardians of youth with disabilities aware of the current physical activity recommendations for themselves and their campers? Are parents/guardians of youth with disabilities following the current physical activity recommendations for themselves? What is the relationship of the following factors (i.e. age, gender, knowledge the parent/guardian possesses about physical activity recommendations, parent/guardian's adherence to adult recommendations) and the youth with disabilities level of physical activity participation?

A questionnaire was administered one time, to the parent or guardian of the youth, either at the check-in period for a weekend respite program, or through the mail. The questionnaires that were mailed, were intended to reach the parents and guardians of youth who were active participants in the weekend respite program but whom were not in attendance for that particular session. This process is discussed in greater detail in the following sections.

Participants

The participants for this study were registered campers in a respite weekend program held at a southeastern university outdoor recreation and camp facility. The weekend respite camp was staffed with university staff members and students, as well as college and university students from across the southeastern United States. The respite camp was a residential, three day, two night camp for males and females with various disabilities, who were 7 years of age or older and lived at home with parents/guardians. These campers resided primarily across a three-county area of a southeastern state and were referred to the respite program by the Disabilities Boards in his or her respective county. The disabilities of the campers ranged from mild to severe and were cognitive, and/or physical, or multiple. Based upon the campers needs, counselors and staff were employed for the duration of camp, with an overall ratio of no more than two campers per counselor. Beginning Friday afternoon and ending Sunday afternoon, the three days of camp were filled with opportunities for physical activities (eg. arts and crafts, archery, group games, fishing, pontoon boat rides, drama and nature). Modifications to activities occurred as needed, facilitating the opportunity for each camper to participate in desired activities. The camp environment provided an opportunity for campers to try new activities, create cherished memories, make new friends while visiting with old ones, and enjoy fellowship and fun with campers and staff. This camp was primarily funded by donations from both individuals and established charitable organizations, with each camper responsible for a charge of fifty dollars per camp session.

Procedures

Data about physical activity were collected using a self-report physical activity questionnaire administered once to a parent or guardian of campers in one of two ways. The first way in which the questionnaire was administered to parents/guardians was in person at the check-in for one of the respite weekends. At check-in for this camp session, 16 questionnaires were completed by parents and/or guardians. The second way in which the questionnaire was administered was through the mail. This method was employed in order to have questionnaires completed by the parents/guardians of campers who had attended respite camp within the previous 12 months but did not attend the current session. Eight questionnaires were completed through the mail. Using these two methods gave the parents/guardians of all youth who had been involved in respite camp in the previous 12 months the opportunity to complete a questionnaire, thus providing investigators with the potential to gather a larger data set.

Human Subjects Research Protocol

Before beginning the data collection process, approval was granted by the Institutional Review Board of the affiliated institution to conduct research with human subjects (Appendix B). A self-report questionnaire about physical activity (Appendix D), accompanied by an informational letter (Appendix C), was then used to collect data. The informational letter provided information on the study as well as the contact information of the Principal Investigator should the parent or guardian have any questions or concerns regarding the study. The questionnaire took between 10 and 15 minutes for the parent or guardian of the camper to complete, whether the parent or guardian filled the

questionnaire out in person, at camp, or at home receiving and returning the survey through the mail.

In Person at Check-in

The questionnaires were administered by the researcher at an indoor conference room at the camp facility during the check-in period for the respite camp session. Parents and guardians had been notified about the questionnaire prior to arriving at camp, and that the researcher would be present at camp check-in.

During this check-in time, when the parents/guardians were registering his or her camper for the weekend, the researcher approached the parent/guardian of each camper about completing the physical activity questionnaire. Completing the questionnaire was explained to the parents/guardians as being completely voluntary and the information provided would be used only for the purposes of this study as well as the improvement of services available for his or her camper. Upon agreeing to complete the questionnaire each parent/guardian was given an informational letter (Appendix C) about the study and the questionnaire (Appendix D).. The researcher remained in the conference room, available to answer questions if needed, and collected the questionnaires when completed. Upon collection, the questionnaires were placed in a folder and stored in a locked office to ensure the information would remain confidential.

Through the Mail

The mailed surveys were distributed through the United States Postal Service to reach the parents/guardians of the campers who had attended respite camp within the previous 12 months, but were not present at the current session. Using mail surveys was

chosen as the method to reach these parents and guardians because it has been a widely used and successful method of distributing self-administered questionnaires (Dillman, 1991).

Within each envelope the researcher placed the informational letter containing contact information for the parent or guardian should he or she encounter any questions while filling out the questionnaire, the questionnaire, and a stamped envelope addressed for the outdoor recreation and camp facility. These three items were folded together within the one single envelope. No additional information or correspondence such as a due date was included in the mailed out surveys. No reminder or follow-up letter was sent.

Instrument

The instrument used in this study was a self-administered physical activity questionnaire (Appendix D). Composed of the Fels Physical Activity Questionnaire (Treuth et al., 2005), in its entirety, the questionnaire used for this study contained additional questions as well, added by the investigators of this study. These questions are discussed in detail in the following sections.

Previously used in epidemiological research, the Fels Physical Activity Questionnaire was a self-report questionnaire designed to measure the physical activity levels of children. When tested, the Fels Physical Activity Questionnaire was found to have acceptable reliability and validity measures of $r = 0.71$ and $P = .006$ respectively (Treuth et al., 2005). The items on the Fels Questionnaire indicated its suitability to address the research questions because the Fels Questionnaire delineated specific

activities in which the camper participated, separates sport related physical activity from leisure time physical activity as well as from work or chore related physical activity.

