

YOUTH ADAPTED SPORTS CAMP

THE IMPACT OF YOUTH ADAPTIVE SPORTS CAMPS

by

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DISSERTATION

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ABSTRACT

The Impact of Youth Adaptive Sports Camps

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Individuals with disability are less physically fit and less likely to participate in physical activity than their able bodied peers. However, strong, positive relationships have consistently been found between physical activity and a person's health and well-being. The purpose of this study was to investigate the impact of an adaptive sports camp for youth on their physical body, health quality of life and overall quality of life using the World Health Organization's International Classification of Functioning for health and disability, Children and Youth Version. This model contains multidimensional factors of body function, activity, participation, environment, and personal factors that contribute to an individual's level of functioning. The current study used a longitudinal, mixed method design to investigate the impact of adapted sports camps on youth. Baseline, end of camp, and one month post-camp measures of physical activity, physical self-perception, health quality of life, well-being, pain, and affect were completed by 32 participants attending a 3-day wheelchair basketball camp at the University of Texas at Arlington. Focus groups were also conducted to investigate expected benefits of participating in the camp. Health quality of life measures increased over the course of the camp,

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in spite of trending increases in pain and somatic symptoms. Additionally, campers' well-being and physical self-perceptions were similar to able-bodied peers and higher than expected based on their level of disability. Campers had high future goals for themselves, expecting to participate in wheelchair basketball at college and Paralympic levels. Their stated benefits of camp were to improve basketball skills, increase functionality, and participate in a supportive community of peers and adults. Overall, the adapted sports camp was shown to offer many benefits to youth, and provided avenues of further investigation for understanding physical activity within youth with disabilities.

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DEDICATION

I dedicate this dissertation to my family. To my husband, Mark, who supported and encouraged me through all ups and downs and craziness of attempting grad school while raising a family. To Rachel, Micah, and Isaac, who don't even remember a life before mom had homework too. I dedicate this to my God, without whom I would not have breath. I love you all.

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CHAPTER 1

Introduction

Adapted sports programs are growing in popularity across the country. An adapted sport, defined by Lundberg, Taniguchi, McCormick, and Tibbs (2011) is “any modification of a given sport or recreation activity to accommodate the varying ability levels of an individual with a disability” (p. 206). Many sports have been adapted for individuals with various disabilities from horseback riding, and water skiing, to wheelchair soccer, and cricket for visually impaired people. Wheelchair basketball has become especially popular, with programs in 35 states (McNiven, 2015). While the popularity of adapted sports programs is growing, there is still a large gap in the research that has been conducted on the impact of these sports in youth who have disabilities. Researchers have described it as a scarcity, paucity, lack, or dearth, and Ian Brittain (2016), even went so far as to claim that, for now, we can assume that individuals with disabilities receive the same benefits from sports as do able-bodied persons.

The purpose of this study was to contribute to the knowledge of the benefits of sports on youth living with disability, specifically in the context of an adapted sports camp. We expected to gain an understanding of the types of individuals who attended such camps and what benefits they expected to attain. We also expected that campers would finish the camp with higher self-reported quality of life, health quality of life and physical self-perceptions than when they began the camp, with intentions to continue a higher level of physical activity after the conclusion of the camp. We also believed that participating in the camp would lead to changes in mood and decreased levels of pain throughout the course of the week. Combined, these factors would contribute to a highly positive impact of adaptive sports camps on youth with disabilities.

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Disability and Physical Activity

The holistic approach of the biopsychosocial model of health (Engel, 1977) has improved our understanding and informed our approach to dealing with many physical and psychological diseases by looking at the complex interactions of the biological, social, emotional, cognitive and environmental states of an individual. The World Health Organization (WHO) has adopted this approach in looking at health and disability, defining health in its constitution as "... a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (2018). Disability is alternately defined as "an umbrella term for impairments, activity limitations and participation restrictions" (WHO, 2002, p. 3). So while it is important to look at the biological perspective of health and disability, it is equally important to understand the psychological and social factors as well. The WHO attempts to understand these factors through the model of Disability and Health – Child and Youth Version (WHO, 2007), which breaks down the biopsychosocial components of a health condition in order to study how the factors work together to affect overall functioning in disability and health.

Research has established the health benefits of physical activity to the point that the Centers for Disease Control and Prevention (CDC) lists regular physical activity as "one of the most important things you can do for your health" (2018). Physical activity has been shown to reduce risk of obesity, coronary heart disease, hypertension, cancer, osteoporosis, stroke in women, diabetes, depression, mood disorders, dementia, & Alzheimer's disease (Penedo & Dahn, 2005; Reiner, Niermann, Jekauc, & Woll, 2013; Warburton, Nicol, & Bredin, 2006). For individuals with chronic pain, studies have shown both long term and short term decreases in central and peripheral pain sensitivity following aerobic exercise training in adults (Søgaard et al, 2012, Søgaard, K & Søgaard, G, 2017) as well as children (Sherry, D.D., Wallace, C.A., Kelley,

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C., Kidder, M., & Sapp, L., 1999). Similar benefits have also been seen in youth, with reductions seen in blood pressure, obesity, depression, anxiety, and an increase in bone density, cardiorespiratory fitness, muscular strength, and self-esteem (Ekeland, Heian, & Hagen, 2005; Janssen & LeBlanc, 2010; US Department of Health, 2008).

The literature becomes more limited when investigating benefits of physical activity on individuals with disabilities. The US Department of Health and Human Services considers this an understudied population for physical activities (US Department of Health, 2008). In spite of the limited number of studies, support was seen for significant increases in cardiorespiratory fitness, muscle strength, self-esteem, sleep quality, and quality of life. Reductions were seen in depression, overall pain, and fatigue (US Department of Health, 2008). These benefits were seen in all types of physical activity with a recent review of the literature confirming many of these results (US Department of Health, 2018). However, individuals with disability are less physically fit and less likely to engage in physical activities than individuals without disability (Johnson, 2009), and 56% of the population participate in no leisure-time physical activity, compared to 36% of the population without disability (US Department of Health, 2008).

Children and youth with disability often have fewer opportunities than their normally developing counterparts to engage in physical activity (King, Shields, Imms, Black & Ardern, 2013). Studies have found that they become frustrated participating in activities in which they were not able to succeed, such as playing tag in an integrated ability group, and when the facilities were not adapted to their needs, creating a sense of isolation, boredom and failure (Dahan-Oliel, Shikako-Thomas, & Majnemer, 2012). However, participation in adapted activities, especially with peers, contributed to a sense of pride and increased self-confidence in their identity (Becker & Dusing, 2010), increasing their perception of the disability as something

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positive. (Shikako-Thomas et al, 2009). Participating in physical activity also helped to increase their sense of autonomy and independence (Verschuren, 2007).

Adapted Sport

Sports may be a way for youth with neuromuscular disabilities to gain the full biopsychosocial benefits of physical activity. Sports offer healthy competition and social interaction, requiring an individual to problem solve, work with peers toward a goal, and learn new skills. While the area of disability sport is, “seriously a under researched area with a dearth of academic material” (Brittain, 2016, p. 1), improvements have been made during the past decade and research involving able-bodied youth and sports can often be applied to those with disability. Researchers have found positive relationships in able-bodied individuals between youth sports and physical, cognitive, emotional, relational and life skills development (Camire, Trudel, & Forneris, 2009; Gould & Carson, 2008; Larson, Hansen, & Moneta, 2006).

Similarly, youth who participated in adaptive sports have been shown to perceive their quality of life and self-concept at levels similar to able bodied peers (Sahlin & Lexell, 2015) and higher than peers with disability who did not participate in sport (Cote-Leclerc et al, 2017; Yazicioglu, Yavuz, Goktepe, & Tan, 2012). Youth who participated in sport at least twice a week have shown better health related quality of life and self-perception than those who did not (te Velde, Lankhorst, Zwinkels, Verschuren, Takken, & de Groot, 2018) Youth who participated in wheelchair basketball maintained a positive relationship between positive affect and better peer relations (Shapiro & Martin, 2010). Youth with cerebral palsy reported higher quality of life, greater mobility, and decreased levels of pain among youth with higher levels of functioning after one year of adaptive swimming or soccer. (Feitosa, Muzzolon, Rodrigues, de Souza Crippa & Zonta, 2017). Individuals competing at the cerebral palsy world championships indicated that

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adapted sport improved their quality of life and overall health, (Groff, Lundberg & Zabriskie, 2009), and youth with multiple disabilities and varying levels of functioning, who participated in an alpine skiing or horseback riding community program reported higher quality of life (Zabriskie, Lundberg & Groff, 2005).

Camps

Summer camps are designed to offer individuals a chance to get away, have new experiences or learn new skills. Camps designed specifically for individuals with disabilities usually carry the additional goal of creating an environment in which the camper comes to perceive their disability in a more positive light (Briery & Rabian, 1999). Camps offer the chance to gain independence, to learn new skills from their peers and their adult leaders, and to participate in a community where functioning with a disability is normal (Goodwin & Staples, 2005). The social comparison in a group of peers with similar disabilities relates to improved physical self-perception in youth (Meltzer & Rourke, 2010). Research at a summer camp for youth with asthma showed benefits in camper's knowledge and attitude about their condition and confidence in self-care (Nicholas, Williams, & MacLusky, 2009). Social acceptance and health quality of life have been shown to increase during a camp designed for hearing impaired children (Devine, Piatt, & Dawson, 2015). Camp participation also led to better perceptions of health in children with congenital heart disease (Moons et al, 2006). In a qualitative study of youth with vision impairments, researchers found that students valued opportunities to increase their independence and try new things, with social interaction of older campers playing an important role (Goodwin, Lieberman, Johnston, & Leo, 2011). These biopsychosocial benefits that have been seen in adaptive sports and disease specific camps can work together to increase functioning and decrease the perception of disability in an individual.

WHO Model of Functioning, Disability and Health

The WHO has adopted the International Classification of Functioning, Disability and Health – Child and Youth Version (ICF) model (WHO, 2007) to document biopsychosocial characteristics that contribute to levels of functioning within a health condition.

As seen in Figure 1, this model is separated into two levels: (a) components of functioning and disability and (b) contextual factors (WHO, 2007). The components of functioning and disability include body functions and structures, activities, and participation. Body function includes the physiological and psychological systems of the body while body structure includes anatomical structures relating to the function or impairment of that system (WHO, 2007). This factor would include cognition and pain processing. The factor of activity is defined by “the execution of a task or action by an individual” (WHO, 2007, p. 9). This factor would include mobility and daily life activities, such as self-care or chores. The factor of participation, though closely aligned with activity, can be distinguished by participation within society. These are activities that have a community or relational component (Jette, 2006).

The second level of the ICF contains environmental and personal factors. Environmental factors “make up the physical, social and attitudinal environment in which people live and conduct their lives” (WHO, 2007, p. 9). These environmental factors may include technology, climate, type of living environment, services, government policies, attitudes of others, and support given through relationships. Personal factors constitute those internal individual factors that may change functioning or how an individual perceives their own health condition. Personal factors are less standardized by the WHO than any of the other domains, but may include gender, habits, age, race, coping styles, upbringing, self-perception, or personality (WHO, 2007; Geyh et al, 2011). The levels of functioning in each of these domains interact to change the overall

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experience of disability or functioning in an individual. The ICF-CY serves as a guide for the design of the proposed study.

The Purpose of this Study

The purpose of this study was to investigate the impact of an adaptive sports camp for youth on their physical body, health quality of life and overall quality of life. Each measure used falls within a component of the ICF model of health and disability and was expected to result in an overall increase of functioning within the camper's health condition. See Figure 2 for a breakdown of how the outcome measures interacted within the model.

Specific Aims and Hypotheses

Aim 1

The first aim was to gain a thorough understanding of who attends adapted sports camps and the benefits that they hope to receive. This was accomplished by looking at the descriptive statistics of the demographics, motivation, pain, current physical activity levels, barriers to physical activity, and qualitative data from the focus groups

Hypothesis 1. The campers would naturally divide into at least two distinct functioning levels, with those who were functioning at a higher level participating in more physical activity prior to the camp experience.

Hypothesis 2. Qualitative data from the focus groups were expected to identify distinct themes related to benefits of an adapted sports camp. Themes of independence, greater levels of functioning, new skills, and improvements in physical self-perception were expected to emerge.

Aim 2

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The second aim was to understand how attending the camp impacted the ICF model elements of perceptions of quality of life, health quality of life, and physical self-perception from the beginning of the camp through the end of camp.

Hypothesis 3. It was expected that overall perceptions of physical self, health and quality of life would improve from the beginning of camp (baseline) to the end of camp assessments, regardless of initial assessments of baseline activity.

Hypothesis 4. While we expected to see improvements in end of camp assessments regardless of initial assessments of baseline physical activity, the largest improvements were expected to be in the group with the lowest initial assessment of baseline activity.

Aim 3

The third aim compared levels of mood and somatic symptoms over the course of the camp.

Hypothesis 5. It was expected that positive mood would increase while negative mood and somatic symptoms would decrease over the course of the camp.

Aim 4

The fourth aim was to investigate the progression of campers' health quality of life, pain, and physical activity from the beginning of camp through one month post-camp.

Hypothesis 6. It was expected that health quality of life would be improved from the beginning of camp through one month post-camp and that both end of camp physical activity intentions and one month post-camp physical activity levels would be higher than baseline physical activity levels. These increases were expected regardless of initial assessment of baseline activity; however, participants with the lowest baseline physical activity were expected to see the greatest increases over time.

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Hypothesis 7. It was expected that pain intensity and chronic pain grade classification would improve from the beginning of camp through one month post-camp.

Aim 5

The fifth aim was exploratory in nature and examined how the different measures related to each other within the ICF model.

Hypothesis 8. It was expected that the activity factor would have stronger relationships with the other model factors than would any of the other factors in the model would be related to each other.

CHAPTER 2

Methods

Design

This study was a mixed methods design. It utilized both qualitative data from focus groups and quantitative data in a repeated measure, pre-post design to investigate potential benefits of an adaptive sports camp on young people with disabilities. The qualitative exploration was a discussion of motivations and expectations regarding the camp experience. The quantitative outcome measures assessed were physical activity, physical self-perception, health quality of life, overall quality of life, pain, and mood.

Participants

The participants were campers between the ages of 12 and 32, with a mean age of 16 years old, recruited out of two wheelchair basketball camps at University of Texas at Arlington during the summer of 2018. The camp was designed as an overnight wheelchair basketball camp. These camps were a 4 day, 3 night experience, offering basketball skills training for young people who require adapted sports. The first camp, July 29 – August 1, 2018, was an all-girls camp. The second camp, August 1 – 5, 2018, was a coed camp. Parental consent and camper assent for campers under the age of 18 were obtained prior to and upon arrival at the camp. Participant consent was obtained for campers 18 and above. The participants were not compensated. Campers were assessed on quality of life and physical self-perception at the beginning of camp and the end of camp. They were assessed on health quality of life, pain, and physical activity levels (or intentions) at the beginning of camp, the end of camp, and 30 days

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post-camp. They provided a self-report of mood and somatic symptoms daily during camp. They also participated in a short focus group regarding their expected benefits of camp.

Recruiting from a pool of 59 potential participants, 31 and 28 from the first and second camps, respectively, thirty four participants consented to participate in the study, 21 from the first and 13 from the second camp. Two participants from the first camp removed themselves from the study due to illness and time constraints from an online summer school course, leaving 32 participants for the beginning and end of camp quantitative measures, a 6% attrition rate for hypotheses investigating Aims 2 and 3. Many campers traveled long distances to attend the camp. Only 8 campers were local, within one hour of the university. An additional 9 campers were from the State of Texas, with travel distances from 3 to 10 hours. The remaining 15 campers were from outside of the state, representing 10 different states and Canada. Post-camp participants consisted of 21 individuals who completed an online qualtrics survey one month after the end of camp, a 35% attrition for Aim 4 hypotheses. Qualitative data were collected from 27 campers in 5 focus groups held during the camp. The focus groups consisted of 4-6 campers and were divided by age and gender. Three female groups were split into two groups of 13-15-year old campers and one group of 16-17-old campers. Two male groups were divided along the ages of 14-16 and 16-21. An a priori power analysis suggested that 52 participants were needed to obtain a power of .80 and an α error probability of .05, which indicates that our current study was underpowered. See Table 1 for camper demographics.

Recruitment

When a youth under the age of 18 registered for the camp, the parent was sent a packet of camp information. For registered campers over the age of 18, the packet was directly addressed

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to them. Within that packet a letter informed them that research was going to be conducted at the camp and further information would be forwarded to them.

The camper or the camper's parents then received a separate letter describing the research, with adult consent forms and youth assent forms. This included a self-addressed, stamped envelope in which to return the forms. They were also allowed to return the forms upon arrival at the camp. The parents received a follow-up phone call from study personnel to answer any questions. Study personnel were also on-site as campers arrived, to inform them of the study and invite them to participate. The camper and their parents received full disclosure regarding the purpose of the study.

Procedure

The camp was designed as an overnight wheelchair basketball camp. All participants required adaptation to play basketball, most of the campers used a wheelchair as their primary form of mobility.

The daily camp schedule included meals and an overnight stay in the dorms with fellow campers. Each day from 9am – 12pm the campers had individual skills sessions. From 2pm – 5pm the campers had small group skill sessions. In the evening, from 7pm – 9pm, the campers participated in scrimmage matches that culminated in a tournament on the final night of camp.

Before camp activities began, participants were asked to complete baseline assessments of general information, Physical Activity Scale for Individuals with Disabilities, Youth Quality of Life, World Health Organization Disability Assessment Schedule for Children, Physical Self-Perception Profile – Child and Youth, and the Chronic Pain Grading Scale. The assessments were given in person with paper and a pencil. Immediately after checking in to camp, participants were led to a quiet area to complete the assessments. A research associate

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remained nearby to answer any questions the camper may have had about completing the assessment.