Using the Fels Questionnaire enabled the primary researcher to answer two of the research questions posed - How often are youth participating in physical activity outside of the respite camp; Through what avenues are youth participating in this physical activity?

The final questionnaire used for this study included several questions not found on the Fels Questionnaire. These questions were added in order to obtain demographic information on the campers, knowledge the parents/guardians possessed on physical activity recommendations, parent or guardian physical activity habits, and more specific information about where campers were participating in physical activity.

Instrument in Detail

The first seven items on the Likert like questionnaire were developed to assess basic demographic information such as the county in which the camper resided, the camper's age and gender. Additional items addressed schooling, and asked the parent/guardian to specify what type of schooling the camper attended. The demographic and school related items provided a list of various answer choices for items that were multiple choice. There was also a space in which the parent or guardian could respond to open ended items. The next two questions asked about physical limitations the camper may have and the frequency with which the camper uses an assistive mobility device (ie.) with multiple answer choices provided. Much like the majority of questions in this questionnaire the answer choices for these two questions were scored on a scale of one to

five, where the number one represented the level or frequency of “None” or “Never”, and the number five represented the level or frequency of “Severe” or “Very Often” respectively.

The next sequence of items contained four items that pertained directly to the parent/guardian. These items were included to assess the knowledge of the parent or guardian regarding recommendations about current physical activity recommendations endorsed by our CDC (2008c). These items assessed whether the parent or guardian was aware of the current physical activity recommendations for adults, the current physical activity recommendations for children, where they obtained that knowledge, and whether or not the parent or guardian participated in that recommended level of physical activity each week. A blank space was provided for the parent or guardian to indicate where they obtained their knowledge of physical activity recommendations. The other three items in this section were provided with the three answer choices of “Yes”, “No”, and “Don’t Know”.

The remaining items on the questionnaire pertained to the camper and were from the Fels Questionnaire. The majority of these questions addressed the nature of physical activity the camper was participating in, and with what frequency and intensity he or she was doing so. However, many of these items contained a second part, in which the parent or guardian was asked to briefly explain where his or her camper was participating in that particular activity. A blank space was provided for the parent or guardian to answer this open-ended item. All of the other items in this section were multiple choice and the answer choices provided were on a scale of either one to three, or one to five,

with each number and corresponding word describing the frequency with which the camper participated in the activity, or the level of intensity of that participation. These corresponding word choices included, among others, the phrases such as “very often”, “often”, as well as “regularly”, and “sometimes”. The questions that asked the parent or guardian to provide the activity in which the camper participated provided a space out to the side in which the response could be written. In order to view the specific questions and answer choices please refer to the complete “Physical Activity Questionnaire” provided in the Appendix portion D of this paper.

Taken directly from the Fels Questionnaire, the items regarding the physical activity participation of the camper were separated into three categories of physical activity participation labeled as “Sports Index”, “Leisure Index”, and “Work (chore) Index”. The questions used to calculate the Sports Index inquired as to the type of “sports or physically active games” in which the camper was participating both “in school” and “outside of school”, where the camper was participating in this activity, and with what frequency. An additional question inquired further as to the intensity of the activity by referencing the act of sweating. Using a multi-step scoring system included in the Appendix portion of this paper (Appendix E), the numeric results of the questions were scored on a Likert style scale of 1 to 5. On this scale a score of 1 represented the state of being least active, while the number 5 represented the state of being most active. For the “Leisure Index” score two questions regarding the frequency of physical activity during leisure time were averaged, with the result being between a 1 and a 5 on the Likert style scale. The “Work Chore Index” was calculated from two questions, with the results being

calculated much like they were for the “Sports Index”, and the resulting number also being between a 1 and a 5 on the Likert style scale.

Data Analysis

Data Analysis was completed using Microsoft Excel and SAS statistical software. Microsoft Excel was used to analyze different subsets of the results based upon demographic information such as the age of the camper, the gender of the camper, the parent or guardians’ knowledge of adult physical activity recommendations, the parent or guardians’ knowledge of child physical activity recommendations, and whether or not the parent or guardian abided by the adult physical activity recommendations. When calculating the results of the items for which the response choices provided were “Yes”, “No” and “Don’t Know”, “No” and “Don’t Know” were collapsed into one response category labeled “No”. This decision was made because the parents and guardians who responded either “No” or “Don’t Know” to each of those three items reported not actually knowing or not actually following the current physical activity recommendations. Because the opposite of knowing something would be not knowing, and the opposite of doing something would be not doing it was reasonable to collapse these three response categories into two: “Yes” the parent or guardian does know or follow the current physical activity recommendations and “No” the parent or guardian does not know or follow the current physical activity recommendations. Placing both the “No” and “Don’t Know” responses into one category it was then possible to separate the campers into two groups based upon each of these items– one group whose parents/guardians do actually know or follow the established physical activity recommendations and one group whose

parents/guardians do not know or follow the physical activity recommendations. Through the use of chi-square analysis, this dichotomous labeling enabled investigators to analyze whether or not a parent or guardian knowing or abiding by the current physical activity recommendations significantly related to his or her campers' level of physical activity participation. The Mean and Standard Deviations of responses to demographic questions, as well as the Mean and Standard Deviations of physical activity participation levels among campers were calculated.

Using chi-square analysis, twenty different models were run with the specific type of physical activity being listed as the dependent variable of the model, and the variables of the campers' age, the campers' gender, the parent or guardians' knowledge of physical activity recommendations for children, the parent or guardians' knowledge of physical activity recommendations for adults, or whether or not the parent abides by the adult physical activity recommendations being the independent variable. This type of analysis was performed in order to analyze whether or not a significant relationship may exist between the level of physical activity participation performed by the camper and each of the above mentioned independent variables. The investigators of this study used a significance level of $p = .05$ for these tests (Ott & Longnecker, 2001).

CHAPTER IV

RESULTS

Description of Participants

There were 24 parent/guardian camper pairs that participated in this study. Sixteen of these participant pairs completed the questionnaire in person at the check-in for the weekend respite camp. The in person response rate of 16 out of the 17 attendees represented a 94% response rate for that method of gathering data. The other 8 completed questionnaires were returned through the mail. Receiving 8 of the 21 questionnaires that were mailed out represented a response rate of 38% for that method of gathering data. All 24 surveys were analyzed as one group, with no distinction made between the two sets in the write-up of this study, because all participants received the exact same self-administered questionnaire and informational letter, whether he or she completed the survey in person or through the mail. The return of 24 of the 38 possible completed questionnaires represented a response rate of 63% for this study.

The youth ranged from 8 to 19 years of age, with the majority (58.4%) between the ages of 15 and 19 (Table 1). Eleven (45.8%) of these youth were female, and 13 (54.2%) were male (Table II).

Table I

Age of Youth in Weekend Respite Camp

Age	Number of Youth this Age	Percent of Group in this Age Range	Mean Age across all Youth
			14.38
8	1	4.20%	
9	1	4.20%	
10	1	4.20%	
11	2	8.30%	
12	2	8.30%	
13	2	8.30%	
14	1	4.20%	
15	4	16.70%	
16	3	12.50%	
17	4	16.70%	
18	1	4.20%	
19	2	8.30%	

Table II

Gender of Youth in Weekend Respite Camp

Gender	Number of Youth this Gender	Percent of Youth this Gender
Male	13	54.20%
Female	11	45.80%

When asked what type of schooling each camper attended, results indicated that 87.5% of the campers attended public school and 4.17% attended a home-schooling program, while 8.33% did not respond to this question (Table III).

Table III

Types of Schooling Attended by Youth in Weekend Respite Camp

Type of Schooling	Number of Youth Attending this School	Percent of Group Attending this School
Public	21	87.50%
Home School	1	4.17%
No Response	2	8.33%

Two items were included with regards to the campers physical abilities. The first item asked each parent or guardian to describe his or her campers level of physical limitation on a scale of 1 to 5, with 1 representing “None”, 2 representing “Mild”, 3 representing “Moderate”, 4 representing “Somewhat Severe”, and 5 representing “Severe”. No definition as to each level of severity was provided. Out of the 24 respondents, 29.17% answered “None”, 25.00% answered “Mild”, 20.83% answered “Moderate”, 20.83% answered “Somewhat Severe”, and 4.17% answered “Severe” (Table IV). The second question in this series inquired as to how often his or her camper

used a wheelchair on a scale of 1 to 5, with 1 representing “Never”, 2 representing “Seldom”, 3 representing “Sometimes”, 4 representing “Often” and 5 representing “Very Often”. No description as to level of frequency was provided. Out of 24 respondents 79.17% answered “Never”. One respondent or 4.17% each answered “Seldom”, “Sometimes” and “Often”. 8.33% answered “Very Often” (Table V).

Table IV

Level of Physical Limitations Among Youth in Weekend Respite Camp

Physical Limitations	Number of Youth with this Level of Limitations	Percent of Group with this Level of Limitations
None	7	29.17%
Mild	6	25.00%
Moderate	5	20.83%
Somewhat	5	20.83%
Severe		
Severe	1	4.17%

Table V

Frequency of Wheelchair Use by Youth in Weekend Respite Camp

Wheelchair Use	Number of Youth that use a Wheelchair with this Frequency	Percent of Group that use a Wheelchair with this Frequency
Never	19	79.17%
Seldom	1	4.17%
Sometimes	1	4.17%
Often	1	4.17%
Very Often	2	8.33%

The data collected with the physical activity questionnaire was analyzed using Microsoft Excel and SAS statistical software. The scores of physical activity participation were calculated using the established scoring system for the Fels Physical Activity Questionnaire which is included with the questionnaire in the appendix portion of this paper (Appendix E). Scores were calculated for “Sport”, “Leisure”, “Work/Chore” and “Total” physical activity participation. The scores for each of these types of physical activity participation were then analyzed individually using chi-square analysis with

regards to possible relationships existing between the participation scores and demographic variables such as age, gender, the parent or guardians' awareness of current physical activity recommendations, or the parent or guardians abidance by the adult physical activity recommendations.

Youth with Disabilities Participation in Physical Activity Outside of Weekend Respite Camp

Using the Fels Physical Activity Questionnaire scoring system (Treuth et al., 2005) the participation levels of physical activity through Sports, Leisure time, and Work or chores, as well as Total physical activity participation were calculated. The results for each specific type of physical activity were determined by referring to a chart of metabolic equivalents for physical activities (Howley & Franks, 2003) and inserting that data into provided equations to calculate participation levels for each specific type of physical activity involvemnt. These equations, along with detailed instructions are provided in Appendix E section of this paper. The final calculated results for each of the 3 types of physical activity participation were scored on a Likert style scale between one and five, with 1 representing "Never", 2 representing "Seldom", 3 representing "Sometimes", 4 representing "Often", and 5 representing "Very Often." With regards to the group of participants, the mean and standard deviation were found for each of the three specific subgroups of physical activity as well as a total physical activity score. The mean physical activity score through Sport was 2.37. The mean physical activity score through leisure was 1.83. The mean physical activity score through work or chores was 2.36. The score for total physical activity, calculated by determining the mean of the

three specific types, was 2.22 (Table VI). According to the questionnaire results campers participated in physical activity of any type “Seldom”, or less than “Sometimes”.