During the course of the camp, small focus groups were conducted to gather qualitative data. These groups consisted of 4-6 participants and were conducted during break times. They lasted approximately 30 minutes. Each full day of the camp, following lunch, the participants completed the Positive and Negative Affect Scale for Children and Children's Somatization Inventory.

After dinner the last full day of camp, immediately before the last activity, the participants again completed the Youth Quality of Life and Physical Self-Perception scales. They also complete the modified Physical Activity Scale for Individuals with Disabilities, with modifications so that the questions were not about their actual physical activity in the previous month, but their intentions toward physical activity in the coming week, and the World Health Organization Disability Assessment Schedule for Children, modified to reflect their 3 days at camp as opposed to the past 30 days.

One month post-camp, participants received an email requesting that they complete the Physical Activity Scale for Individuals with Disabilities, the World Health Organization Disability Assessment Schedule for Children, and the Chronic Pain Grading Scale. These assessments were completed online, using Qualtrics Survey Software.

Measures

Descriptive Information

Descriptive questions helped characterize who attended the adapted sports camp. These questions included information about their age, gender, wheelchair basketball experience,

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motivation, barriers to activity, and general information regarding their disability (see Appendix A).

World Health Organization Disability Assessment Schedule –Child (WHODAS-C)

The World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) is a 36 item self-administered assessment of health quality of life (HQoL) as measured over the past 30 days. It is designed for adults and is modeled after the International Classification of Functioning, Disability and Health which considers multiple aspects of a person's life (such as development, activity, and environment) rather than only focusing on the diagnosis. (Federici, Bracalenti, Meloni, & Luciano, 2016). The WHODAS 2.0 has shown a high overall reliability, with Cronbach alpha levels of 0.98 (Ustun, Kostanjsek, & Rehm, 2010). The WHODAS 2.0 has been used to measure disability in children as young as 12 (Federici & Meloni, 2010; Hu, Zang, & Li, 2012; Statistics Canada, 2013) and confirmatory factor analysis has shown measurement invariance between adult and youth in a large study in Canada (Kimber, 2015). The current study had a lower reliability of $\alpha = 0.62$ with acceptable test-retest correlations ($r = 0.57, p = .005$).

A version specific to children, the World Health Organization Disability Assessment Schedule for Children (WHODAS-C), has been adapted by the Diagnostic and Statistical Manual of Mental Disorders Version 5 (DSM-5) Impairment/Disability workgroup (Canino, Fisher, Alegria, & Bird, 2013; Scorza et al, 2013; & von Korff et al, 2008). This version uses the same structure as the WHODAS 2.0, modified for comprehension so that a child as young as 11 years old can self-report (see Appendix B).

The WHODAS-C assesses functioning along six different domains and offers an overall global disability score. The domains involve cognition, mobility, self-care, getting along with

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others, participation in society, and life activities (Ustun, Kostanjsek, & Rehm, 2010) and are coded on a scale of 1-5, with 1 representing “none” and 5 representing “extreme/cannot do”. For example, the level of difficulty involved in getting up from a sitting position could be 1, which would endorse no difficulty. As no standard scoring has been set for the WHODAS-C (Scorza et al, 2013), scoring methods provided for the WHODAS 2.0 were used. The simple scoring is highly correlated with the weighted scoring for the WHODAS 2.0 (vonKorff et al, 2008) and domain weights are not yet validated in an adolescent sample, so the choice was made to utilize simple scoring instructions provided by the WHO (2019). The simple sum of the score for each domain was divided by the maximum possible domain score to create a percentage in which 0 stood for no disability along that domain and 100 equals full disability. An overall HQoL score was found using an average percent score of included domains. To ease comparisons among other study variables, in which a larger number is equivalent to greater functioning, the scores of the overall HQoL and the individual subdomains were inverted so that 0 stands for full disability, or no functioning, and 100 stands for no disability, or full functionality, in that specific domain. In this study, two different variables for overall HQoL were computed. The subdomain of life activities, which focuses on helping out at home and success at school, was not assessed at the end of camp and the subdomain of participation in society was not assessed one month post-camp. The end of camp overall HQoL, for the comparison of baseline to end of camp, was the average percent score of cognitive HQoL, mobility HQoL, self-care HQoL, getting along with each other HQoL, and participation in society HQoL. The overall HQoL, which compared all three time points, was the average percent score of cognitive HQoL, mobility HQoL, self-care HQoL, and getting along with each other HQoL.

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This instrument was modified for the end of camp assessment to reflect functioning during their time at the camp (see Appendix C).

Physical Activity Scale for Individuals with Physical Disabilities (PASIPD)

The PASIPD is a self-report scale developed using the Physical Activity Scale for the Elderly (PASE), modifying it for specific use with individuals with physical disabilities (Washburn, Zhu, McAuley, Frogle, & Figoni, 2002). This is a 13-item self-report test of recalled physical activity over the past 7 days developed to evaluate the domains of light-moderate sport/recreation, vigorous sport/recreation, housework, home repairs, and occupation/transportation. The questions relate to how often an activity has been completed in the past week. This PASIPD scale has shown a test-retest correlation of 0.77. This correlation is comparable to other physical activity measures (van der Ploeg et al, 2007). It has internal consistency in those with spinal cord injury of $\alpha = 0.63$ (de Groot, van der Woude, Niezen, Smit, & Post, 2010). It has also shown ability to differentiate between those who consider themselves very active and those who are not at all active (Washburn et al, 2002). This study focused on the sport/recreation subscales, and asked only questions #1-6 of the PASIPD. These questions refer to a participant's leisure time activities (LTA) and are based on a weighted scoring that calculates the number of metabolic equivalents (METs) to determine the intensity of physical activity. Light sport/recreation activities might include bowling, billiards or pool, fishing or hunting. Moderate sport/recreation activities are softball, doubles tennis, or wheeling for pleasure (not exercise). Strenuous activities are wheelchair racing, swimming, arm cranking, and basketball. Activities specifically for muscle strength and endurance were considered pull-ups, dips, or lifting weights. The range of possible METs for total LTA is 0 - 59.32 with a higher score reflecting participation in more strenuous activities across more days for longer periods of

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time. Internal consistencies of $\alpha = 0.48$ & 0.65 have been found in the sport/recreation subscale for light to moderate sport/recreation and vigorous sport/recreation, respectively (Washburn et al, 2002). The current study found reliabilities of light to moderate sport/recreation and vigorous subscales of $\alpha = 0.68$ and 0.62 . Study test-retest correlations were acceptable, $r = 0.68$ ($p = .001$) and $r = 0.63$ ($p = .004$), respectively.

This test was given at three times. The first, before camp and the third, one month post-camp assessed actual recalled activity over the past week (see Appendix D). For the second administration, at the end of camp, the questions were modified to reflect the camper's intention to participate in the physical activity items over the next week (see Appendix E).

Youth Quality of Life Instrument – Short Form (YQOL-SF) Version 2.0

Quality of life, defined by the WHO, is an “individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns” (2008). The YQOL – SF (see Appendix F) is an instrument designed to assess the perception of youth in each of these domains. The subscales involve perception of self, relationships, and environment. The self-subscale contains statements such as, “I am pleased with how I look” and “I am able to do most things as well as I want.” Relationship statements include “I am happy with the friends I have” and “I feel understood by my parents or guardians.” Environment assesses statements such as “I feel my life is full of interesting things to do” or “I feel safe when I am at home.” The overall youth quality of life (YQoL) represents the mean of these three domains as well as the score of a one question general domain, “I am satisfied with the way my life is now.” The scale is a 15-item self-report instrument. The items are answers on a Likert-type scale with 11 values (0-10) and have verbal anchors, “not at all” and “very much.” There are five questions for each subscale with one

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question needing to be reverse scored so that a higher score can be interpreted as a higher quality of life. The scores are transformed to a 0 to 100 point scale with 100 indicating higher quality of life within each subscale or overall. The instrument is designed to be understood at a 6th grade reading level and has shown test-retest reliability of 0.74 - 0.85 (Topolski et al, 2001), acceptable internal consistency ($\alpha = 0.77-0.96$) and discriminate validity with similar instruments (Patrick, Edwards, & Topolski, 2002). This measure was given twice, at the beginning and end of camp with high reliability, $\alpha = 0.87$ and test-retest correlations, $r = .93, p < .001$.

Physical Self- Perception Profile – Child and Youth Version (PSPP-CY)

The PSPP-CY was based on the Physical Self-Perception Profile (Fox & Corbin, 1989), a well-validated scale among adults, designed to measure physical self-concept. This measurement of physical self-concept looks at the global self-concept as well as the specific domains of sport competence, physical conditioning, body attractiveness, physical strength and physical self-worth. It was modified for youth (Whitehead, 1995) and has been validated for both youth and children (Eklund, Whitehead, Welk, 1997; Welk & Eklund, 2005) with strong factorial validity and internal reliability (α range: 0.77-0.91) and appropriate rest-retest correlations, $r = 0.73$ (Fox & Corbin, 1989; Welk et al., 1997). The current study maintained similar levels of overall scale reliability, $\alpha = 0.90$ and test-retest reliability levels, $r = 0.93, p < .001$.

This PSPP-CY has 36 forced-choice questions, with opposite versions of each choice that a child is instructed to endorse as “really true for me” or “sort of true for me.” Statements are phrased neutrally, “Some kids are proud of themselves physically but other kids don’t have as much to be proud of physically.” This design is employed to elicit a child’s self-perception while reducing the selection of a socially desirable answer (see Appendix G). The questions were then

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re-coded so that higher scores indicate more positive self-perceptions while lower scores indicate more negative self-perceptions. Overall PSPP was computed by calculating the mean of all 36 items. This instrument was administered to the participants at the beginning and end of camp.

Children's Somatization Inventory (CSI-24)

The CSI-24 is a self-report measure of how much a child was bothered by somatic symptoms over the past 2 weeks (Walker, Garber, & Greene, 1991). In the case of this study, the question was revised to ask how much the participant was bothered by the symptoms during the course of the day (see Appendix H). Symptoms range from feeling low in energy or slowed down, to sore muscles and headaches, to difficulty swallowing, vomiting, and blurred vision. It is a 24-item survey rated on a 5 point scale ranging from 0 "not at all" to 4 "a whole lot." Lower scores on the measure indicate lower somatic symptoms that a child experienced (Walker, Garber, & Greene, 1991). The Total CSI score is the sum of the scores from the scale with 0 as the minimum symptom distress and a score of 96 for the maximum.

This test has been validated in several countries and many clinical samples (Garber, Walker, & Zeman, 1991; Walker, Beck, Garber, & Lambert, 2009) and has good internal consistency ($\alpha = 0.92$). Construct validity is well correlated with functional disability and quality of life, $r = 0.63, p < .01$ and $r = -0.68, p < .01$, respectively (Lavigne, Saps, and Bryant, 2012). The psychometric properties have been evaluated in children aged 8-18 years (Walker, Beck, Garber, & Lambert, 2009). This measure was administered each full day of the camp, after lunch. Reliability remained high in this study, $\alpha = 0.85$, with a high test-retest correlation ($r = 0.84, p < .001$).

Positive and Negative Affect Schedule for Children (PANAS-C)

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The PANAS-C investigates how strongly a child endorses words that describe positive and negative affect (Laurent et al, 1999). The instrument was adapted from the Positive and Negative Affect Schedule (PANAS), an affect scale designed and validated for adults (Watson, Clark, & Tellegen, 1988). The PANAS-C consists of 20 words that describe different feelings and emotions. The positive affect adjectives include terms such as interested, alert, excited, happy, strong, and determined while the negative affect adjectives include terms such as of afraid, ashamed, irritable, and upset. The PANAS-C uses a Likert-type scale with answers ranging from 1 “very slightly or not at all” to 5 “extremely.”

Disability sport research has displayed adequate internal consistency for the PANAS-C with reported Cronbach alpha levels for the positive and negative affect scales among youth sport participants measured at 0.88 and a 0.79, respectively. Test-retest reliability was also acceptable ($r = .83, p < 0.05$) in youth wheelchair basketball athletes (Martin, 2008). In the current study, Cronbach levels were similar for positive affect, $\alpha = 0.65$ and lower for negative affect, $\alpha = 0.65$. Test-retest reliability for positive affect ($r = 0.88, p < .001$) and negative affect ($r = 0.63, p = .001$) were acceptable. Negative affect is computed as the mean of scores given to negative terms while positive affect is the mean of scores assigned to positive terms with 1 being least endorsed and 5 being the most endorsed. This scale was administered after lunch each full day at camp (see Appendix I).

Chronic Pain Grading Scale

The Chronic Pain Grading Scale (CPGS) is a self-report scale to measure pain intensity and overall pain-related disability (Von Korff, Ormel, Keefe, Dworkin, 1992). Cronbach’s alpha indicated an internal consistency of greater than 0.9 (Smith et al., 1997). This scale has been validated in children with chronic pain as young as 11 years old (Wager et al, 2013). Based on

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the World Health Organization's International Classification of Functioning, Health and Disability it is scored on an 11-point Likert scale with responses from 0-10. Three subscales of pain intensity, disability score, and disability points score are used together to classify subjects into five categories of pain related disability called the Chronic Pain Grade Classification (CPGC). A grade of 0 is given for pain intensity of 0 and disability points of 0. Grade I occurs when the pain intensity is less than 50 and disability points are less than 3. Grade II has the same disability points but a pain intensity of greater than 50. Grades III and IV look only at disability points, regardless of pain; 3 or 4 and 5 or 6, respectively. Therefore, CPGC takes into account both the pain intensity and the degree to which it interferes with an individual's daily life. In order to examine pain within the ICF model factor, body function, pain intensity was also explored as a separate variable. Test-retest correlations for this study were $r = 0.80$ ($p < .001$) and $r = 0.63$ ($p = .003$) for pain intensity and CPGC, respectively. This measure was administered to camp participants before camp activities begin, at the end of camp, and one month post-camp (see Appendix J).

Focus Group Questions

Focus group questions (see Appendix K) were developed based on a qualitative study of the motivations and aspirations of collegiate wheelchair basketball players (Bryant, 2015) and anecdotal evidence of what benefits players experienced during adaptive sport and disability specific camps (Goodwin et al, 2011; Dealwis, 2005). Focus groups consisted of 4-6 participants. The campers participated in the focus groups during free time the first full day of camp. The sessions lasted approximately 30 minutes and questions revolved around how they felt about the camp before they arrived. The campers were instructed that there were no right or wrong answers and anything they said, good or bad, would be kept confidential and not shared

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with the coaches or leaders during camp. The sessions were recorded to be transcribed and coded at a later time.

CHAPTER 3

Results

Data Screening

All variables were thoroughly screened for outliers, improbable, or missing data. Outliers and improbable data were again checked against original questionnaires for accuracy. Improbable data were coded as missing. Missing data were less than 5% for all variables and no consistent pattern was seen (T&F, 2001). Scoring of the Children's Somatization Inventory was based on the expectation of no missing data (Walker, Beck, Garber, & Lambert, 2009). The Inventory scales had 7 missing item data points (less than .01%) in a random pattern, so in order to score properly, case mean substitution was utilized (Fox-Wasylyshyn & El-Masri, 2005; Raymond, 1986; Roth, Switzer & Switzer, 1999) in which the mean of the individual's score on the Children's Somatization Inventory was used to replace the missing value.

Data were then assessed for normality using skewness and kurtosis values and a visual inspection of histograms and boxplots. Variables for activity HQoL, pain intensity, chronic pain grade scale, participation in society HQoL, and physical self-perception were normally distributed and required no transformations. Variables for total leisure time activity, children's somatization inventory, and negative affect were positively skewed. A square root transformation was applied to total leisure time activity and children's somatization inventory while a log10 transformation was applied to negative affect to reach normal distribution. The remaining variables were negatively skewed. Mobility HQoL and positive affect were squared to achieve normality. Cognitive HQoL, getting along with others HQoL, life activities HQoL, relationship youth quality of life, environment youth quality of life, self youth quality of life,

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total youth quality of life, end of camp HQoL and overall HQoL were scores were cubed in order to attain a normal distribution.

Demographics and study variables were assessed using a One-Way Analysis of Variance to determine if there were differences between study participants who continued the study to complete the one-month post camp survey and participants who completed assessments at the beginning and end of camp only. There were differences found in the physical self-perception measure, $F(1,30) = 5.54, p = 0.03$. Study participants who completed assessments at all-time points had higher levels of physical self-perception ($M = 2.90, SE = 0.12$) than participants who did not complete assessments 30 days post camp ($M = 2.40, SE = 0.18$). No other differences were seen in demographics and study variables.

Study Covariates

Covariates of gender, age, and baseline activity level were identified a priori as potential covariates. Gender and age differences have been found in participation of moderate to vigorous physical activity among young people (Belcher et al, 2010) and baseline physical activity levels were also likely to impact benefits of and changes due to an adaptive sports camp. However, in the current study, the covariates were not well correlated with the study variables. Given the low power of the study, the decision was made to not include covariates in the analysis, thereby increasing degrees of freedom. Demographic data were displayed in Table 1 with Descriptive data in Table 2.

Aim 1

Data Analysis

The first aim, which was to gain a thorough understanding of who attends adaptive sports camps and the benefits they hope to receive, was analyzed through both quantitative and qualitative data.

Hypothesis 1. In the first hypothesis, it was expected that campers would naturally divide into at least two distinct functioning levels, with those who were functioning at a higher level participating in more physical activity prior to the camp experience. These groups were assessed using a hierarchical cluster analysis. Variables used were baseline physical activity measures within the IFC Model function of activity; activity HQoL and total leisure time activity. Activity HQoL was computed as the average of the percent scores for the subdomains of mobility HQoL, self-care HQoL, and life activities HQoL. Total leisure time activity was the sum of average leisure time activity units over the course of the past month, as self-reported on the Physical Activity Scale for Individuals with Physical Disabilities. The two variables were z-scored and distributions were investigated.