Types of Activity that Provide Youth with Disabilities with Physical Activity

Results indicated that youth were participating in physical activity through sport, leisure, and chore activities. On average, physical activity was participated in most through sport activities, with the mean score being 2.37, representing a frequency between 2 or “Seldom” and 3 or “Sometimes”. Parent initiated work or chore related activity ranked second, with a mean score of 2.36, which represented a frequency between 2 or “Seldom” and 3 or “Sometimes”. Physical activity through leisure was the lowest recorded amount of physical activity, with a mean score of 1.83, which represented a frequency between 1 or “Never” and 2 or “Seldom” (Table VI).

Table VI

Physical Activity Participation Levels Among Youth

Type of Physical Activity Participation	Mean Level of Participation of Group	Standard Deviation Among Group
Sport	2.37	0.87

Leisure	1.83	0.56
Work/Chore	2.36	1.10
Total	2.22	0.60

Note. The above scores were calculated using the scoring system applied in the Fels Physical Activity Questionnaire, which is included in the Appendix portion of this paper (Appendix E). The score for each specified category represented physical activity participation of that specified type based upon a Likert style scale, where 1 represented the frequency of “Never”, 2 represented “Seldom”, 3 represented “Sometimes”, 4 represented “Often”, and 5 represented “Very Often”.

Parents/Guardians of Youth with Disabilities Awareness of Physical Activity

Recommendations for Themselves and Their Campers

The two items presented to the parent/guardian with regards to current physical activity recommendations and his or her own participation resulted in the following responses. When asked if he or she (as the parent or guardian) was aware of the physical activity recommendations advocated by the Center for Disease Control and Prevention for children it was found that 20.83% were aware of these recommendations and 79.17% were not (Table VII). When asked if he or she was aware of the physical activity recommendations advocated by the Center for Disease Control and Prevention and the American College of Sports Medicine for adults to participate in each week it was determined that 41.67% were and 59.33% were not (Table VII). Although these two questions pertaining to the parent or guardians awareness of current physical activity recommendations provided three answer choices, “Yes”, “No”, and “Don’t Know”, “No”

and “Don’t Know” responses were collapsed into one category labeled “No”. The “Don’t Know” responses were combined with the “No” responses because the parent or guardian reported not actually knowing the current physical activity recommendations, making it possible to separate the campers into two groups – one group whose parents/guardians did know the established physical activity recommendations for adults and one group whose parents/guardians certainly did not. This dichotomous labeling allowed investigators to analyze whether or not a parent or guardian knowing the current physical activity recommendations had an impact on his or her campers’ level of physical activity participation. Chi-square analysis was used for that portion of the analysis process.

Parents/Guardians of Youth with Disabilities Abidance by Current Physical Activity Recommendations for Themselves

One item on the questionnaire asked the parent or guardian if he or she regularly abided by the current physical activity recommendations that existed for adults. It was found that 12.50% of the parents and guardians regularly abided by the adult physical activity recommendations, and 87.50% did not (Table VII). This one item also provided the response choices of “Yes”, “No” and “Don’t Know”, but “No” and “Don’t Know” responses were collapsed into one category, labeled “No”, making it possible to separate the campers into two groups – one group whose parent or guardian do actually abide by the established physical activity recommendations for adults and one group whose parent or guardian certainly do not. This allowed investigators to analyze if the parent or guardian abided by the current physical activity recommendations that existed for adults

had a significant impact on his or her campers' level of physical activity participation.

That portion of the analysis was performed using chi-square analysis.

Table VII

Physical Activity Knowledge and Practices of Parents/Guardians

Parent/Guardian Response	Number of Parents/Guardians	Percent of Group of Parents/Guardians
Aware of Child Recommendations		
Yes	5	20.83%
No	19	79.17%
Aware of Adult Recommendations		
Yes	10	41.67%
No	14	58.33%
Follow Adult Recommendations		
Yes	3	12.50%
No	21	87.50%

In summary, 19 of the 24 (or 79.17%) of parents/guardians surveyed were not aware of the current physical activity recommendations that existed for his or her child. Fourteen of the parents/guardians (or 58.33%) were not aware of the current physical activity recommendations that existed for adults. Three (or 12.5%) of the parents/guardians reported that he or she regularly abided by the adult physical activity recommendations.

Relationships of Age, Gender, Knowledge the Parent/Guardian Possess about Physical Activity Recommendations, Parent/Guardian's Abidance by Adult Recommendations and the Youth with Disabilities Level of Physical Activity Participation

Chi-square analysis was used to detect whether or not relationships existed between the above mentioned variables and each of the specific physical activity participation levels. Each of the specific types of physical activity participation including Sport, Work/Chore, Leisure, and Total physical activity participation were analyzed, as the dependent variable, in relation to each of the five independent variables. The five independent variables included the age of the camper, the gender of the camper, parent or guardians knowledge of physical activity recommendations for children, parent or guardians knowledge of physical activity recommendations for adults, and parent or guardians abidance by adult physical activity recommendations. Twenty different models were run to analyze relationships between each of the four types of physical activity participation, including Sport, Leisure, Work or Chore, and Total physical activity participation and the five specified independent variables. The researchers in this study

used a significance level of $p = .05$. One independent variable, the parent or guardians abidance by adult physical activity recommendations, was shown to be related to the campers participation in physical activity through leisure ($p = 0.0443$) with the parent or guardians abidance by adult physical activity recommendations in a positive direction.

Table VIII

Chi-Square Analysis Results

Type of Physical Activity		Participation		
	Independent Variable	DF	Value	P
Sport	Age	110	112.5000	
	Gender	10	12.1175	0.2773
	Child	10	10.6611	0.3845
	Adult	10	9.8057	0.4577
	Abide	10	5.2571	0.8734
Leisure	Age	44	48.8056	0.2860
	Gender	4	5.7063	0.2222
	Child	4	6.4842	0.1658
	Adult	4	5.7714	0.2169
	Abide	4	9.7778	0.0443
Work/ Chore	Age	77	92.1667	0.1145
	Gender	7	4.1958	0.7570
	Child	7	4.2947	0.7453
	Adult	7	2.7429	0.9077

	Abide	7	4.1905	0.7576
Total	Age	187	192.5000	0.3760
	Gender	17	15.9441	0.5278
	Child	17	20.9684	0.2277
	Adult	17	16.8000	0.4680
	Abide	17	24.0000	0.1194

Summary

In summary, youth participation in physical activity was reported as being “Seldom”, with participation in physical activity through sport being the most popular type of involvement. The majority of parents/guardians of the campers reported being unaware of the physical activity recommendations that exist for themselves (79.17%) or their campers (59.33%). Only 12.5% of parents/guardians reported regularly abiding by the current adult physical activity recommendations. The parent’s/guardian’s abidance by adult physical activity recommendations was the only independent variable shown to affect youth physical activity participation, with the correlation seen through leisure involvement ($p=0.0443$).

CHAPTER V

DISCUSSION

Introduction

The general purpose of this study was to learn more about physical activity among individuals with disabilities. Specifically this study acquired information on the levels of physical activity participation among youth participants in a weekend respite camp, the avenues through which these youth were participating in physical activity, the knowledge their parents and guardians possessed on physical activity recommendations, and whether or not the parents/guardians abided by the physical activity recommendations for adults. This study also analyzed whether significant relationships existed between the age of the camper, the gender of the camper, the parent or guardians' knowledge of physical activity recommendations, as well as the parent or guardians' physical activity participation and the campers' level of physical activity participation. The specific findings from the data analysis as well as their implications are discussed in greater detail in the following sections.

Summary of Findings

The research questions in this study were addressed by analyzing the data using descriptive statistics and chi-square analysis. The mean and standard deviations of responses were used to analyze the knowledge of the parents/guardians with regards to physical activity recommendations, whether or not parents/guardians abided by current physical activity recommendations for adults, and the physical activity participation levels of the campers. Chi-square analysis was used to analyze whether relationships

existed between the independent variables of the camper's age, the camper's gender, the parent's/guardian's knowledge of physical activity recommendations, and whether the parent/guardian abided by current adult physical activity recommendations and the dependent variable of each of the specific types of physical activity participation levels.

Analyses suggested that the campers were participating in all types of physical activity at a frequency more than "Seldom" and less than "Sometimes". It was reported that campers participated in physical activity through sport more than either of the other two types. Work or chore related physical activity was ranked second, for the level of physical activity participation seen through this avenue. Leisure time physical activity was the lowest recorded type of the three categories.

With regards to parental knowledge and physical activity habits, the questionnaires revealed that the majority of parents/guardians were not aware of the current physical activity recommendations for children or adults. Nineteen (or 79.17%) of the 24 parents/guardians surveyed were not aware of the current physical activity recommendations that existed for their child. Fourteen (or 58.33%) of the parents/guardians were not aware of the current physical activity recommendations that existed for adults. Only 3 (or 12.5%) of the parents/guardians reported that he or she regularly abided by the adult physical activity recommendations.

Chi-square analyses suggested only one of the assessed variables to be related to a camper's level of physical activity participation. The parent or guardians abidance by adult physical activity recommendations was shown to be positively correlated with his or her camper's participation in physical activity through leisure. Neither the age of the

camper, gender of the camper, parents'/guardians' knowledge of the physical activity recommendations for children, nor the parents' knowledge of physical activity recommendations for adults were shown to be significantly correlated with the level of physical activity participation of the camper.

Implications

The results from this study showed the campers participating in physical activity at a frequency more than “Seldom” and less than “Sometimes”. These lower levels of physical activity participation are similar to those reported in a number of other studies on physical activity among youth as well as studies on individuals with disabilities (Sallis et al., 2000; USDHHS 2000; USDHHS, 2002). Due to the positive outcomes physical activity has been shown to produce for youth more efforts should be applied to increasing these levels of participation. Further research should be conducting regarding factors affecting physical activity among this population.

When evaluating the physical activity in which the campers did participate it became obvious that they participated in physical activity through sport more than either of the other two types. Work or chore related physical activity was ranked second, for the level of physical activity participation seen through this avenue. Leisure time physical activity was the lowest recorded type of the three categories. These results were similar to those found in other studies on this subject, in which youth sport participation was seen to represent a large portion of the regular physical activity in which this population participated, often accounting for a significant percentage of the total amount of energy burned over the course of a day (Wickel & Eisenmann, 2007; Katzmarzyk & Malina,

1998). The availability of sports programs to youth with disabilities should be explored, as these programs have been shown as a viable means of physical activity participation for this population. However, more research should be conducted regarding barriers and facilitators that exist for these types of activities such as transportation and facilities.