A hierarchical agglomerative cluster analysis was first used to determine the most viable number of clusters using the Ward linkage method and squared Euclidian distance for measurement (Aldenderfer & Blashfeld, 1984; Ward, 1963). The resulting clusters were internally validated using a partitional (k-means) method to create a cluster profile using group means, followed up with a chi-square to determine if there were differences between the groups when two different methods were utilized. A silhouette analysis was also conducted to determine the distinctiveness of the clusters. A silhouette coefficient closer to 1 indicated that the cases were well within their assigned cluster and a coefficient closer to 0 implied that more

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cases fell somewhere between the clusters (Garcia, MacDonald, & Archer, 2015; Rousseeuw, 1987).

Hypothesis 2. For the second part of this first aim, the study utilized qualitative data obtained from focus groups. For Hypothesis 2, I expected to identify distinct themes related to benefits of an adapted sports camp, specifically themes of independence, greater levels of functioning, new skills, and improvements in physical self-perception.

Recordings from the focus groups were transcribed and coded using a 6-phase process outlined by Braun and Clark (2006). In the first phase, we became familiar with the data, listening to and transcribing the data, with repeated active readings of the transcriptions. Secondly, we began to generate initial codes, using NVivo software to begin organizing the codes. Our progression through the data was theory driven, with the ICF Model as a framework. In the third phase, we searched through the initial coded data for themes, which was where we began to see our hypothesized themes, as well as other themes, begin to emerge. The fourth step included a review of the themes to make sure they fit the data. Criteria for a theme was that it was coherent within its own group and distinct from other themes. In this step, new themes emerged and similar themes were combined. The fifth phase of defining and refining themes was to review the data and capture a conceptual understanding of each theme as well as to bring back data extracts from each theme and identifying any important sub-themes. The final step was to combine and report on the theme definitions, data extracts, and reflect a clear understanding of expectations and benefits of an adapted sport camp from the perspective of the camper.

Results

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Hypothesis 1. It was expected that the campers would naturally divide into at least two distinct functioning levels, with those who were functioning at a higher level participating in more physical activity prior to the camp experience. The z-scored variables of activity HQoL and total leisure time activity, measured at the beginning of camp, were investigated within the hierarchical cluster analysis. Upon examination of the agglomeration coefficients and cluster profiles, it was decided that a two cluster solution was the most viable for further validation. Using the means for the two group cluster, we validated the clusters and created a cluster profile using k-means. Convergence was found within 2 iterations. The first cluster had 21 participants and appeared to have a high baseline level of physical activity in both total leisure time activity ($M = 0.163$) and activity HQoL ($M = 0.617$). The second cluster contained 11 participants and had low baseline levels, ($M = -0.643$ and -1.018), respectively. A silhouette analysis was performed on the two cluster solution. An online discussion of silhouette analysis from UC Berkley (2007) listed the silhouette coefficient range of 0.26-0.50 as weak and potentially artificial, while the range of 0.51-0.70 indicated that a reasonable structure had been found. The two cluster solution in this study, while weak, was nearing the range that can be interpreted as a ‘reasonable structure’ for both cluster 1 and 2 (*Silhouette coefficient* = 0.42 and 0.49, respectively).

A chi square test was run between the means of clusters from both analyses and was not significant ($p = 0.219$), indicating there was not a group difference between the clusters created using the hierarchical and partitional (k-means) clustering methods. Comparing the two methods, six cases were categorized differently. One case was listed in Cluster 2 in the hierarchical analysis but was in Cluster 1 in the k-means analysis. Alternately, 5 cases were in Cluster 1 in the hierarchical analysis, while ending up in Cluster 2 in k-means. Cluster 1 was the

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high physical activity group while Cluster 2 was the low physical activity group. These subgroups were used to further understand differences between campers throughout the course of the camp.

Hypothesis 2. For the second part of this first aim, the study utilized qualitative data obtained from focus groups. Hypothesis 2 expected these qualitative data would help to identify distinct themes related to expected benefits of an adapted sports camp. Thematic expectations of increased independence, greater levels of functioning, new skills, and improvements in physical self-perception were expected to emerge.

Thematic analysis was utilized (Braun & Clarke, 2006), which involved a primarily inductive approach to looking at the data while acknowledging that a researcher cannot extricate their expectations from the process. Five focus groups were conducted for a total of 15 female and 12 male participants. Recordings from the focus groups were transcribed and reviewed. Initial codes were identified based on coding using NVivo 12 software to begin organizing the codes. In the third phase, we searched through the initial coded data for themes, which was where we began to see our hypothesized themes, as well as others, begin to emerge. New themes identified were preparing for the future, proving themselves, social aspects, boredom, love of basketball, and gender differences.

The fourth step included a review of the themes to make sure they fit the data. Criteria for a theme was that it was coherent within its own group and distinct from other themes. In this step, new subthemes emerged and similar themes were combined. The theme of new skills was separated into basketball skills and other life/social skills. Boredom was reclassified as a diversion.

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The fifth phase of defining and refining themes reviewed the data to capture a conceptual understanding of each theme as well as to bring back data extracts from each theme and identify any important sub-themes. In this phase, the theme social aspect was reclassified as supportive community with sub-themes of coach support, friendship, and a familiar community. The theme new skills was paired as a sub-theme of independence to describe an overall theme of greater functionality.

The final step was to combine and report on the theme definitions, data extracts, and to reflect a clear understanding of expectations and benefits of an adapted sport camp from the perspective of the camper. Overall, eight main themes were identified as benefits the campers expected to receive from attending the camps. The themes, in order of most to least endorsed, were improved basketball skills, supportive community, greater functionality, gender differences, preparing for the future, love of basketball, proving themselves, and a diversion. (See Figure 3). The theme of supportive community contained three subthemes of coach support, friendship, and familiar community, while greater functionality held subthemes of independence and new skills. Of the four hypothesized themes, only improved self-perception did not emerge as a benefit expected by the campers.

Theme 1: Basketball Skills. By far the biggest benefit that the campers expected to receive from the camp experience was getting better at the game of basketball. As one young man characterized, “*you’ll learn something every day, that you probably learned it, but never really went in depth with it. And that’s what they do here, they go super in depth with it until you understand it... it gives you better knowledge of what you are doing.*” Some felt like camp was a place to develop basketball skills that they may not have the opportunity to develop at home. “*Hey, we’re all here to learn and get better, and help each other out, and stuff like that.*”

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I've been playing for 4 years, but I feel like a lot of my areas of skill can be improved... because my team has not expected me to fulfill certain roles, and I feel like this is a good place to learn those roles." The fact that camp was a place where everyone was passionate about improving in the sport was also appealing. *"I like the competition because it brings another side of me that I don't even know about, and it's like, it makes me work even harder, to be at their level, or past their level."* Many of the campers expressed the need to get better so they could play basketball in college and the Paralympics, but they not only expressed a desire to get better for their own benefit, several campers felt that their attendance at the camp would help their teams back home, mentioning the desire to, *"win a state championship"* or *"take my team to the top 5."*

Theme 2: Supportive Community. Campers were often encouraged to attend the camp by their coaches or fellow teammates, and, for many, camp attendance seemed to be an annual tradition, making it feel like a homecoming with coaches and friends that they trusted in a familiar environment. One key element of this supportive community was support that they received from the coaches. The coaches were, in general, described as both supportive and tough. One co-ed camper stated, *"... the coaches here... don't treat you like you're in a chair... you're just a normal person when you're here so everyone's like... like if you whine at all you can either sit there and whine [and] it's not going to get done."* Another young lady said, *"the coaches... push you to get out of your comfort zone."* This support was tied to an increase in confidence. *"I always thought that I couldn't shoot the ball and that... I always had to pass it away... and so they're like no you can do it. Just shoot it. And then when it goes in you have more confidence with your like shooting and skills and stuff like that."* Other terms used to describe the coaches were *"fun," "smart," "nice,"* and *"absolutely the most helpful people you will ever meet in your life."*

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Another important piece of this supportive community was the familiarity that they felt when they came to camp. Many of the campers attended in the past. One camper stated that coming to camp *“felt like coming home.”* The camp has maintained a similar routine and, in many cases, the same coaching staff. The campers expressed that it was nice to know what to expect from the camp. *“I think that last year I was... super nervous and... scared to come to camp, but then... after I met all the coaches... they’re super helpful and they make sure that your... everything is going the way it should be and if you need help all you have to do is ask. So this year I wasn’t worried cause I knew they would have anything I needed.”*

Friendships were also included in the supportive community. The campers described the wheelchair basketball community as a small group of people with similar interests who enjoyed playing together. The teams and players were spread out over long distances and often had to travel to see and play each other. The camp gave them a chance to spend time together during the off-season. *“Camp is where some of my best friends will be. Some people play during the basketball season and miss seeing each other during the summer.”* Many of the campers also expressed excitement at meeting new friends, *“the best reason is to make new friends.”* And because of the size of the wheelchair basketball community, the campers had the expectation of seeing these new friends at different times throughout the year. They agreed, *“if you go to tournaments and you see the friends that you’ve recently made in camp... that’s a plus.”*

This sub-theme was one of the only places where campers alluded to potential isolation due to their disability. As one camper stated, *“it’s just nice to hang out with your friends because I don’t have a lot of friends [back home]... school friends.”* Additionally, campers expressed how it felt to be part of a community of people who have similar challenges. For example, one camper described, *“... me, I just like meeting new friends and making friends, just*

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talking to other people that are my... that have the same injury I have... I just like meeting new friends and getting to know them well and seeing how they got their injury, differently than I did.” One young lady explained it well. *“We all understand what (laugh) everyone else is going through.”*

Theme 3: Greater functionality. This theme dealt with the camper’s overall level of participation in society and how they were learning to interact with their environment. Greater functionality was tied to themes of independence and new skills. Often the statements began with new skills surrounding basketball, such as learning a new basketball drill, but the conversation then gave way to other new learning opportunities, such as knowing when to get up and when to go to lunch. Participants also identified new learning opportunities that were specific to living or playing sports in spite of a disability. One young man identified that he learned about the different types of sport chairs by coming to camp while a female camper described what it was like to have other campers show her easier ways to transfer into her basketball chair. *“My roommate last year taught me that you could like pop a wheelie up into the frame of your basketball chair and then you can lock your brakes on your everyday and then your basketball and everyday chair stay together and so you won’t fall on the ground.”*

The increased functionality was not only tied to concrete skills. Social and life skills were also mentioned. *“[I am]... developing better social skills and coming out of my shell to develop better habits of helping with my anxiety and other mental health issues.”* These skills were also tied with independence. As one camper stated, *“it will... teach me other ways of being independent and... prepping me up for getting ready to potentially live in a college dorm.”*

Other campers tied the experience of playing basketball with independence and higher levels of functioning. *“In basketball, you go learn new skills, that maybe you did learn, but just*

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didn't really practice it. And then, in general, it teaches you responsibility and independence of yourself, taking care of yourself, either if it's from health or just buying the stuff that you want."

Another camper agreed, *"I would say, [coming to camp] basketball wise...you can only get better playing if you're playing all the time, and then... it teaches you how to be independent... because you are going to have to do stuff by yourself."*

One of the focus group questions, "How do you feel about your parents coming, or not coming with you?" brought out brief themes of independence. Two campers expressed concern without their parents to help them but stated that their parents had pushed them to come to the camp to increase their independence levels. The majority of the campers gave answers you would expect to hear from a typical adolescent; expressing that they were enjoying the freedom and having time away from their family. One camper specifically did not want her mother to come to the camp because she was more responsible at camp and did not want to have to be more responsible at home.

Theme 4: Gender Differences. In terms of how a camper expected to benefit from the camps, gender differences were discussed primarily by the female campers. When gender was brought up by the male campers, it was in the context of experiencing a heightened competitiveness in the presence of a girl. They experienced a feeling of not wanting to be 'beat by a girl.' As the young men expressed it, *"when it's a girl... it brings the competitive outta me. No, you are not gonna try to do better. I wanna get on your level and be better"* and *"when it's when it's a girl, and they try to steal the ball from you, as a guy, your pride kind of goes up, and it's like "You're not gonna steal it from me."*

The female campers understood this changing game dynamic when the teams were co-ed, and they expressed it frequently as a benefit of attending the all-female camp. The teams that

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campers played on during the year were co-ed and primarily male. Most of the female campers were the only, or one of two, female players on their wheelchair basketball team back home. When describing the dynamic of playing basketball with mostly male teammates they used terms like “*ball hog*”, “*show off*”, and “*ego*” to describe this shift in dynamic.

The female campers expressed that the males did not trust the females to make the basket and would rather make the attempt themselves. They expressed that in the all-girls camp, there was more encouragement. Their female teammates focused on allowing them to get better. For example, they encouraged their teammates to go ahead and shoot the ball. This was different than their experience with male teammates who were more concerned about making the shot than letting someone else get better, even during practice scrimmages. *“I have a team full of guys and so [laughing] they would always... pressure me not to shoot the ball and give it away... because I’m shorter... and female and they’re like ‘no no don’t shoot the ball just give it to me just give it to me’, but here it’s all girls so they know how it’s like to be a girl.”*

This trust and understanding experienced during the all-female camp was an important piece of how the girls expected to benefit from the first camp. As one stated, *“...they don’t trust girls...as much. So it’s nice going to an all-girls camp, because we all know that feeling, so we all... actually trust each other.”* One young lady gave an especially passionate plea for gender equality in adaptive sports,

“Also I feel like because basketball is a mostly a male dominated sport... I feel it kinda shows proof that hey, girls can be good at this sport too, and it’s not just showing... the woman’s national team or... girl’s college team, it’s in the junior level too. It’s everywhere, you know, you could... have an all-girls team at 5 years old one day... if this camp can bring a lot of attention to... girls and basketball... it’s not just a boy’s sport... girls can play any sport and it shouldn’t

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just be about... what gender you are. I hope that in the future... even many, many years from now, there will be... more adaptive sports created, because I think we all deserve to be athletes if we want to be.”

Theme 5: Preparing for the Future. Nearly half of the campers who participated in the focus groups expressed the desire to play basketball either in college, *“I want to get a scholarship,”* or in the Paralympics, often a single camper expressed both goals. The benefit of coming to this camp was to better prepare them for this future. One camper captured the feelings of most in the room when she talked about playing at the highest level. *“The Paralympics, is that... your ultimate goal? A lot of y’all are nodding yeah... mine too. Yeah. That’s common... very cool.”*

Other campers expressed that attending camps could provide benefits beyond just basketball skills. For one camper, those benefits were about being able to adapt, *“It’s always better to be able to adapt to new players around you and new environments... which is really helpful for being able to go to the Olympics.”*

Another additional benefit was attending camp specifically at UTA. Both males and females expressed that it was good to attend camp at the college they were interested in attending in order for the coaches to get to know them. As one camper stated, *“... and [the coach] knows that it’s going to make me stronger and it gets me better at basketball and I wanna play college basketball so [the coach] knows that I’m reaching my goals I guess.”* Two students had the opposite perspective and wanted to see if UTA was the right university for them. They wanted to *“...see if it would be a fit, if I wanted to come here for college in a few years.”*

An element expressed frequently within this theme had to do with parental support. Many of the campers endorsed the fact that their parents supported their love of basketball and

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their goals of playing in college or at the Paralympics. Statements in this theme contained many phrases such as *“my parents knew”* and *“my parents thought”* when referring to goals and coming to camp.

Theme 6: Love of Basketball. A female camper said it succinctly, *“I’m just excited to go to camp cause I love-I love basketball.”* Several campers expressed that they just love playing wheelchair basketball. *“This is all I wanted to do is to play wheelchair basketball.”* It was important, said another, to make sure you are playing because you love the game and not because other people are pressuring you to play.

One young man specifically stated that he liked the game for the competitive nature of it. *“Me... I just like playing basketball with all of the group players, and going against the group players, and seeing how good they are, compared to me. I’m not that good... I thought I was going to be really good, but then I found out how quick these other guys are... faster than me. And I just like the competition.”*

According to a young lady, connecting over basketball is a special way for the wheelchair basketball community to come together. *“I feel like most people... connect over loving this one sport and coming to basketball everyone over the whole... nation can come and get together and just do what they love together and be happy doing what they love and I think... that’s everything.”*

Theme 7: Proving Themselves. Only a few campers expressed that they expected to benefit from the camp by being able to prove themselves. There were elements of proving themselves to others and proving themselves just to themselves. For all of the campers, proving themselves was defined by physically accomplishing something that either they or others did not believe that they could accomplish.

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For one young man, he wanted to *“prove that I could do better than I did in the year before”* and he was grateful to the coaches because *“they don’t give you any leeway and I think that’s a good thing because it... helps us prove to ourselves that we can do things that we didn’t think we could do.”* Another young man expressed being able to prove himself with the help of his teammates. *“We were doing like a whole lap around the court, and it brought...something that I didn’t know that I had in me, when I hear my teammates say, “keep pushing, keep pushing,” then I want to go even harder.”*

Only two campers endorsed feeling the need to prove their ability to other people. One seemed to have specific people in mind. *“You want to show off to your friends what you can do. Especially as a little kid, you [have] been picked on, and now... your friends know what you can do. You want to prove them even more, what you actually can do”* The other camper felt like she spoke for the rest of her group when she said, *“I feel that [is] a lot of our goals... just to prove to the Earth that we can do everything just as good as everybody else can.”*

Theme 8: Diversion. The theme of diversion received a limited number of endorsements, but could be divided into two components; diversion from boredom and diversion from thinking about problems. Two campers felt like the camp benefited them by relieving their boredom. One stated, *“[I am not] doing anything so this is a nice time killer before school starts.”* The second camper in this theme stated, *“I’m not really that enthusiastic about many things but beats just staying at home just doing nothing... at least I get to practice more basketball.”* The two campers that endorsed camp as a distraction from problems were very open. The first one stated that she was, *“having all that mental stuff and just had no motivation whatever”* so getting to camp was hard. Another young lady mentioned that camp for her was *“kinda just a distraction... from everything that’s... gone on at home, this summer has kinda been rough for*

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me, because of all my mental stuff, and you know. I haven't gotten outta the house much. But... I feel like, coming into these camps, though it may seem at first like I don't want to go, because... I just don't feel like going... [but], I kind of forget about that for a while, and you know, focus on having a good time."