The positive correlation observed between the parent's/guardian's abidance by adult physical activity recommendations and the camper's participation in physical activity through leisure in this study was nothing new. The idea that an adult's physical activity habits may influence the participation levels of his or her child has been previously reported in literature on factors affecting physical activity among youth (Sallis et al., 1999; Fogelholm et al., 1999). In the present study, the act of the parent following the physical activity recommendations implied that he or she was aware of them. Although the chi-square analyses did not specifically indicate that a relationship existed between the parent or guardian knowing the current physical activity recommendations for adults or for children, and his or her child's physical activity level, the theory that a parent or guardian being aware of the current physical activity recommendations can positively impact the physical activity practices of his or her child is supported in existing reports (CDC 2008c). The average frequency of physical activity participation was more than "Seldom" and less than "Sometimes". Results indicated that 17 of the 24 parents/guardians surveyed were not aware of the current physical activity recommendations that existed for his or her child, while 14 were not aware of the current physical activity recommendations that existed for adults. These possibly coinciding circumstances should not be completely overlooked.

Implications for Practice

Findings suggest that practitioners should work to increase the knowledge parents/guardians possess on physical activity. Adults should be educated on the benefits of physical activity participation as well as opportunities that exist for their children. Opportunities and encouragement for youth to be more physically active should be provided. Additional encouragement should be provided for parents/guardians to be physically active themselves, while facilitating physical activity participation among their children. When possible, parents should be physically active with their children. Again, more research should be conducted in order to aid in the development of these practices.

Limitations

In this study, unlike many other previous studies focusing on physical activity among youth, the variables of age and gender were not shown to significantly correlate to physical activity participation (Strauss et al., 2001; Sallis et al., 1999; Lindquist et al., 1999; Pate et al., 2002). The small sample size of the 24 could have affected this outcome, while reducing generalizability of the findings. Because far more variables that could affect physical activity participation among this population exist than were addressed in this study further research should be conducted with youth with disabilities to learn more.

The use of a self-report questionnaire instead of more advanced forms of measurement to acquire physical activity levels could be seen as a limitation because of the questionnaire's inability to measure exact physical activity levels. (Pate et al., 2002) Using the Fels Physical Activity Questionnaire, a questionnaire originally used in

epidemiological studies, could be viewed as a limitation because of the nature of the present study, and the small sample size studied. The topic of the questionnaire itself could be seen as a limitation because of the recent press on the importance of physical activity. Because the parent or guardian completed the questionnaire for his or her respective camper the amount of physical activity reported could have been exaggerated because participation in physical activity is viewed as being positive. Collecting data solely from the parents/guardians of youth limited the information gathered for this study to a small group of youth with different types of disabilities whom all lived with a parent or legal guardian in or near upstate South Carolina. Not sending a reminder or follow up letter to the participants who received questionnaires through the mail could be viewed as a limitation because the response rate for this method of gathering data may have been greater had the participants received a second or even third mailing (Dillman, 1991).

Future Research

Future research could incorporate a qualitative research component in which campers are interviewed with their parent or guardian in a structured fashion to further explore why the camper is participating in physical activity at the level reported on the questionnaire. In these interviews information on barriers to physical activity participation and physical activity knowledge could be acquired.

Future research on this topic could include a larger participant group. This could be achieved by gathering data from different camps for children with disabilities. This information could be gathered in a specific region of the United States or across the United States. Studies could even specify the nature of the disability of the campers

studied, focusing on one specific disability, or comparing physical activity participation levels between different disability groups.

In light of research findings which suggest that various factors in the home environment may affect a child's physical activity habits, future studies with this population could look at the home environment in more detail (Strauss & Knight, 1999; Sallis et al., 1999). Additional questionnaires could be administered to the parent or guardian in order to gather more information on the parents and the home situation. If time and researcher constraints allow, direct observation could conceivably be employed to measure physical activity levels among some or all of the study participants (Sirard & Pate, 2001).

Conclusions

A lack of physical activity among youth, particularly individuals with disabilities, is a valid and growing concern. Though it is believed that no one factor, but multiple factors can affect the physical activity habits of youth, several variables have been associated with physical activity among this population (Lindquist et al., 1999). The present study confirmed previous studies which indicate that a parents physical activity habits can influence the physical activity participation of his or her child. The results of the research performed for the present study do suggest that much remains unknown with regards to physical activity for children with disabilities. The scarcity of information on this topic, coupled with the surmounting evidence on the importance of physical activity for everyone, namely individuals with disabilities, should serve as a catalyst for further, more extensive research. Ideally future research will result in a more inclusive body of

knowledge, improved tools for measuring physical activity among individuals with disabilities, new and effective intervention programs for increasing physical activity levels, and a plausible method for removing the barriers facing those with disabilities. Every step made towards increasing physical activity participation among individuals, especially youth with disabilities, is a step away from the disparities experienced by the debilitating prevalence of limited physical activity, and a leap in the right direction.

APPENDICES

Appendix A

Letter of Support

January 15, 2008

Katie Felton

Department of Parks, Recreation and Tourism Management

Clemson University

263 Lehotsky Hall

Clemson, South Carolina 29634

Dear Katie:

We are glad you have chosen our Camp Sunshine campers for your proposed graduate study. We understand that you will be examining the physical activities in which our campers participate outside of Camp Sunshine. We are particularly interested in this research study as it will give us insight into how we can provide additional opportunities for our campers based on their activity levels.

As we discussed, the Outdoor Lab is in support of having our Camp Sunshine campers participate in the proposed study with the understanding that the findings will be shared with our organization upon its completion.