Theme Summary. With the exception of coach support, which was strongly endorsed by females but not mentioned by male campers, all of the themes were endorsed by both male and female campers. Overall representation of the themes differed by gender, with males endorsing basketball skills and greater functionality more often than the other themes combined. Female campers represented a supportive community and gender differences as nearly half of their overall themes. See Figures 4 and 5 for tree maps of the endorsements by gender.

Aim 2

Data Analysis

The second aim was to understand how attending the camp impacted the ICF model elements of perceptions of quality of life, health quality of life, and physical self-perception throughout the course of the camp. Ideally, to assess the hypotheses within these aims, a repeated-measure multivariate analysis of covariance (MANCOVA) would have been utilized. More power, however, was needed to run the between subject effects of a between by within subject interaction with multiple dependent variables. Therefore, the data were analyzed using repeated-measures univariate analysis of variance (ANOVA) with Bonferonni corrections for multiple tests. ANOVA assumptions were checked and met for each analysis. To ensure robustness we employed Pillai's criterion (Olson, 1979; Tabachnick & Fidell, 2007) which provided the most protection against Type I error with small sample sizes. Multivariate analyses were reported as designs with time were more suited to multivariate analyses.

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Aim 2 utilized time (beginning of camp, end of camp) as the independent variable with end of camp overall HQoL, total youth quality of life, and physical self-perception as the dependent variables. The aim then looked at the differences of time by high versus low physical activity group, determined through cluster analysis.

As an exploratory analysis, additional ANOVAs were conducted for the separate factors of the ICF model to determine if grouping of dependent variables according to the proposed ICF model contributed to differences over the course of the camp. Dependent variables for ICF factor of activity were total leisure time activity, mobility HQoL, and self-care HQoL. The body function factor included pain intensity, children's somatization inventory, and cognitive HQoL. Participation factor combined the getting along with others HQoL and participation in society HQoL subdomains. The ICF environmental factor included the relationship youth quality of life and the environment youth quality of life while the personal factor used the dependent variables of physical self-perception, self youth quality of life, positive affect, and negative affect.

Additionally, effect sizes (η_p^2) were examined for non-significant findings as medium to high effect sizes may indicate a potential for differences that could not be detected with the low power of this investigation. Effect size levels were defined using rules of thumb given by Cohen (1988) and discussed on Cambridge University's Cognition and Brain Sciences webpage (MRC, 2018). Small effect size, $\eta_p^2 = .02$, medium effect size, $\eta_p^2 = 0.06$, and large effect size, $\eta_p^2 = 0.14$.

Results

Hypothesis 3. We expected to find that overall perceptions of physical self, health, and quality of life would improve from the beginning of camp to the end of camp, regardless of initial levels of physical activity. For the overall ICF model with physical self-perception, total

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youth quality of life, and end of camp overall HQoL, the multivariate analysis found that overall Health Quality of Life improved during the course of the camp (see Table 3).

To further explore the ICF model, measure subdomains were grouped into the ICF contextual factors and components of function and explored within the proposed grouping. Separate ANOVA's were analyzed using variables that related to each ICF group. For the ICF component of activity, the HQoL subdomain of self-care increased by the end of camp. The ICF factor of participation, getting along with others HQoL, had also increased by the end of camp.

Examination of effect sizes found several subdomains that appeared to be trending toward significance. The cut-off for this determination was made using the combination the non-adjusted alpha, $p < .05$ and a medium effect size, $\eta_p^2 = 0.06$. With this designation, all the subdomains that comprise the ICF factor of body function were trending toward higher levels. These factors were cognitive HQoL, pain intensity, and somatic symptoms. Also trending up were participation in society HQoL, an ICF factor of participation, and the youth quality of life subdomain of self, an ICF personal factor. Another ICF personal factor, negative affect, was trending down at the end of camp.

Hypothesis 4. In addition to overall improvements, we also expected that the largest improvements would be seen in the group with the lowest initial assessment of baseline activity. The sample sizes in this hypothesis were small and not equal, with those in the high activity group ($N = 18$) doubling those in the lower activity group ($N = 9$).

Within the overall model we saw no interaction differences with time as a between subjects factor. Exploring changes within the separate factors of the ICF model indicated an interaction in the subdomain self-care HQoL (Table 4).

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As an additional exploratory measure, we split the file by the high and low baseline activity group and ran separate ANOVA's, using Bonferroni corrections to adjust for multiple analyses. The high activity group showed trends of higher overall HQoL, self quality of life, and pain intensity at the end of camp while the low activity group in the same domains remained unchanged. Self-care HQoL and getting along with others HQoL saw increasing trends among the lower activity group while the higher baseline campers did not increase in those domains (Table 5).

Aim 3

Data Analysis

Specific Aim 3 compared levels of mood and somatic symptoms over the course of the camp, using time (beginning of camp, during camp, and end of camp) as the independent variable with negative affect, positive affect, and children's somatization inventory as the dependent variables. Differences within high and low activity clusters were also investigated. Multiple repeated-measure univariate ANOVA's were utilized with Bonferroni corrections to determine significance.

Results

Hypothesis 5. It was expected that positive affect would increase and negative affect and somatic symptoms would decrease over the course of the camp. No differences were seen in these variables for the camp participants, however trends were noticed based on effect sizes. Over the 3 measurements, negative affect was trending down while somatic symptoms was indicating possible increases (See Table 6). Negative affect saw the largest decrease from day 1 ($M = .19, SE = .02$) to day 2 ($M = .15, SE = .02, p = .05$) while no trends were noted from day 2 to day 3. Somatic symptoms were trending upward between day 1 ($M = 2.96, SE = .28$) and day

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3($M = 3.52$, $SE = .24$, $p = .05$) while no trends were seen surrounding the second day. No interaction effects were noted.

Aim 4

Data Analysis

Specific Aim 4 sought to investigate the effects of participating in the adapted sports camp one month after the camp had ended. Data were analyzed as outlined in Aim 2. Again, time was the independent variable (beginning of camp, end of camp, one month post-camp). For Hypothesis 6, the dependent variables were overall HQoL and total leisure time activity. For Hypothesis 7, the dependent variables were pain intensity and chronic pain grade classification. In both cases, investigations were made to determine if there were differences in low and high activity clusters.

Results

Hypothesis 6. It was expected that health quality of life would be improved from the beginning of camp through one month post-camp and that both end of camp physical activity intentions and one month post-camp physical activity levels would be higher than baseline physical activity levels. These increases were expected regardless of initial assessment of baseline activity; however, participants with the lowest baseline physical activity were expected to see the greatest increases over time. No differences were indicated and no interactions between time and level of functioning were seen.

Hypothesis 7.

It was expected that pain, measured by pain intensity and chronic pain grade classification would improve from the beginning of camp through one month post-camp. No changes in pain intensity or chronic pain grade classification were seen in camp participants.

Aim 5

Data Analysis

The final specific aim was an exploration into how the different factors of the ICF model related to each other. This was assessed using an intra class correlation (ICC), two way mixed effects model, to determine the internal reliability of the variables within each ICF factor, defined above (Koo & Li, 2016). Before testing with ICC, the variables of pain intensity, somatic symptoms and negative affect were reverse scored to maintain consistency of direction. Once it was determined that the variables fit together within the factor, each measure was transformed to a z-score and summed to create a total factor score. The relationship of the 5 ICF factors were investigated using a bivariate correlation. Hotelling's T^2 , was then applied in order to investigate "joint comparisons of correlated variables" (Hotelling, 1931) correlations and determine if there were differences in strength of the relationships.

Results

Hypothesis 8. It was expected that the activity factor would have stronger relationships with the other model factors than would any of the other factors in the model would be related to each other. The internal reliability of the measures within each factor of the ICF model were evaluated using intraclass correlations (see Table 7). According to guidelines by Cicchetti (1994), personal factors had poor reliability; body function and activity were fair; participation was good; and environmental factors had an excellent intraclass correlation coefficient.

The individual measures within each ICF factor were transformed into z-scores. The z-scored measures were then summed with the other measures that comprised the ICF factor, creating an ICF factor score. The ICF factor score was used to determine the relationship with other ICF factors using a Pearson's product moment correlation coefficients (see Table 8).

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The factor of activity correlated only with participation. Body function did not indicate a relationship with any other measures. Environmental and personal factors both associated with each other and with participation. Participation was significantly correlated with all of the variables except for body function.

Investigations into the strength of the correlations using Hotelling's T^2 found no differences in the relationship of activity or body function to any of the other ICF factors. Within the factor participation, body function was lower than environment ($p = .01$) but higher than personal factors ($p = .03$). Within the factor of environment, activity was lower than environment ($p = .02$) but higher than personal factors ($p < .001$) and body function was lower than participation ($p = .01$) and but higher than personal factors ($p = .002$). Within personal factors, activity was lower than both participation ($p = .03$) and environment ($p < .001$), participation was lower than environment ($p = .046$), and body function was lower than both participation ($p = .047$) and environment ($p < .001$).

Exploratory Analysis

Data analysis

The youth quality of life and physical self-perception measures did not change throughout the course of camp. While there was no normative comparison data of these measures for young people with disability, when considered with the qualitative data, it seemed as if the current study participants had higher than expected scores on subjective measures of well-being and self-perception. This was tested by locating published studies using the same measure and conducting a single sample t -test. The first was a study of 960 adolescents, completed by the group that developed the Youth Quality of Life that was used in our sample. They found lower quality of life scores in adolescents with disability compared to those without

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disability (Edwards, Patrick, & Topolski, 2003). Two comparison studies were found for physical self-perception comparisons. The first study (Biddle et al, 2012) was conducted from the lab of Kenneth Fox, developer of the physical self-perception measure used in this study and reported the means of boys ($N = 164$) and girls ($N = 158$) with an average age of 14.88. The second comparison study reported physical self-worth and global self-worth means for 239 middle school able bodied students (Kolovelonis et al, 2013).

Results

For Youth Quality of Life, the single sample t -test indicated that the participants of the current study ($M = 82.18$, $SD = 2.9$) reported higher levels of well-being than non-depressed youth with disability ($M = 73.8$, $SD = 25.8$, $t(31) = 2.89$, $p = .007$) and were not different from non-depressed able-bodied youth ($M = 86.3$, $SD = 14.5$, $t(31) = -1.42$, $p = .17$) who had self-rated health of excellent.

For physical self-perception, a single sample t -test from the first study (Biddle et al, 2012) indicated that global self-worth in able bodied boys ($M = 2.78$, $SD = .69$) was not different than boys in the current study ($M = 3.10$, $SD = .62$, $t(12) = 1.87$, $p = .09$). However, global self-worth was lower in able bodied girls ($M = 2.68$, $SD = .60$) than girls in the current study ($M = 3.11$, $SD = .76$, $t(12) = 2.45$, $p = .03$). Physical self-worth as not different between able bodied boys ($M = 2.71$, $SD = .46$) and the current study ($M = 2.85$, $SD = .64$, $t(12) = .76$, $p = .46$) and able bodied girls ($M = 2.45$, $SD = .48$) compared to the current study ($M = 2.70$, $SD = .86$, $t(18) = 1.25$, $p = .23$).

The subdomains of physical self-perception found similar comparisons in a sample where the gender was combined (Kolovelonis et al, 2013). Able bodied youth had levels of global self-worth ($M = 3.24$, $SD = .65$) that were similar to the present sample ($M = 3.08$, $SD = .70$, $t(31) = -$

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1.31, $p = .20$). This was also found with physical self-worth ($M = 2.96$, $SD = .86$ and $M = 2.74$, $SD = .77$, $t(2) = -1.62$, $p = .12$, respectively).

CHAPTER 4

Discussion

The purpose of this study was to investigate how adaptive sports camps impact a young person's perception of their physical body, health quality of life and overall quality of life in the framework of the World Health Organization's ICF model of health and disability. The ICF model was supported in this study, with several components of the different factors increasing, or starting to increase, over the course of the camp. These model factors were endorsed in both the qualitative and quantitative data. While it was expected that the activity component of the ICF model would be the most important factor, this study found that participation, specifically getting along with others and participation in society were key to overall functioning and health. While we did not see increases in physical self-perception and overall perceived quality of life, it was likely due to a sample that was previously very active. Based on the literature, our study participants should have been lower functioning due to the severity of their disabilities and lack of ambulation.

In order to more fully understand the campers, this study collected both descriptive and qualitative data. As expected in Hypothesis 1, campers naturally divided into two distinct functioning levels (higher and lower baseline activity) based on initial levels of total leisure time activity and activity HQoL. Themes of independence, levels of functioning, and new skills emerged from the focus groups as expected. Additionally, unanticipated themes were identified pertaining to preparing for the future, proving themselves, supportive community, diversion, love of basketball, and gender differences. In contrast, improved self-perception was an expected theme that never emerged as a camper anticipated benefit of camp.

Health Quality of Life improved from the beginning of camp to the end, but overall youth quality of life and physical self-perception did not change, only partially supporting Hypothesis

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3. Within HQoL, the subdomains of self-care and getting along with others increased by the end of camp. However, Hypothesis 4 was not supported; participants with lower initial functioning did not have greater improvements than those with higher initial functioning.

The evaluation of long term (one month) follow-up of camp outcomes did not reveal changes over time in mood and somatic symptoms (Hypothesis 5), HQoL and physical activity levels (Hypothesis 6), or pain intensity and chronic pain grade classification (Hypothesis 7).

Finally, Hypothesis 8, an investigation into how the factors in the ICF model related to each other, was not supported. We expected that the ICF factor of activity would have a stronger relationship to the other model factors than would any of the other factors in the model would be related to each other. However, ICF factor of participation was positively related to more factors, and the strength of the correlations were higher than any of the other factors to each other. In this model, the ICF Participation factor contained the HQoL subdomains of getting along with each other and participation in society.

Baseline Activity

Baseline activity of the campers is an interesting topic that deserves further discussion and investigation. While we identified a higher and lower cluster within the participants, overall the campers appeared to be a high activity group. Very few the campers had never attended an adapted sports camp before, almost all of the campers played on a wheelchair basketball team at home, and most had played for three or more years. Most of the campers indicated a congenital disability while only one-third experienced an injury related disability. Previous research of male wheelchair basketball athletes found that those with congenital disabilities are more competitive and goal oriented in sports than those with an injury related disability (Skordilis, Skafida, Chrysagis, & Nikitaras, 2006). On the pre-camp survey, only 10 campers (31%)

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indicated that pain kept them from their usual activities on any day during the previous month. Additionally, traditional structural barriers did not appear to keep most of the campers from physical activity, and the campers had higher internal than external motivation

This is confirmed qualitatively in the focus groups, the primary theme of the campers was the expectation that they were going to further develop their basketball skills, with the high level of competition as an additional benefit. Several campers wanted to help take their current teams to the next level of competition, and at least half of the focus group participants expressed the goal of playing basketball in college and for a Paralympic team. The participants liked the fact that their coaches pushed and encouraged them to reach these elite athletic goals. There was no difference in the level of physical activity before camp and after camp physical activity intentions, which might indicate that campers felt like their physical activity level was sufficient and not necessary to increase. Both qualitative and quantitative data indicated that the participants in this sample were physically active, competitive, goal oriented, internally motivated, not limited by their disabilities, and overall a very high functioning group.

Consideration must be made, however, for the level of motor impairment in the participants of this study. Only 14.7% of our campers indicated unassisted walking as the primary form of physical movement. The majority (64.8%) used a wheelchair as their primary form of mobility, with the rest using a combination of assistive mobility devices: wheelchair, crutches, walker, and braces. Most adaptive sport research has studied athletes with less severe limitations.

The European SPARCLE project, which looked at hundreds of adolescents with cerebral palsy across Europe, found that severity of motor impairment strongly influenced physical activity (Michelsen, et al, 2013). It was also associated with reduced quality of life in

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the domains of mood, social support and autonomy (Colver et al, 2015), and functional impairments were predictive of recreational and physical activities in adolescents with cerebral palsy (Shikako-Thomas et al, 2013b). In each of these large studies, the level of impairment that negatively influenced physical activity was a Gross Motor Function Classification (GMFCS) of Level III or higher. Briefly, a GMFC Level II individual walked unassisted in most situations, using assisted devices for longer distances or balancing. Level III adolescents could walk but usually required an assistive device for short distances and a wheelchair for longer distances or outside. At Level IV, adolescents most likely relied on a wheelchair for mobility and often required adaptive seating for trunk control (Palisano et al, 1997). While the current study did not assign a GMFCS score for each camper, based on the GMFC definitions, the majority of campers would likely be at GMFC Level III or higher.

In adaptive sport and physical activity studies that have not directly investigated the impact of mobility limitations, an overwhelming number of studies have examined individuals with more ambulation than our participants. A recent meta-analysis of physical activity participation in youth with cerebral palsy found that most participants were classified at GMFCS levels I to III (Reedman, Boyd, & Sakzewski, 2017). This trend was found in studies with elite athletes (Groff, Lundberg, & Zabriskie, 2008; Yazicioglu, Yavuz, Goktepe, & Tan, 2012) as well as adolescents involved in recreational physical activity (Feitosa et al, 2017; Shakiko-Thomas et al, 2013b). Often the level of disability is unreported in the study, as was found in a review looking at the meaning of leisure for young people with disabilities (Powrie et al, 2015). A review by Ross et al (2016) mentioned that a major gap in current literature on sports and disability was the lack of a consistent understanding of physical activity. The same argument can be made for disability and levels of functioning. In this emergent literature, we have no

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objective construct with which to compare the baseline activity of this study against others involved in adaptive sports.

Focus Group Themes

According to focus group participants, they primarily expected camp to provide a space to enjoy their love of basketball. They also felt it would help increase independence, higher levels of functioning, and new skills (primarily athletic). They also talked about how the camp would help them prepare for their future, give them a chance to prove of what they were capable, be part of a supportive community, and act as a diversion during the summer. These themes have been endorsed by other studies on the benefit of leisure activity (Sahlin & Lexell, 2015).

A synthesis of 12 qualitative studies on the benefits of leisure activity for young people with disabilities identified four themes that supported our findings: fun, freedom and independence, fulfillment of development toward potential, and social connectedness (Powrie, Kolehmainen, Turpin, Ziviani & Copley, 2015). Cote-Leclerc and colleagues (2017) had similar thematic findings with youth who were specifically participating in adapted sports: social participation, self-efficacy, increased sense of accomplishment, belonging, and increased functioning. Additionally, perceived competence and sport enjoyment have been shown as predictors of commitment to physical activity and participation in sport (Martin, 2006).

Gender differences have previously emerged as themes in qualitative studies, with able-bodied males attempting to dominate the field of play in co-ed game situations (Allender, Cowburn, & Foster, 2006). The female campers in the current study agreed on the benefit of playing basketball with all female teammates. While they endorsed a high level of competitiveness and love for the game, their expectations of camp were different than their male campers, looking more for the supportive community through camp. These gender differences

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have been shown to influence an individual's motivation for participating in adapted sports (Brasile, Kleiber, & Harnish, 1991). While love of basketball was a vital motivation, males more often endorsed the enjoyment around the task of playing the game and females seemed more drawn to the social and supportive benefits that came from playing within a community.

Surprisingly, improved self-perception was an expected theme that never emerged as a camper anticipated benefit of camp. The theme of improved self-perception due to adaptive sport participation has been consistently reported in adult literature (Blinde & McClung, 1997; Zabriskie et al, 2005). One adult male in Fiji reported, "*It (sport) changed my mindset. It changed how I look at myself.*" (Devine et al, 2017). While improved self-perception levels have not been noted in the youth literature, it has been noted that youth who participated in sports indicated self-concepts similar to that of able bodied peer athletes (Sahlin & Lexell, 2015; Sherrill, 1990). One qualitative study that included adolescents specifically asked how participation changed the way they view themselves or others viewed them. The adults in the study endorsed increased confidence in how they compared themselves against able bodied peers, but the youth only discussed changing the way others viewed them (Lundberg et al, 2011). In the Lundberg study, similar to our current study, most participants had been involved in adaptive sports for multiple years. If adolescent athletes already held self-perceptions equivalent to able-bodied peers, improvements would not be noted.

Physical Self Perception

In keeping with the quantitative data findings, no changes were seen in physical self-perception measures throughout the course of camp. Studies of able-bodied adolescents have shown that the amount of time spent participating in team sport was positively associated with higher self-perception (Slutzky & Simpkins, 2008). Comparisons between the current study and

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two studies by Kolovelonis et al (2013) and Biddle et al (2012) of able-bodied adolescents found similar means of global self-worth and physical self-worth. If the participants from the current study had global and physical self-worth subdomain scores similar to those of able-bodied adolescents, it was possible the lack of change was due to a ceiling effect of physical self-perception. Anderson (2009) found that girls with disability who participated in organized sport had role models and support in their lives that allowed them to view themselves as normal and similar to other girls their age who did not have a disability. Their goals were future oriented, whereas their peers who were not involved in organized sport had goals that were more focused on improving function.

Youth Quality of Life

Youth quality of life was a multidimensional look at subjective well-being, focusing on self, relational, and environmental domains. The overall youth quality of life measured how an individual perceives their well-being, regardless of more objective measures (Patrick, Edwards & Topolski, 2002). There was no change in subjective well-being over the course of the camp, likely due to reasons similar to physical self-perception. Well-being scores for our campers were similar to those of adolescents with no disability. This contradicted what we expected based on our review of the current literature and raised questions of how our sample had such high levels of subjective well-being.

Health Quality of Life

Health quality of life was a multidimensional view of functioning within disability and disease (Ustun, 2010). Physical activity, and especially participation in sport, has been shown to improve all levels of physical functioning (Shapiro & Martin, 2010). In this study, overall HQoL was higher at the end of camp than at the beginning. Health quality of life subdomains improved

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throughout camp as well. Getting along with others was higher at the end of camp and participation in society and cognitive HQoL were both trending higher. Getting along with others and participation in society were both subdomains that made up the ICF factor of Participation. This factor had a high intraclass correlation factor and was more significantly correlated with any of the other ICF factors. In a previous study, youth mentioned that participating in the strength and agility required for sport made daily activities easier (Lundberg et al, 2011). While this study hypothesized that activity was the most important ICF factor, it may be that participation was key to higher levels of functioning, as described through health quality of life measures. Another important domain was getting along with others, which focused on making and maintaining friendships (WHO, 2009). The importance of friendships also emerged as a theme in the qualitative part of our study, especially among the female campers. Participation in society was a subdomain that assessed how well the individual was able to navigate the world in spite of barriers that others might impose on them (WHO, 2009). From coaches who pushed and encouraged, to peers who modeled better methods of functioning, to parents who made coming to camp possible, the entire camp experience was designed to limit imposed barriers.

Understanding key mechanisms that drive this increased health quality of life was important to consider in the context of other trends during camp. Both somatic symptoms and pain intensity exhibited upward trends. This made sense as the young athletes were pushing their bodies harder and for longer periods of time than they usually did. However, in spite of increased pain and somatic symptoms, they were reporting higher levels of health related quality of life. Additionally, increases within the participation factor components were likely influenced by camp participants at lower baseline levels of activity.

Limitations

The primary limitation of this study was the sample size. A larger sample size would have provided more power to confidently detect differences. This was mitigated by conducting the focus groups with the camp participants, allowing a comparison between the quantitative data and what the campers qualitatively endorsed as camp benefits. Another limitation was the range of ages, while the majority of participants were between 14-19 years old, the range extended from 12 to 31 years old. A smaller age range would have allowed us to interpret findings within the camper's developmental life stage. The extent of this limitation was investigated by looking at age as a covariate, and while age was not a necessary covariate for this study, caution should be exercised when generalizing these results. As with many studies, selection bias was a limitation in this study. The characteristics of the camp participants who chose to not participate in this study remain unknown. This bias is reduced due to the high rate of participation in the study as 57.6% of campers chose to participate in the study. The lack of a comparison group was a limitation of this study, and of many studies of the effect of adapted sport on young people with disabilities. This was addressed by the longitudinal, mixed methods design. This is the only study that takes a longitudinal approach of how adapted sport camps affect young people from a multidimensional model of functioning. This approach has helped us to identify additional limitations within the body of research surrounding youth adapted sports.

Another limitation to this research is the lack of consistently operationalized definitions for key variables. Disability severity and physical activity are operationalized differently in nearly every study. Participants in the current study had a limited range of both severity and physical activity. While the ICF model has loosely defined the different factors thought to contribute to health and functioning, there remains much subjectivity in how the factors should

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be operationalized. The failure to adequately define these key measures makes it nearly impossible to objectively compare the sample in the current study with those in the literature. This is a key limitation that should be addressed through further study.

Future Study

While the main purpose of this study was to determine how an adaptive sports camp affects the physical self-perception, the health and perceived quality of life of an adolescent with disability, the findings have highlighted individuals that seem to be different than what was expected based on current literature around athletes with disabilities. No studies have been done with adolescents with disabilities who have the goal and potential of becoming elite athletes. What allows this group of individuals to have a higher physical self-perception and sense of well-being? What allows them to overcome barriers that are constrictive to other adolescents with disabilities?

Darcy (2017) identified seven levels of constraint to sport: community support, equipment, transportation, interpersonal, intrapersonal, time, and economic. The multidimensional nature of the current investigation addressed these barriers, with the exception of economic barriers. Future research should further investigate the differences in socioeconomic status among families within this sample of potential elite athletes. The cost of participating in adaptive sports can be a significant barrier, as seen by the distances that campers in this study traveled to participate in an adapted sports camp. Research should also investigate how these individuals have overcome the other identified constraints, such information could lead to novel ways to help other adolescents overcome barriers to activity.

Additionally, key demographic differences should be further investigated, such as how long an adolescent has been involved in adapted sports, the level of competition in which they

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participate, whether the adapted sport is a team or individual sport, and the primary motivations for playing competitive team sports. Studies of adolescents who are at an adapted sports camp for the first time may uncover interesting information. Groff, Lundberg, and Zabriskie (2009) have found that athletic identity is important to quality of life, participation, and functioning in adults. Individuals with disability who identify as an athlete have a stronger sense of well-being and are more likely to continue higher levels of physical activity. This has not been investigated longitudinally in adolescents. Deeper understanding of the elements leading to this athletic identity might be uncovered by investigations into the differences between those who attended camp for the first time and the returning campers. It might also be important to uncover if the age at which an individual with disabilities begins to identify as an athlete is important to long term participation, and what type of exposure to adapted sport leads to this identification.

Gender differences among campers could also be investigated. If the key motivator for female participants is a supportive community, is subjective well-being, health quality of life, and physical self-perception higher in females who are part of a consistent supportive community, regardless of physical activity?

While comparison studies are important, more longitudinal studies should be conducted to determine the changes seen over time and what may effect these changes. The ICF model contains a multidimensional approach to health and functioning and the primary goal of any future research for adolescents with disabilities should be to refine and operationalize factor definitions and determine how they improve the lives of our participants. Individuals with disabilities are a heterogeneous population who deal with different pathologies, impairments, levels of disability severity, functioning, and access to resources. However, as the ICF model depicts, these factors are key to helping individuals improve their level of functioning and

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overall health, while minimizing the effects of their disability. Use of this model is widespread from a theoretical and research perspective and is especially utilized in within disease specific research (Moretti, Alves, & Maxwell, 2012; Simeonsson et al, 2009). It is now time for researchers to prioritize investigations into ICF model factors across pathology and more stringently operationally define elements that may affect levels of functioning, regardless of disease type. The author of this study agrees with the long range plan (2018-2023) of the National Institute on Disability, Independent Living, and Rehabilitation Research that strongly advocates the need to advance disability research by supporting consistent use of common data elements, reliable and valid measures, and uniform disability identifiers (US Department of Health and Human Services, *n.d.*).”

Conclusions

Most studies involving sport and disability are limited to comparisons between one or two constructs, for example, self-esteem and social inclusion (Shapiro & Martin, 2010a). This study is one of the very few that have attempted to look at the impact of adapted sports camps holistically or longitudinally. The current study found that the sample of campers’ quality of life and physical self-perceptions were similar to able-bodied peers. Their overall health quality of life increased over the course of camp, in spite of the fact that somatic symptoms and pain intensity were also trending higher. Campers had high future goals for themselves, wanting to participate in basketball at the college and Paralympic levels. The biggest benefits campers expected to receive from camp were improving basketball skills, being around a supportive community, and increasing functionality. While we may not have uncovered changes in every expected area, unanticipated findings presented themselves, especially a greater understanding of the campers themselves. Taken together, the findings of this study confirm the benefits of

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attending adaptive sports camps and should be used to advocate for greater levels of funding for young people to have access to these opportunities, as well as funding for advancements in research. Although a great deal of study is still needed among this overall population, it is clear that adaptive sports camps have a positive impact on young people. Perhaps the ultimate testimony is that the majority of campers return year after year.

References

- Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: a review of qualitative studies. *Health Education Research: theory & Practice*, 21(6), 826-835.
- Anderson, D. (2009). Adolescent girls' involvement in disability sport: implications for identity development. *Journal of Sport & Social Issues*, 33(4), 427-449.
- Becker, E. & Dusing, S. (2010). Participation is possible: A case report of integration into a community performing arts program. *Physiotherapy Theory and Practice*, 26(4), 275-280, DOI: [10.3109/09593980903423137](https://doi.org/10.3109/09593980903423137)
- Belcher, B. R., Berrigan, D., Dodd, K. W., Emken, B. A., Chou, C.-P., & Spuijt-Metz, D. (2010). Physical Activity in US Youth: Impact of Race/Ethnicity, Age, Gender, & Weight Status. *Medicine and Science in Sports and Exercise*, 42(12), 2211–2221.
- Biddle, S., Page, A., Ashford, B., Jennings D., Brooke, R., & Fox, K. (2012). Assessment of children's self-perceptions. *International Journal of Adolescence and Youth*. 4(2), 93-109.
- Blinde, E.M. & McClung, L.R. (1997). Enhancing the physical and social self through recreational activity: Accounts of individuals with physical disabilities. *Adapted Physical Activity Quarterly*, 14, 327-344.
- Brasile, F., Kleiber, D. & Harnish, D. (1991). Analysis of participation incentives among athletes with and without disabilities. *Therapeutic Recreation Journal*, 25(1), 18-33.
- Briery, B.G. & Rabian, B. (1999). Psychosocial changes associated with participation in a pediatric summer camp. *Journal of Pediatric Psychology*, 2(24), 183–190.
<https://doi.org/10.1093/jpepsy/24.2.183>

YOUTH ADAPTED SPORTS CAMP

- Bryant, J.M. (2015). *Aspirations and expectations of intercollegiate wheelchair basketball paralympic athletes*. (Master's thesis). Retrieved from ProQuest Dissertations and Theses database.
- Brittain, I. (2016). *The Paralympic Games Explained*, 2nd edition. New York, NY: Routledge.
- Camire, M., Trudel, P., & Forneris, T. (2009). High school athletes' perspectives on support, negotiation processes, and life skill development. *Qualitative Research in Sport and Exercise, 1*, 72-88.
- Canino, G., Fisher, P., Alegria, M., & Bird, H. (2013). Assessing child impairment in functioning in different contexts: implications for use of services and the classification of psychiatric disorders. *Open J Med Psychology, 2*(1), 29-34.
- Centers for Disease Control and Prevention. (2018). The Benefits of Physical Activity. Retrieved from <https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm4>
- Cicchetti, Domenic V. (1994). "Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology". *Psychological Assessment, 6*(4), 284–290. [doi:10.1037/1040-3590.6.4.284](https://doi.org/10.1037/1040-3590.6.4.284).
- Cohen, J. (1973). Eta-squared and partial eta-squared in fixed factor ANOVA designs. *Educational and Psychological measurement, 33*, 107-122.
- Colver, A., Rapp, M., Eisemann, N., Ehlinger, V., Thyen, U., Dickinson, H.O., Parkes, J., Parkinson, K., Nystrand, M., Fauconnier, J., Marcelli, M., Michelsen, S.I. & Arnaud, C. (2015). Self-reported quality of life of adolescents with cerebral palsy: a cross-sectional and longitudinal analysis. *Lancet, 385*, 705-716.
- Côté-Leclerc, F., Duchesne, G. B., Bolduc, P., Gélinas-Lafrenière, A., Santerre, C., Desrosiers, J., & Levasseur, M. (2017). How does playing adapted sports affect quality of life of

YOUTH ADAPTED SPORTS CAMP

- people with mobility limitations? Results from a mixed-method sequential explanatory study. *Health and Quality of Life Outcomes*, 15(22), 2-8.
- Dahan-Oliel, N., Shikako-Thomas, K., & Majnemer, A. (2012). Quality of life and leisure participation in children with neurodevelopmental disabilities: A thematic analysis of the literature. *Quality of Life Research*, 21(3), 427-439. Retrieved from <http://www.jstor.org.ezproxy.uta.edu/stable/41445069>
- de Groot, S., van der Woude, L.H.V., Niezen, A., Smit, C.A.J., & Post, M.W.M. (2010). Evaluation of the physical activity scale for individuals with physical disabilities in people with spinal cord injury. *Spinal Cord*, 48, 542-547.
- Dealwis, T. (2005). The fabulous five: A special story of acceptance, appreciation, and friendship. *Active Living*, 13, 28-29.
- Devine, A., Carrol, A., Naivalu, S., Seru, S., Baker, S., Bayak-Bush, B., James, K., Larcombe, L., Brown, T. & Marella, M. (2017). 'They don't see my disability anymore' – the outcomes of sport for development programmes in the lives of people in the pacific. *Journal of Sport for Development*, 8(5), 4-18.
- Devine, M. A., Piatt, J., & Dawson, S. L. (2015). The role of a disability-specific camp in promoting social acceptance and quality of life for youth with hearing impairments. *Therapeutic Recreation Journal*, 49(4), 293-309.
- Edwards, T.C., Patrick, D.L., & Topolski, T.D. (2003). Quality of life of adolescents with perceived disabilities. *Journal of Pediatric Psychology*, 28(4), 233-241.
- Ekeland, E., Heian, F., & Hagen, K.B. (2005). Can exercise improve self-esteem in children and young people? A systematic review of randomized controlled trials. *British Journal of Sports Medicine*, 39(11), 792-798.

YOUTH ADAPTED SPORTS CAMP

- Eklund, R., Whitehead, J.R. & Welk, G.J. (1997). Validity of the children and youth physical self-perception profile: A confirmatory factor analysis, *Research Quarterly for Exercise and Sport*, 68(3), 249-256.
- Engel, G.L. (1977). The need for a new medical model: a challenge for biomedicine. *Science*. 196(4286),129-36.
- Federici, S, Bracalenti, M. Meloni, F. & Luciano, J.V. (2016). "World health organization disability assessment schedule 2.0: An international systematic review". *Disability and rehabilitation*, 39(23), 2347-2380.
- Federici, S. & Meloni, F. (2010). WHODAS II: Disability self-evaluation in the ICF conceptual frame. In: Stone, J.H., Blouin, M., (eds.). *International Encyclopedia of Rehabilitation*. Buffalo: Center for International Rehabilitation Research Information and Exchange
- Feitosa, L.C., Muzzolon, S.B., Rodrigues, D.B., de Souza Crippa, A.C., & Zonta, M.B. (2017). The effect of adapted sports in quality of life and biopsychosocial profile of children and adolescents with cerebral palsy. *Revista Paulista De Pediatria*, 35(4), 429-435.
doi:10.1590/1984-0462/;2017;35;4;00001
- Fox, K.R. & Corbin, C.B. (1989). The Physical Self-Perception Profile: Development and Preliminary Validation. *Journal of Sport & Exercise Psychology*, 11(4), 408-430.
- Fox-Wasylyshyn, S.M. & El-Masri, M.M. (2005). Handling missing data in self-report measures. *Research in Nursing & Health*, 28, 488-495.
- Garber, J., Walker, L.S., & Zeman J. (1991). Somatization symptoms in a community sample of children and adolescents: Further validation of the Children's Somatization Inventory. *Psychological Assessment*, 3, 588–595.