Sincerely,

Leslie Conrad

Associate Director/Camp Director

Clemson University Outdoor Lab

Appendix B

IRB

Approval



March 13, 2008

Dr. Francis McGuire
Department of Parks, Recreation
and Tourism Management
282B Lehotsky Hall
Clemson University
Clemson, SC 29634-0735

SUBJECT: Human Subjects Protocol # **IRB2008-012**, entitled "**Physical Activity among Camp Sunshine Campers**"

Dear Dr. McGuire:

The Institutional Review Board (IRB) of Clemson University reviewed the above-mentioned study using Expedited review procedures and has recommended approval. **Approval for this study has been granted as of March 13, 2008.**

Your approval period is **March 13, 2008 to March 12, 2009**. Your next continuing review is scheduled for January 2009. Please refer to the IRB number and title in communication regarding this study. Attached are handouts regarding the Principal and Co-Investigators' responsibilities in the conduct of human research. The Co-Investigator responsibilities handout should be distributed to all members of the research team.

No change in this approved research protocol can be initiated without the IRB's approval. This includes any proposed revisions or amendments to the protocol or consent form. Any unanticipated problems involving risk to subjects, any complications, and/or any adverse events must be reported to the Office of Research Compliance immediately. Please contact the office if your study has terminated or been completed before the identified review date.

We appreciate your assistance in complying with federal regulations and institutional policies. You may contact the Office of Research Compliance at 656-6460 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Laura A. Moll".

Laura A. Moll, M.A., CIP
IRB Administrator



OFFICE OF RESEARCH COMPLIANCE

223 Brackett Hall Box 345704 Clemson, SC 29634-5704 864.656.1525 FAX 864.656.4475 www.clemson.edu/research
Institutional Animal Care and Use Committee: 864.656.4538 Institutional Biosafety Committee: 864.656.0118 Institutional Review Board: 864.656.6460

Appendix C

Informational Letter

Information Concerning Participation in a Research Study Clemson University

Physical Activity Survey

Description of the research and your participation

You are invited to participate in a research study conducted by Dr. Fran McGuire and Katie Felton. The purpose of this research is to gather information on the physical activity in which Camp Sunshine campers typically participate outside of Camp Sunshine.

Your participation will involve filling out a brief survey about your camper and the physical activities in which your camper usually participates outside of camp.

The amount of time required for your participation will be less than ten minutes.

Risks and discomforts

There are no known risks associated with this research.

Potential benefits

By participating in this study the information you provide can help the Camp Sunshine staff to provide a more rewarding camp experience, and help local schools, healthcare services, and other organizations provide better services for our Camp Sunshine campers.

Protection of confidentiality

No information that could be used to identify you or your child as a parent/guardian or camper will be collected in this study. The data collected will be included in a written thesis, and the trends found will be known by the administrators of Camp Sunshine and any organizations with which they see fit to share these discovered trends.

In rare cases, a research study will be evaluated by an oversight agency, such as the Clemson University Institutional Review Board or the federal Office for Human Research Protections, that would require that we share the information we collect from you. If this happens, the information would only be used to determine if we conducted this study properly and adequately protected your rights as a participant.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

This form is valid only if the
Clemson University IRB
Stamp of approval is shown here:

CLEMSON UNIVERSITY IRB CONSENT FORM
APPROVED <u>3/13/08</u>
EXPIRES <u>3/12/09</u>

Contact information

If you have any questions or concerns about this study, or if any problems arise, please contact Dr. Fran McGuire at Clemson University at 864-656-2183. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Institutional Review Board at 864-656-6460, toll free at 1-866-297-3071, or via email at lmoll@clemson.edu.

This form is valid only if the
Clemson University IRB
Stamp of approval is shown here:

CLEMSON UNIVERSITY IRB CONSENT FORM
APPROVED <u>3/13/08</u>
EXPIRES <u>3/12/09</u>

Appendix D

Physical Activity Questionnaire

Physical Activity Survey Adapted from Fels Physical Activity Questionnaire

Please list the county in which you and your camper live: _____

Camper's age: _____

(Please circle)

Camper's gender: Male Female

Does your camper attend school? Yes No _____

Is this school public, private, home-schooling or other, please explain.

Please describe your camper's level of physical limitation on a scale of 1 to 5.

1	2	3	4	5
None	Mild	Moderate	somewhat severe	Severe

How often does your camper use a wheelchair?

1	2	3	4	5
---	---	---	---	---

Never Seldom Sometimes Often Very often

- *The next four questions pertain to you as the parent or guardian.*

Are you aware of the current levels of physical activity recommended by the Center for Disease Control and Prevention for children to participate in each day?

Yes No Don't Know

Are you aware of the current levels of physical activity recommended by the Center for Disease Control and Prevention and the American College of Sports Medicine for adults your age to participate in each week?

Yes No Don't Know

Where did you learn about these current physical activity recommendations?

Please explain _____

Do you abide by these physical activity recommendations for yourself each week?

Yes No Don't Know

These questions pertain to the camper.