YOUTH ADAPTED SPORTS CAMP

- Garcia, D., MacDonald, S., & Archer, T. (2015). Two different approaches to the affective profiles model: median splits (variable-oriented) and cluster analysis (person-oriented). *PeerJ* 3:e1380; DOI 10.7717/peerj.1380
- Geyh, S., Peter, C., Müller, R., Bickenbach, J. E., Kostanjsek, N., Ustün, B. T., . . . Cieza, A. (2011). The personal factors of the international classification of functioning, disability and health in the literature - a systematic review and content analysis. *Disability and Rehabilitation*, 33(13-14), 1089.
- Goodwin, D. L., Lieberman, L. J., Johnston, K., & Leo, J. (2011). Connecting through summer camp: Youth with visual impairments find a sense of community. *Adapted Physical Activity Quarterly*, 28(1), 40.
- Goodwin, D. L., & Staples, K. (2005). The meaning of summer camp experiences to youth with disabilities. *Adapted Physical Activity Quarterly*, 22, 160–178.
- Greenwood, C. M., Dzewaltowski, D. A., & French, R. (1990). Self-efficacy psychological well-being of wheelchair tennis participants and wheelchair non-tennis participants. *Adapted Physical Activity Quarterly*, 7(1), 12-21
- Groff, D. G., Lundberg, N. R., & Zabriskie, R. B. (2009). Influence of adapted sport on quality of life: Perceptions of athletes with cerebral palsy. *Disability & Rehabilitation*, 31(4), 318-326.
- Gould, D. & Carson, S. (2008). Life skills development through sport: Current status and future directions. *International Review Sport and Exercise Psychology*, 1, 58-78.
- Hotelling, H. (1931). The generalization of Student's ratio. *Annals of Mathematical Statistics*, 2(3), 360–378. doi:10.1214/aoms/1177732979

YOUTH ADAPTED SPORTS CAMP

- Hu, L., Zang, Y.L., & Li, N. (2012). The applicability of WHODAS 2.0 in adolescents in China. *J Clin Nurs*, *21*, 2438–2451. doi: 10.1111/j.1365-2702.2012.04126.x PMID: 22765309
- Janssen, I. & LeBlanc, A.G. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity*, *7*, 40.
- Jette, A. M. (2006). Toward a common language for function, disability, and health. *Physical Therapy*, *86*(5), 726-734.
- Johnson, C.C. (2009). The benefits of physical activity for youth with developmental disabilities: A systematic review. *American Journal of Health Promotion*, *23*(3), 157-167.
- Kimber, M., Rehm, J., & Ferre, M.A. (2015). Measurement invariance of the WHODAS 2.0 in a population-based sample of youth. *PLoS One*, *10*(11), e0142385.
doi:10.1371/journal.pone.0142385
- King, M., Shields, N., Imms, C., Black, M., & Ardern, C. (2013). Participation of children with intellectual disability compared with typically developing children. *Research in Developmental Disabilities*, *34*(5), 1854-1862. doi: 10.1016/j.ridd.2013.02.029
- Knapp, D., Devine, M. A., Dawson, S., & Piatt, J. (2013). Quality of life and social acceptance in a pediatric camp for children with physical disabilities. *Journal of Child Health Care*.
Prepublished: December, 2013, DOI: 10.1177/0123456789123456
- Kolovelonis, A., Mousouraki, M., Goudas, M. & Michalopoulou, M. (2013). Psychometric properties of the Greek version of the children and youth physical self-perception profile questionnaire. *Advances in Physical Education*. *3*(4), 158-164.

YOUTH ADAPTED SPORTS CAMP

- Koo TK, Li MY (June 2016). A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research". *Journal of Chiropractic Medicine*, 15(2), 155–63. doi:10.1016/j.jcm.2016.02.012
- Larson, R., Hansen, D.M., & Moneta, G. (2006). Differing profiles of developmental experiences across types of organized youth activities. *Developmental Psychology*, 42, 849-863.
- Laurent, J., Catanzaro, S. J., Joiner, T. E., Jr., Rudolph, K. D., Potter, K. I., Lambert, S., Osborne, L., Gathright, T. (1999). A measure of positive and negative affect for children: Scale development and preliminary validation. *Psychological Assessment*, 11(3), 326-338.
- Lavigne, J.V., Saps, M., & Bryant, F.B. (2012). Reexamining the factor structure of somatization using the Children's Somatization Inventory (CSI-24) in a community sample. *Journal of Pediatric Psychology*, 37, 914-924.
- Lundberg, N., Taniguchi, S., McCormick, B., & Tibbs, C. (2011). Identity Negotiating: Redefining Stigmatized Identities through Adaptive Sports and Recreation Participation among Individuals with a Disability. *Journal of Leisure Research*, 43(2), 206.
- Martin, J.J. (2006) Psychosocial aspects of youth disability sport. *Adapted Physical Activity Quarterly*, 23(1), 65-77.
- Martin, J.J. (2008). Multidimensional self-efficacy and affect in wheelchair basketball players. *Adapted Phys Activity Q.* 25, 275-288.
- Martin, J.J. & Shapiro, D.R. (2010). Multidimensional physical self-concept of athletes with physical disabilities. *Adapted Physical Activity Quarterly*, 27, 294-307.

YOUTH ADAPTED SPORTS CAMP

McNiven, L. (2015). *Adaptive sports in the United States*.

http://www.gcd.state.nm.us/uploads/FileLinks/8cf6b380c7a74d0f9d5d55130ded5399/Final_Draft_on_Adaptive_Sports_in_pdf__2_on_October_23__2015_2.pdf

Meltzer, L.J. & Rourke, M.T. (2010). Oncology summer camp: Benefits of social comparison.

Children's Health Care. (34)4, 305-314. DOI: [10.1207/s15326888chc3404_5](https://doi.org/10.1207/s15326888chc3404_5)

Michelsen, S.I., Flachs, E.M., Damsgaard, M.T., Parkes, J., Parkinson, K., Rapp, M., Arnaud, C.,

Nystrand, M., Colver, A., Fauconnier, J., Dickinson, H.O., Marcelli, M., & Uldall, P.

(2014), European study of frequency of participation of adolescents with and without cerebral palsy. *European Journal of Paediatric Neurology*, 18, 282-294.

Moretti, M., Alves, I., & Maxwell, G. (2012). A systematic literature review of the situation of

the international classification of functioning, disability and health and the international classification of functioning, disability and health-children and youth version in

education: a useful tool or a flight of fancy? *Am J Phys Med Rehabil*, 91(13), S103-117.

Moons, P., Barrea, C., De Wolf, D., Gewilling, M., Massin, M., Mertens, L., Ovaert, C., Suys,

B., Sluysmans, T. (2006). Changes in perceived health of children with congenital heart disease after attending a special sports camp. *Pediatric Cardiology*, 27(1), 67-72.

MRC Cognition and Brain Sciences Unit of University of Cambridge. (2018). *Rules of thumb on*

magnitudes of effect sizes. Retrieved from <http://imaging.mrc-cbu.cam.ac.uk/statswiki/FAQ/effectSize>

Nicholas, D. B., Williams, M. and MacLusky, I. B. 2009. Evaluating group work within a

summer camp intervention for children and adolescents with asthma. *Social Work with Groups*, 32, 209–221.

Palisano, R., Rosenbaum, P., Walter, S., Russell, D., Wood, E., & Galuppi, B., 1997. Gross

motor function classification system. *Dev Med Child Neurol*, 39, 214-233.

YOUTH ADAPTED SPORTS CAMP

- Patrick, D.L., Edwards, T.C., & Topolski, T.D. (2002). Adolescent quality of life, part II: initial validation of a new instrument. *Journal of Adolescence*, 25(3), 287-300. Doi: 10.1006/jado.2002.0471
- Penedo, F.J. & Dahn, J.R. (2005). Exercise and well-being: a review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry*, 18(2), 189-193.
- Powrie, B., Kolehmainen, N., Turpin, M., Ziviani, J., & Copley, J. (2015). The meaning of leisure for children and young people with physical disabilities: a systematic evidence synthesis. *Dev Med Child Neurol*, 57, 993-1010.
- Raymond, M.R. (1986). Missing data in evaluation research. *Evaluation and the Health Professions*, 9, 395-430.
- Reedman, S., Boyd, R.N., & Sakzewski, L. (2017). The efficacy of interventions to increase physical activity participation of children with cerebral palsy: a systematic review and meta-analysis. *Developmental Medicine & Child Neurology*, 59: 1011-1018.
- Reiner, M., Niermann, C., Jekauc, D., & Woll, A. (2013). Long-term health benefits of physical activity – a systematic review of longitudinal studies. *BMC Public Health*, 13(813), 1-9. <https://doi.org/10.1186/1471-2458-13-813>
- Ross, S.M., Bogart, K.R., Logan, S.W., Case, L., Fine, J. & Thompson, H. (2016). Physical activity participation of disabled children: a systematic review of conceptual and methodological approaches in health research. *Frontiers in Public Health*, 187(4), 1-10.
- Roth, P.L., Switzer, F.S. & Switzer, D.M. (1999). Missing data in multiple item scales: a monte carlo analysis of missing data techniques. *Organizational Research Methods*, 2, 211-212.

YOUTH ADAPTED SPORTS CAMP

- Rousseuw, P.J. (1987). Silhouettes: a graphical aid to the interpretation and validation of cluster analysis. *Journal of Computational and Applied Mathematics*, 20, 53-65.
- Sahlin, K.B. & Lexell, J. (2015). Impact of organized sports on activity, participation, and quality of life in people with neurologic disabilities. *PM&R*, 7(10), 1081-1088.
- Scorza, P., Stevenson, A., Canino, G., Mushashi, C., Kanyanganzi, F., Munyanah, M., & Betancourt, T. (2013). Validation of the "world health organization disability assessment schedule for children, WHODAS-Child" in Rwanda. *PLoS One*, 8(3), e57725.
- Shapiro, D.R. & Martin, J.J. (2010). Athletic identity, affect, and peer relations in youth athletes with physical disabilities. *Disability and health journal*. 3(2), 79-85.
- Sherrill, C., Hinson, M., Gench, B., Kennedy, S. O., & Low, L. (1990). Self-Concepts of Disabled Youth Athletes. *Perceptual and Motor Skills*, 70(3_suppl), 1093–1098.
- Sherry, D.D., Wallace, C.A., Kelley, C., Kidder, M., & Sapp, L. (1999). Short- and long-term outcomes of children with complex regional pain syndrome type I treated with exercise therapy. *The Clinical Journal of Pain*, 15, 218-223.
- Shikako-Thomas, K., Lach, L., Majnemer, A., Nimignou, J., Cameron, K., & Shevell M. (2009). Quality of life from the perspective of adolescents with cerebral palsy: I just think I'm a normal kid, I just happen to have a disability. *Quality of Life Research*, 18, 825-83.
- Shikako-Thomas, K., Shevell, M., Lach, L., Law, M., Schmitz, N., Poulin, C., & Majnemer, A. (2013). Picture me playing – a portrait of participation and enjoyment of leisure activities in adolescents with cerebral palsy. *Research in Developmental Disabilities*, 34, 1001-1010.

YOUTH ADAPTED SPORTS CAMP

- Simeonsson, R.J., Leonardi, M., Lollar, D., Bjorck-Akesson, E., Hollenweger, J., & Martinuzzi, A. (2009). Applying the international classification of functioning, disability and health to measure childhood disability. *Disability and Rehabilitation*, 25(11-12), 602-610.
- Skordilis, E.K., Skafida, F.A., Chrysagis, N., Nikitaras, N. (2006). Comparison of sport achievement orientation of male wheelchair basketball athletes with congenital and acquired disabilities. *Perceptual and Motor Skills*, 103, 726-732.
- Slutzky, C.B. & Simpkins, S.D. (2009). The link between children's sport participation and self-esteem: exploring the mediating role of sport self-concept. *Psychology of Sport and Exercise* 10(3), 381-389.
- Søgaard, K., Blangsted, A.K., Nielsen, P.K., Hansen, L., Andersen, L.L., Vedsted, P. & Sjogaard, G. (2012). Changed activation, oxygenation, and pain response of chronically painful muscles to repetitive work after training interventions: a randomized controlled trial. *Eur. J. Appl. Physiol*, 112(1), 173–81.
- Søgaard, K., & Søgaard, G. (2017). Physical activity as cause and cure of muscular pain: evidence of underlying mechanisms. *Exercise and Sport Sciences Reviews*, 45(3), 136-145.
- Statistics Canada. (2013). Canadian Community Health Survey (CCHS)-Mental Health. User Guide: Microdata. Ottawa: Statistics Canada.
- te Velde, S.J., Lankhorst, K., Zwinkels, M., Verschuren, O., Takken, T., & de Groot, J. (2018). Associations of sport participation with self-perception, exercise self-efficacy and quality of life among children and adolescents with a physical disability or chronic disease – a cross-sectional study. *Sports Medicine – Open*, 4:38. Doi.org/10.1186/s40798-018-0152-

YOUTH ADAPTED SPORTS CAMP

Topolski, T.D., Patrick, D.L., Edwards, C.E., Connell, F.A., Heubner, C., & Mount, K.K. (2001).

Quality of life and health risk behaviors among adolescents. *Journal of Adolescent Health*, 29, 426-435.

UC Berkley. (2007). Performing and interpreting cluster analysis. *Retrieved from:*

<https://www.stat.berkeley.edu/~spector/s133/Clus.html>

US Department of Health and Human Services. (2008). *Physical activity guidelines advisory committee report*. Retrieved from <http://www.health.gov/paguidelines/report>

US Department of Health and Human Services. (2018). *2018 Physical activity guidelines advisory committee scientific report*. Retrieved from

https://health.gov/paguidelines/second-edition/report/pdf/16_F-10_Individuals_with_Chronic_Conditions.pdf

US Department of Health and Human Services. (n.d.). *National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR): 2019-2023 Long-Range*

Plan. Retrieved from <https://acl.gov/sites/default/files/about-acl/2019-01/NIDILRR%20LRP-2018-2023-Final.pdf>

Ustun, T.B., Kostanjsek, S., & Rehm, J (Eds). (2010). *Measuring Health and Disability: Manual for WHO Disability Assessment Schedule WHODAS 2.0*. Geneva, Switzerland: World Health Organization.

van der Ploeg, H.P., Streppel, K.R., van der Beek, A.J., van der Woude, L.H., Vollenbroek-Hutten, M., van Mechelen, W. (2007). The physical activity scale for individuals with physical disabilities: test-retest reliability and comparison with an accelerometer. *J Phys Activity Health*, 4, 96-100.

Verschuren, O., Ketelaar, M., Gorter, J. W., Helders, P. J. M., Uiterwaal, C. S. P. M., & Takken, T. (2007). Exercise training program in children and adolescents with cerebral palsy: A

YOUTH ADAPTED SPORTS CAMP

- randomized controlled trial. *Archives of Pediatrics and Adolescent Medicine*, *161*(11), 1075.
- Von Korff, M., Crane, P.K., Alonso, J., Vilagut, G., Angermeyer, M.C., Bruffaerts, R., de Girolamo, G., Gureje, O., de Graaf, R., Huang, Y., Iwata, N., Karam, E.G., Kovess, V., Lara, C., Levinson, D., Posada-Villa, J., Scott, K.M., & Ormel, J. (2008). Modified WHODAS-II provides valid measure of global disability but filter items increased skewness. *J Clin Epidemiol*, *61*(11), 1132-43.
- Walker, L. S., Beck, J. E., Garber, J., & Lambert, W. (2009). Children's Somatization Inventory: Psychometric Properties of the Revised Form (CSI-24). *Journal of Pediatric Psychology*, *34*(4), 430–440. <http://doi.org/10.1093/jpepsy/jsn093>
- Walker, L.S., Garber, J., & Green, J.W. (1991). Somatization symptoms in pediatric abdominal pain patients: Relation to chronicity of abdominal pain and parent somatization. *Journal of Abnormal Child Psychology*. *19*, 79–394.
- Warburton, D. E. R., Nicol, C. W., & Bredin, S. S. D. (2006). Health benefits of physical activity: the evidence. *CMAJ: Canadian Medical Association Journal*, *174*(6), 801–809. <http://doi.org/10.1503/cmaj.051351>
- Washburn, R.A., Zhu, W., McAuley, E., Frogley, M., & Figoni, S.F. (2002). The physical activity scale for individuals with physical disabilities: development and evaluation. *Arch Phys Med Rehabil*, *83*, 183-200.
- Watson, D., Clark, L.A., Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS Scales. *J Pers Soc Psychol*. *54*, 1063-1070.