1. In the last year, what sports or physically active games did your camper play in school? Please use the line following the word “in” to list the class or program at school through which the camper participated in the activity.

	regularly		often		sometimes
My camper played _____	3		2		1
in _____					

	regularly		often		sometimes
My camper played _____	3		2		1
in _____					

	regularly		often		sometimes
My camper played _____	3		2		1
in _____					

	regularly		often		sometimes
My camper played _____	3		2		1
in _____					

	regularly		often		sometimes
My camper played _____	3		2		1
in _____					

	regularly		often		sometimes
My camper played _____	3		2		1

in _____

	regularly	often	sometimes
My camper played _____	3	2	1
in _____			

2. In the last year, what sports or physically active games did your camper play outside of school? Please use the line following the “@” symbol to list where or through what organization your camper participated in the activity.

	regularly	often	sometimes
My camper played _____@_____	3	2	1
	regularly	often	sometimes
My camper played _____@_____	3	2	1
	regularly	often	sometimes
My camper played _____@_____	3	2	1
	regularly	often	sometimes
My camper played _____@_____	3	2	1
	regularly	often	sometimes
My camper played _____@_____	3	2	1
	regularly	often	sometimes
My camper played _____@_____	3	2	1

3. When my camper plays sports or games he/she sweats

very often	often	sometimes	seldom	never
5	4	3	2	1

4. During leisure time my camper plays sports or physically active games

very often	often	sometimes	seldom	never
5	4	3	2	1

5. During leisure time my camper watches television or reads

never	seldom	sometimes	often	very often
5	4	3	2	1

6. With what frequency does your camper walk and/or bicycle to and from school or work?

very often	often	sometimes	seldom	never
5	4	3	2	1

7. What chores does your camper do at home or work that are physically active and how often does he/she do them?

	regularly	often	sometimes
Chore_____	3	2	1

	regularly	often	sometimes
Chore_____	3	2	1

	regularly	often	sometimes
Chore_____	3	2	1

	regularly	often	sometimes
Chore_____	3	2	1

	regularly	often	sometimes
Chore_____	3	2	1

	regularly	often	sometimes
Chore_____	3	2	1

	regularly	often	sometimes
Chore_____	3	2	1

8. When my camper does chores he/she sweats

never	seldom	sometimes	often	very often
1	2	3	4	5

Appendix E

Questionnaire Scoring Formula

Calculations for Scoring of the FELS PAQ:

Sports index = summarized scores of questions 1–3 (in Likert scales)

Note: Scores of questions 1 and 2 = sum of (intensity x frequency) for all activities.

There are three levels of intensities for the sports:

1. Low-level sports (METs < 4.5) such as biking, dog walking, and bowling. Intensity = 0.76

2. Medium-level sports ($4.5 \leq \text{METs} \leq 7.9$), such as aerobics, jogging, basketball, and skateboarding.

Intensity = 1.26

3. High-level sports (METs ≥ 8.0), such as running, football, and field hockey. Intensity = 1.76

For frequency, there are three levels: regularly (4.5), often (2.5), and sometimes (0.5).

This is then converted into a Likert

value based on the scale (0 (no sports listed) = 1; 0.01 – 4 = 2; 4 – 8 = 3; 8 – 12 = 4; and >12 = 5))

Score of question 3 = the value under the frequencies (e.g., very often (5), often (4),

sometimes (3), seldom (2), and

never (1))

Leisure index = mean score of questions 4 and 6

Note: Scores of 4 and 6 each = the value under the frequencies (e.g., very often (5), often (4), sometimes (3), seldom (2), and never (1))

Work (chore) index = mean scores of questions 7 and 8

There are three levels of intensities for the chores (question 7):

1. Low-level chores (METs <3), such as cleaning kitchen, carrying laundry baskets, watering flowers, feeding pets, picking up trash. Intensity = 0.76
2. Middle-level chores ($3 \leq \text{METs} \leq 4.9$), such as cleaning bathroom, carrying food bags, weeding garden, walking large animals, sweeping, picking up sticks. Intensity = 1.26
3. High-level chores (METs ≥ 5.0), such as cleaning barn, mowing lawn, heavy lifting. Intensity = 1.76

Note: Score of question 7 = sum of (intensity x frequency) for all chores. There are three levels of frequency: regularly

(4.5), often (2.5), and sometimes (0.5). This is then converted into a Likert value based on the scale (0 (no sports listed) = 1; 0.01 – 4 = 2; 4 – 8 = 3; 8 – 12 = 4; and >12 = 5)

Total Physical Activity score = sport index + leisure index + work index

Example

Sport

Q1. Basketball sometimes $1.26 \times 0.5 = 0.63$

Baseball often $1.26 \times 2.5 = 3.15$

Football regularly $1.76 \times 4.5 = 7.92$

Kickball sometimes $1.26 \times 0.5 = 0.63$

$0.63 + 3.15 + 7.92 + 0.63 = 12.33$ (after conversion to Likert value) = 5

Q2. Football regularly $1.76 \times 4.5 = 7.92$

Baseball sometimes $1.26 \times 0.5 = 0.63$

Basketball often $1.26 \times 2.5 = 3.15$

Kickball sometimes $1.26 \times 0.5 = 0.63$

$7.92 + 0.63 + 3.15 + 0.63 = 12.33$ (after conversion to Likert value) = 5

Q3. Sweat often = 4

Sport index = $(5 + 5 + 4)/3 = 4.7$

Leisure

Q4. Leisure sport seldom = 2

Q6. School walk very often = 5

Leisure index = $(2 + 5)/2 = 3.5$

Work

Q7. Sweep often $1.26 \times 2.5 = 3.15$

Pick up trash regularly $0.76 \times 4.5 = 3.42$

Pick up sticks often $1.26 \times 2.5 = 3.15$

Cut weeds sometimes $1.26 \times 0.5 = 0.63$

$3.15 + 3.42 + 3.15 + 0.63 = 10.35$ (after conversion to Likert value) = 4

Q8. Chore sweat sometimes = 3

Work index = $(4 + 3)/2 = 3.5$

$$\text{Total score} = \text{sport} + \text{leisure} + \text{work} = 4.7 + 3.5 + 3.5 = 11.7$$

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