YOUTH ADAPTED SPORTS CAMP

- Weiss, M. R., & Ferrer-Caja, E. (2002). Motivational orientations and sport behavior. In T. S. Horn (Ed.), *Advances in sport psychology* (pp. 101-170). Champaign, IL, US: Human Kinetics
- Welk, G.J., Corbin, C.B., Nann Dowell, M., & Harris, H. (1997). The validity and reliability of two different versions of the children and youth physical self-perception profile. *Measurement in Physical Education and Exercise Science, 1*(3), 163-177.
- Welk, G. J., & Eklund, B. (2005). Validation of the children and youth physical self perceptions profile for young children. *Psychology of Sport & Exercise, 6*(1), 51-65.
doi:10.1016/j.psychsport.2003.10.006
- Whitehead, J. R. (1995). A study of children's physical self-perceptions using an adapted Physical Self-Perception Questionnaire. *Pediatric Exercise Science, 7*, 132–151.
- World Health Organization (WHO). (2002). *International Classification of Functioning, Disability and Health. Towards a common language for functioning and Health ICF*. Geneva, Switzerland.
- World Health Organization (WHO). (2009). *Measuring health and disability: Manual for WHO disability assessment schedule WHODAS 2.0*. Geneva: Switzerland. World Health Organization.
- World Health Organization (WHO). (2007). *International classification of functioning, disability and health: children & youth version: ICF-CY*. Geneva: Switzerland. World Health Organization.
- World Health Organization (WHO). (2018). Constitution of WHO: principles. Retrieved from <http://www.who.int/about/mission/en/>

YOUTH ADAPTED SPORTS CAMP

World Health Organization (WHO). (2018). WHO disability assessment schedule 2.0 WHODAS

2.0. Retrieved from <https://www.who.int/classifications/icf/whodasii/en/index4.html>.

Yazicioglu, K., Yavuz, F., Goktepe, A.S., & Tan, A.K. (2012). Influence of adapted sports on quality of life and life satisfaction in sport participants and non-sport participants with physical disabilities. *Disability and Health Journal*, 5, 249-253.

Zabriskie, R. B., Lundberg, N. R., & Groff, D. G. (2005). Quality of Life and Identity: The Benefits of a Community-Based Therapeutic Recreation and Adaptive Sports Program. *Therapeutic Recreation Journal*, 39(3), 176-191.

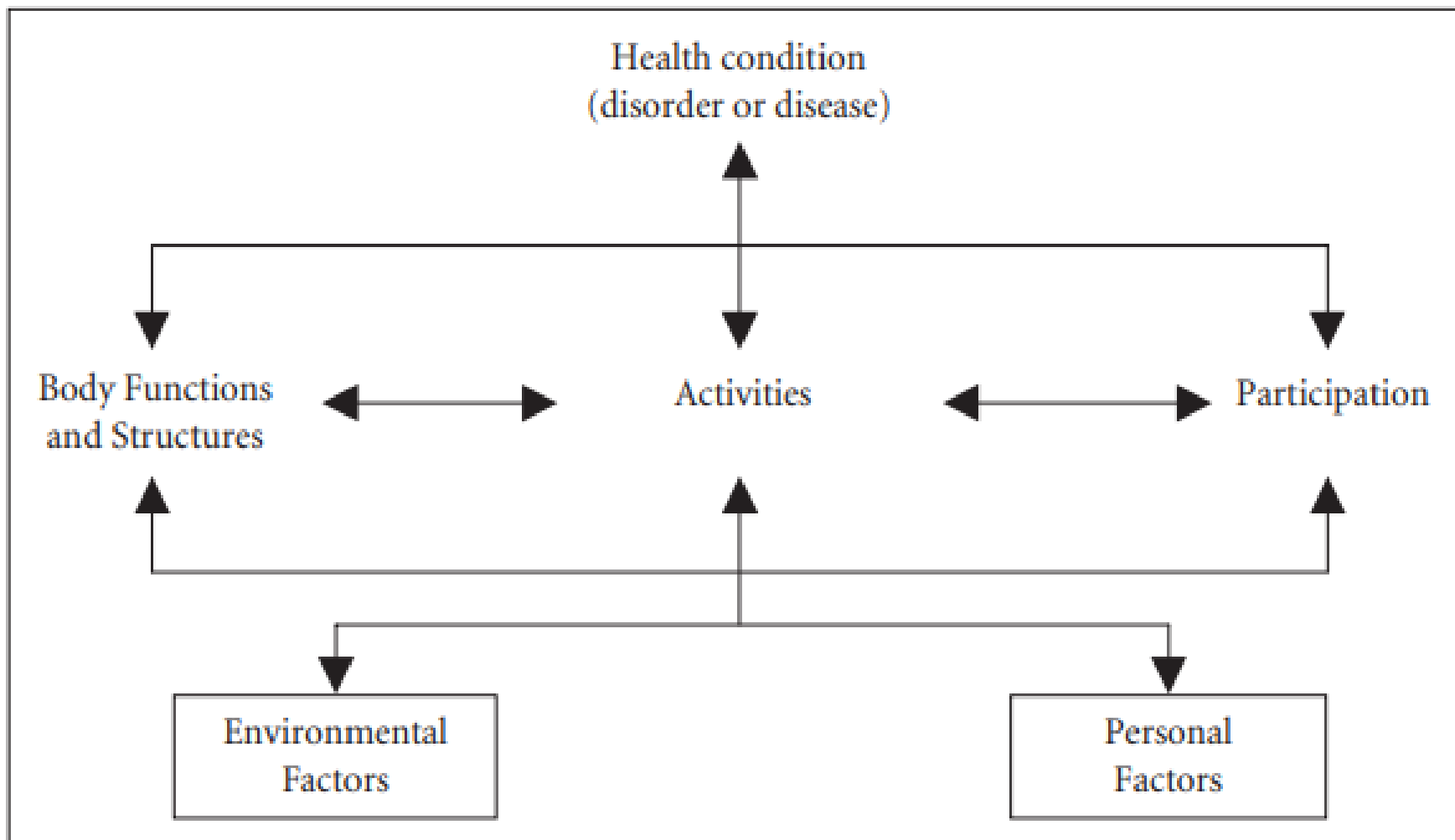


Figure 1. International Classification of Functioning, Disability and Health – Child and Youth Version (ICF) Model representing the characteristics that contribute to levels of functioning within a health condition and how those components interact with each other.

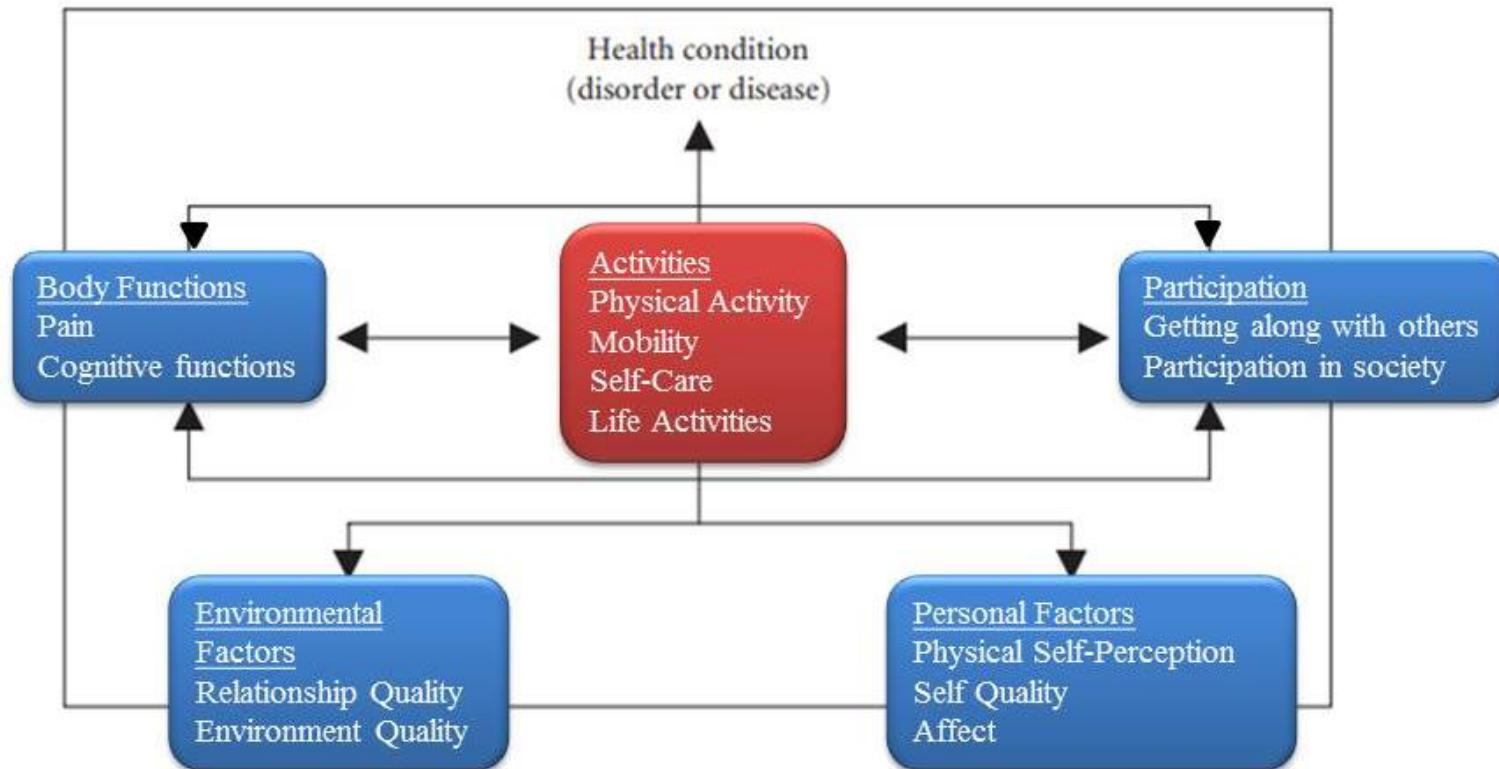


Figure 2. ICF model with study outcome measures.

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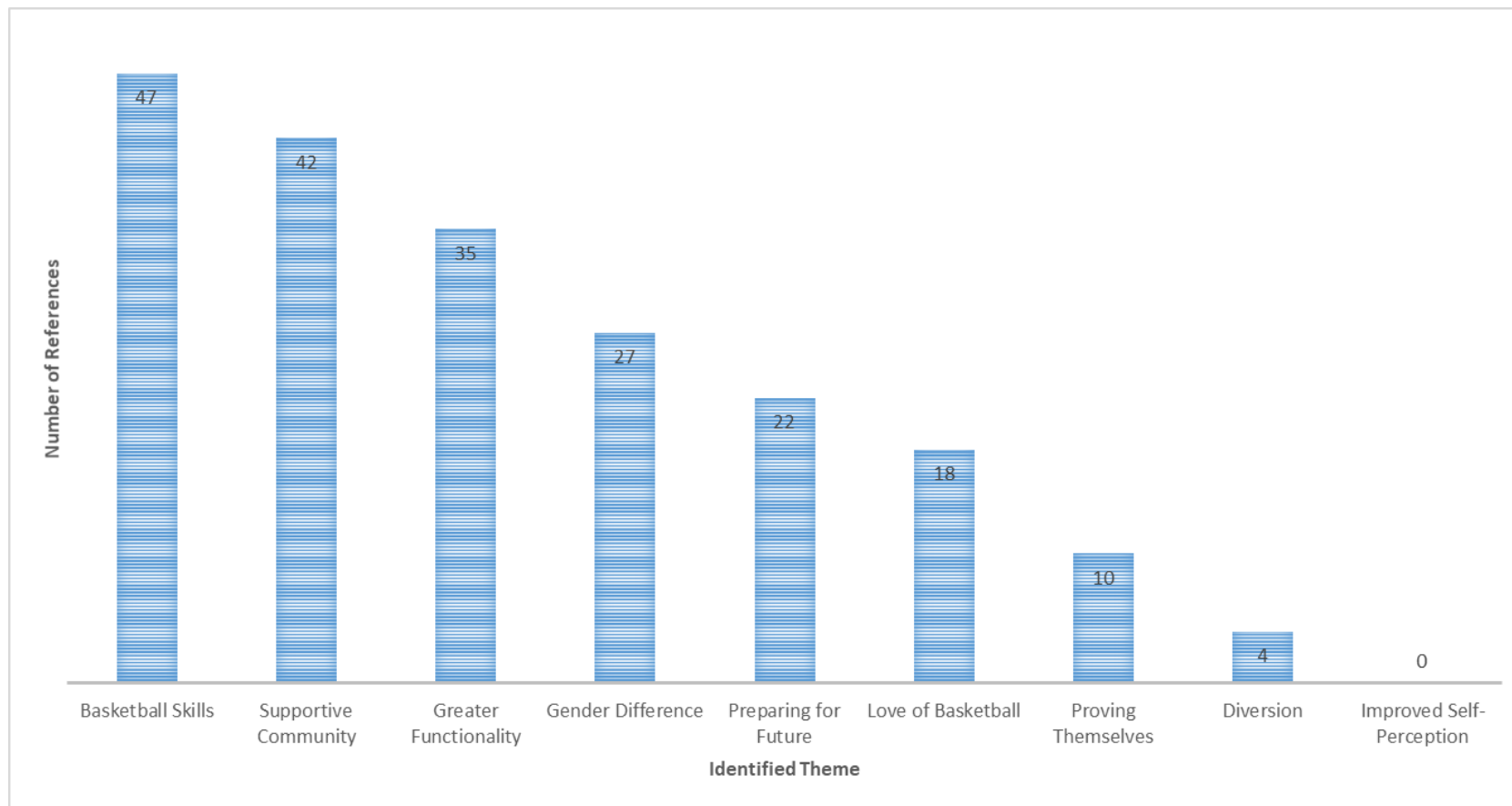


Figure 3. Number of references overall for each theme identified from the focus groups conducted during the camp. These themes were endorsed by both male and female campers.

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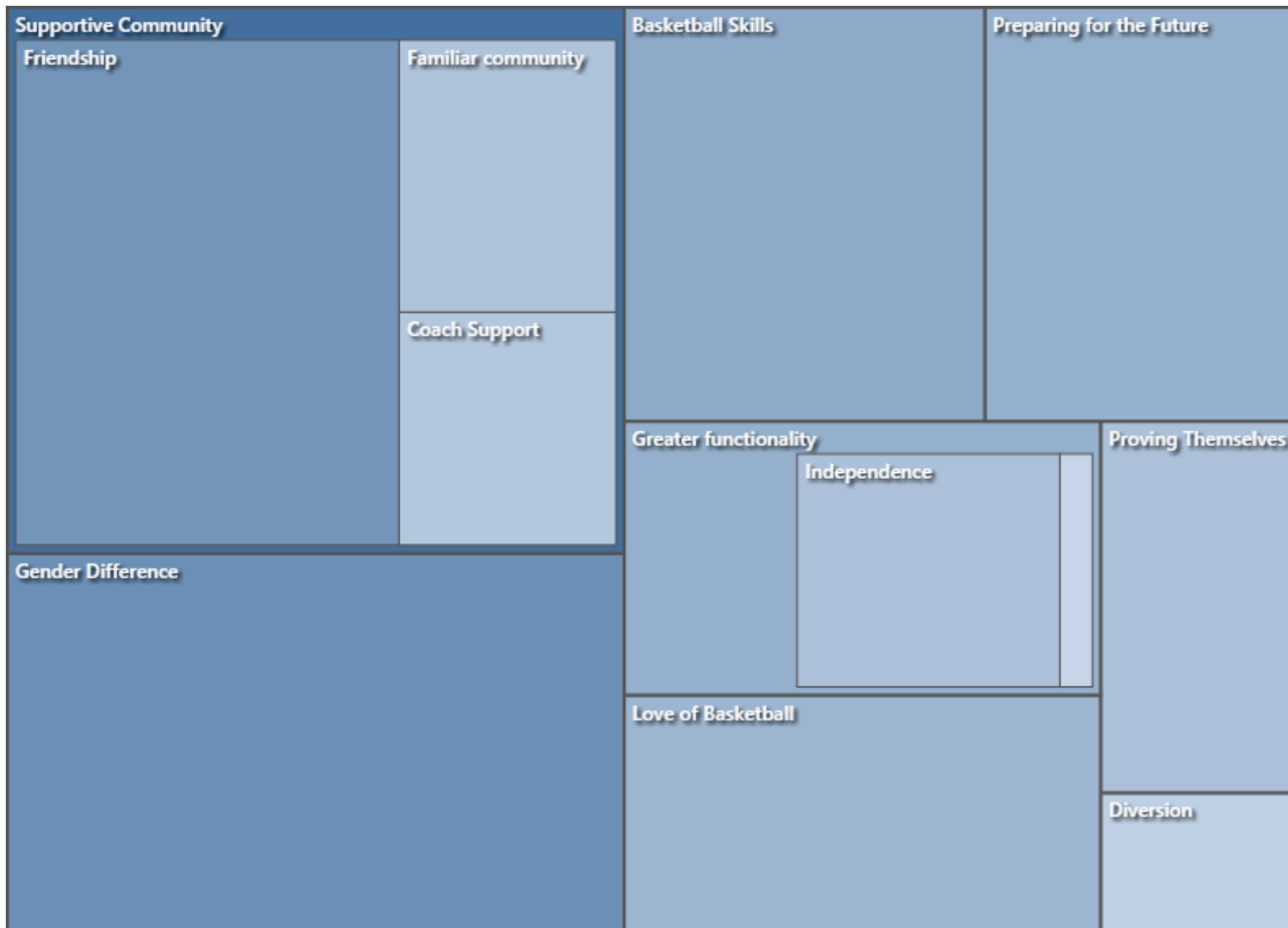


Figure 4. Tree Map of Female Focus Groups. This depicts the number of thematic endorsements by the female focus groups.

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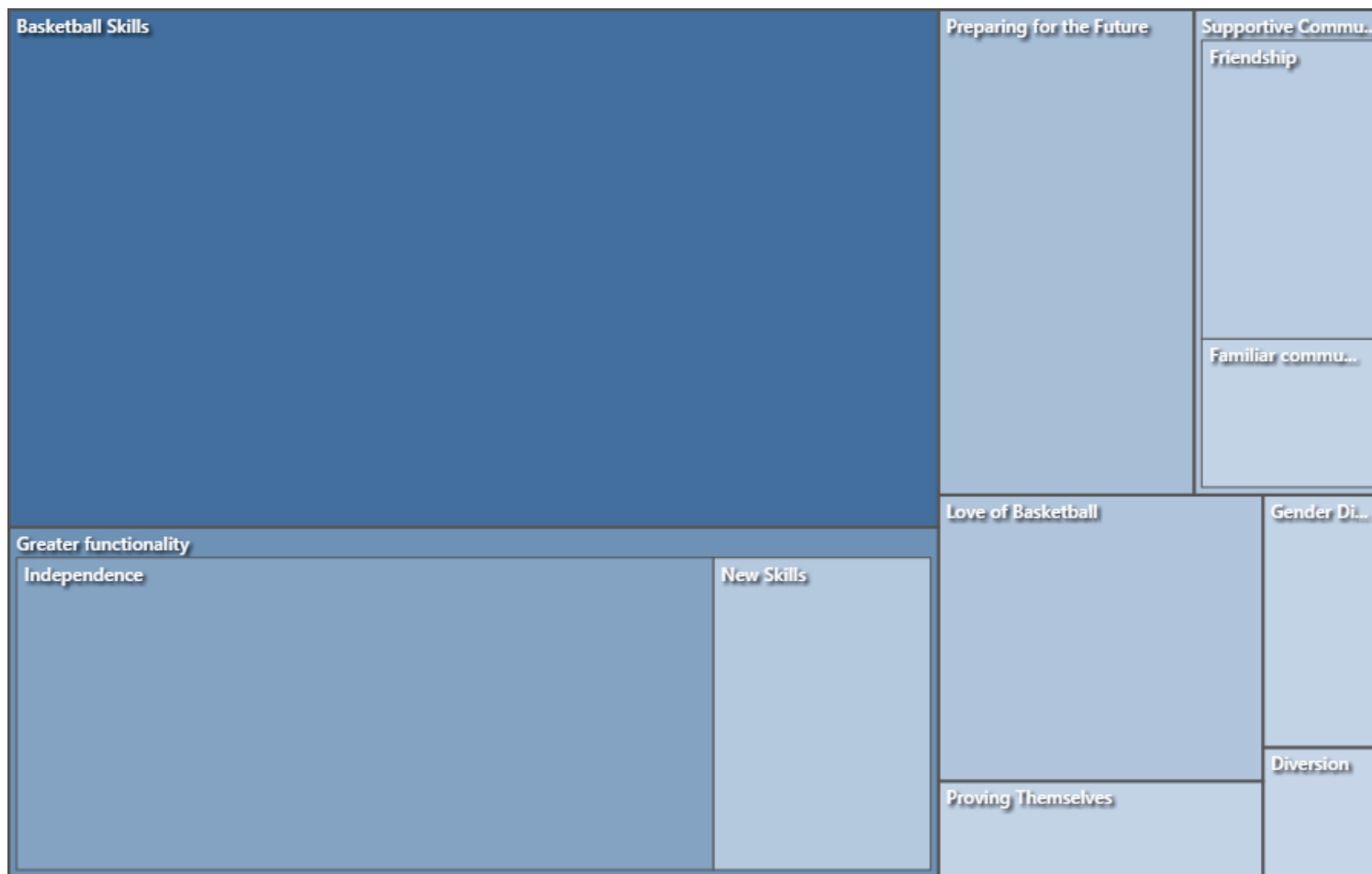


Figure 5. Tree Map of Male Focus Groups. This depicts the number of thematic endorsements by the male focus groups.

YOUTH ADAPTED SPORTS CAMP

Table 1
Demographic Characteristics of Camp Study Participants

Characteristic	<i>N</i>	%
Gender		
Male	13	38.2
Female	20	58.8
Other	1	2.9
Age at time of camp		
12	1	2.9
13	3	8.8
14	4	11.8
15	10	29.4
16	9	26.5
17	2	5.9
19	2	5.9
21	1	2.9
22	1	2.9
32	1	2.9
Race		
White	19	55.9
Hispanic/Latin	8	23.5
Asian	3	8.8
Other	4	11.8
What best describes the adults living in your home?		
Mother & Father	18	52.9
Mother only	2	5.9
Father only	2	5.9
Mother and stepfather	4	11.7
Father and stepmother	3	8.8
Other	5	14.8
<i>Mom & Aunt</i>		
<i>Grandma and Nunnie</i>		
<i>Mother and Mother</i>		
<i>Self</i>		
<i>Sister & Brother-in-law</i>		
Reason for Disability		
Congenital	22	68.8
Injury	10	31.2

YOUTH ADAPTED SPORTS CAMP

Table 1 continued

Demographic Characteristics of Camp Study Participants

Characteristic	<i>n</i>	%
What is your primary form of physical movement?		
Unassisted Walking	5	14.7
Walking/wheelchair	1	2.9
Braces/Crutches	1	2.9
Braces/Crutches/Wheelchair	2	5.9
Braces only	2	5.9
Crutches/Walker	1	2.9
Wheelchair	22	64.8
Do you play on a wheelchair basketball team at home?		
No	3	9.1
Yes	30	90.9
How many years of basketball have you played?		
0	1	2.9
1	5	14.7
2	3	8.8
3	4	11.8
4	7	20.5
5	2	5.9
6	2	5.9
8	4	11.8
9	2	5.9
10	2	5.9
11	2	5.9
How many adapted sports camps have you attended?		
0	5	14.7
1	10	29.4
2	6	17.7
3	5	14.7
4	3	8.8
5	3	8.8
Don't know	2	5.9
How often does not having facilities or space to exercise keep you from physical activity?		
Never	13	38.2
Sometimes	17	50.0
Very Often	4	11.8

YOUTH ADAPTED SPORTS CAMP

Table 1 continued

Demographic Characteristics of Camp Study Participants

Characteristic	<i>n</i>	%		
How often does not knowing where to go to exercise keep you from physical activity?				
Never	23	67.6		
Sometimes	9	26.5		
Very Often	2	5.9		
How often does lack of adapted exercise equipment keep you from physical activity?				
Never	20	58.8		
Sometimes	11	32.4		
Very Often	3	8.8		
How often does lack of transportation to get to a place to exercise keep you from physical activity?				
Never	21	61.8		
Sometimes	11	32.4		
Very Often	2	5.9		
	<i>N</i>	<i>M</i>	<i>SD</i>	
Internally Motivated	34	6.49	0.77	
Externally Motivated	34	1.70	0.84	

YOUTH ADAPTED SPORTS CAMP

Table 2
Descriptive Statistics for the Study Variables

Variable		<i>N</i>	<i>M</i> (*)	<i>SE</i> (*)	Range
Activity HQoL		32	179.75(177.75)	4.58(5.93)	0-300
Total leisure time activity					0-59.32
	pre	32	21.83(21.14)	2.91(3.64)	
	end	31	24.64(22.30)	3.25(3.82)	
	post	21	26.78(26.78)	3.68(3.68)	
HQoL					0-100
	pre	32	65.79(66.47)	1.14(1.31)	
	end	31	69.05(68.90)	1.07(0.93)	
	post	20	68.52(68.52)	0.9(0.90)	
YQoL					0-100
	pre	32	82.18(83.61)	2.9(3.51)	
	end	31	81.91(82.48)	3.26(4.39)	
PSPP					0-4
	pre	32	2.73(2.90)	0.11(0.12)	
	end	29	2.75(2.85)	0.11(0.14)	
Cognitive HQoL					0-100
	pre	32	68.44(69.21)	1.8(1.92)	
	end	32	71.19(72.06)	2.06(2.84)	
	post	21	72.06(72.06)	1.58(1.58)	
Mobility HQoL					0-100
	pre	32	54.88(56.00)	2.74(3.50)	
	end	31	56(55.40)	3(3.78)	
	post	20	50.2(50.20)	3.01(3.01)	
Self Care HQoL					0-100
	pre	32	75.78(74.76)	1.12(1.52)	
	end	32	78.13(77.38)	0.86(1.27)	
	post	21	78.81(78.81)	0.48(0.48)	
Getting Along with Others HQoL					0-100
	pre	32	67.38(68.57)	2.53(3.19)	
	end	32	73.13(74.29)	1.75(1.62)	
	post	21	72.57(72.57)	1.57(1.57)	
Participation in Society HQoL					0-100
	pre	32	62.5(63.81)	2.18(2.23)	
	end	32	66.38(66.29)	1.66(1.86)	
Self YQoL					0-100
	pre	32	72.5(75.05)	3.7(4.38)	
	end	31	77.1(77.71)	3.57(4.58)	

**M/SE* of campers who completed assessments at all time periods

YOUTH ADAPTED SPORTS CAMP

Table 2 continued
Descriptive Statistics for the Study Variables

Variable		<i>N</i>	<i>M</i> (*)	<i>SE</i> (*)	
Relationship YQoL	pre	32	83.31(84.59)	2.57(3.35)	0-100
	end	31	80.39(80.67)	3.29(4.54)	
Environment YQoL	pre	32	88.52(88.45)	2.48(3.48)	0-100
	end	32	87.03(86.31)	3.31(4.93)	
Somatic symptoms	pre	32	11.98(11.43)	1.44(1.84)	0-96
	during	29	12.69(12.06)	1.7(2.47)	
	end	29	14.41(13.4)	1.75(2.26)	
Positive Affect	pre	32	3.68(3.77)	0.13(0.15)	0-4
	during	27	3.81(3.89)	0.14(0.17)	
	end	31	3.61(3.57)	0.15(0.20)	
Negative Affect	pre	32	1.59(1.54)	0.06(0.06)	0-4
	during	29	1.43(1.40)	0.06(0.07)	
	end	30	1.43(1.48)	0.07(0.10)	
Pain Intensity	pre	32	31.98(31.11)	3.57(4.25)	0-100
	end	31	38.49(36.19)	4.11(5.32)	
	post	21	38.89(38.89)	5.49(5.49)	
Chronic Pain Grade Scale	pre	32	1.19(1.14)	0.95(0.13)	0-4
	end	31	1.39(1.33)	0.14(0.17)	
	post	21	1.62(1.62)	0.18(0.18)	

**M/SE* of campers who completed assessments at all time periods

YOUTH ADAPTED SPORTS CAMP

Table 3
ANOVA Summaries of ICF model factors from the beginning to the end of camp.

Overall ICF Model	multi F	df	Error df	p	η_p^2	Mean Difference	SE	95% CI for Difference	
								Lower Bound	Upper Bound
Health Quality of Life ^d	7.96	1	30	0.008**	0.21	-44642.16	15818.91	-76948.68	-12335.64
Youth Quality of Life ^d	0.34	1	30	0.57	0.01	-13416.30	23194.18	-60785.14	33952.54
Physical Self Perception	0.03	1	28	0.86	0.001	-0.01	0.06	-0.13	0.11
ICF Model Grouped by Factor									
Body function									
Pain Intensity	5.84	1	30	0.02 [†]	0.16	-7.20	2.98	-13.29	-1.12
Children's Somatization Inventory ^a	4.98	1	28	0.03 [†]	0.15	-0.48	0.22	-0.92	-0.04
Cognitive HQoL ^d	5.87	1	31	0.02 [†]	0.16	-62111.11	25633.02	-114390.00	-9832.22

* $p < .025$, alpha adjusted for 2 separate ANOVAS

** $p < .0125$, alpha adjusted for 3 separate ANOVAS

† $p < .05$ and at least medium effect size

^a = square root transformation applied

^b = log10 transformation applied

^c = squared transformation applied

^d = cubed transformation applied

YOUTH ADAPTED SPORTS CAMP

Table 3 continued

ANOVA Summaries of ICF model factors from the beginning to the end of camp.

ICF Model Grouped by Factor Activity	<i>multi F</i>	<i>df</i>	<i>Error df</i>	<i>p</i>	η_p^2	<i>Mean Difference</i>	<i>SE</i>	<i>95% CI for Difference</i>	
								<i>Lower Bound</i>	<i>Upper Bound</i>
Total Leisure Time Activity ^a	0.71	1	30	0.41	0.02	-0.24	0.29	-0.83	0.35
Mobility HQoL ^c	0.12	1	30	0.73	0.004	-90.32	256.96	-615.10	434.46
Self-Care HQoL ^d	6.78	1	31	0.01**	0.18	-38003.91	14594.06	-67768.69	-8239.12
Participation									
Getting along with others HQoL ^d	6.07	1	31	0.02*	0.16	-66956.00	27188.61	-122407.54	-11504.47
Participation in society HQoL	4.25	1	31	0.048 [†]	0.12	-3.88	1.88	-7.71	-0.04
Environmental									
Relationship YQoL ^d	1.05	1	30	0.32	0.03	33446.97	32722.25	-33380.78	100274.72
Environment YQoL ^d	0.02	1	31	0.88	0.001	4775.88	32050.39	-60591.33	70143.09

* $p < .025$, alpha adjusted for 2 separate ANOVAS

** $p < .0125$, alpha adjusted for 3 separate ANOVAS

[†] $p < .05$ and at least medium effect size

a = square root transformation applied

b = log10 transformation applied

c = squared transformation applied

d = cubed transformation applied

YOUTH ADAPTED SPORTS CAMP

Table 3 continued
ANOVA Summaries of ICF model factors from the beginning to the end of camp.

ICF Model Grouped by Factor	multi <i>F</i>	<i>df</i>	Error <i>df</i>	<i>p</i>	η_p^2	Mean Difference	SE	95% CI for Difference	
								Lower Bound	Upper Bound
<hr/> Personal <hr/>									
Self YQoL ^d	3.93	1	30	0.05 [†]	0.12	-76792.26	38729.07	-155887.57	2303.05
Physical Self Perception	33	1	28	0.86	0.001	-0.01	0.06	-0.13	0.11
Positive Affect ^c	0.01	1	30	0.92	0	0.08	0.77	-1.50	1.65
Negative Affect ^b	4.63	1	29	0.04 [†]	0.14	-0.05	0.02	0.002	0.09

* *p* < .025, alpha adjusted for 2 separate ANOVAS

** *p* < .0125, alpha adjusted for 3 separate ANOVAS

† *p* < .05 and at least medium effect size

a = square root transformation applied

b = log10 transformation applied

c = squared transformation applied

d = cubed transformation applied

YOUTH ADAPTED SPORTS CAMP

Table 4

Mixed Model ANOVA Summaries from the beginning to the end of camp with baseline activity as between subject indicator

	<i>multi F</i>	<i>df</i>	<i>Error df</i>	<i>p</i>	η_p^2	<i>Mean Difference</i>	<i>SE</i>	<i>95% CI for Difference</i>	
								<i>Lower Bound</i>	<i>Upper Bound</i>
Overall ICF Model									
Health Quality of Life ^d	7.44	1	29	0.01**	0.20	-45814.85	16796.78	-80168.12	-11461.59
<i>Interaction</i>	<i>0.06</i>	<i>1</i>	<i>29</i>	<i>0.81</i>	<i>0.00</i>				
Youth Quality of Life ^d	0.02	1	29	0.90	0.00	-3056.86	23745.34	-51621.53	45507.81
<i>Interaction</i>	<i>2.26</i>	<i>1</i>	<i>29</i>	<i>0.14</i>	<i>0.07</i>				
Physical Self Perception	0.02	1	27	0.90	0.00	-0.01	0.06	-0.14	0.12
<i>Interaction</i>	<i>0.01</i>	<i>1</i>	<i>27</i>	<i>0.93</i>	<i>0.00</i>				
<hr/>									
ICF Model Grouped by Factor									
<hr/>									
Body function									
Pain Intensity	4.33	1	29	0.046 [†]	0.13	-6.54	3.14	-12.96	-0.11
<i>Interaction</i>	<i>0.53</i>	<i>1</i>	<i>29</i>	<i>0.47</i>	<i>0.02</i>				
Children's Somatization Inventory ^a	5.07	1	27	0.03 [†]	0.16	-0.51	0.22	-0.97	-0.05
<i>Interaction</i>	<i>0.24</i>	<i>1</i>	<i>27</i>	<i>0.63</i>	<i>0.01</i>				
Cognitive HQoL ^d	5.14	1	30	0.03 [†]	0.15	-62166.43	27430.50	-118186.98	-6145.87
<i>Interaction</i>	<i>0.00</i>	<i>1</i>	<i>30</i>	<i>1.00</i>	<i>0.00</i>				
<hr/>									
Activity									
Total Leisure Time Activity ^a	0.37	1	29	0.55	0.01	-0.19	0.31	-0.83	0.45
<i>Interaction</i>	<i>0.23</i>	<i>1</i>	<i>29</i>	<i>0.63</i>	<i>0.01</i>				
Mobility HQoL ^c	0.00	1	29	0.95	0.00	16.40	264.45	-524.45	557.25
<i>Interaction</i>	<i>0.06</i>	<i>1</i>	<i>29</i>	<i>0.18</i>	<i>0.06</i>				
Self-Care HQoL ^d	11.14	1	30	0.002**	0.27	-48189.67	14439.24	-77678.54	-18700.79
<i>Interaction</i>	<i>5.10</i>	<i>1</i>	<i>30</i>	<i>0.03[†]</i>	<i>0.15</i>				

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† $p < .05$ and at least medium effect size

a = square root transformation applied; b = log10 transformation applied

c = squared transformation applied; d = cubed transformation applied

YOUTH ADAPTED SPORTS CAMP

Table 4 continued

Mixed Model ANOVA Summaries from the beginning to the end of camp with baseline activity as between subject indicator

ICF Model Grouped by Factor	<i>multi F</i>	<i>df</i>	<i>Error df</i>	<i>p</i>	η_p^2	<i>Mean Difference</i>	<i>SE</i>	<i>95% CI for Difference</i>	
								<i>Lower Bound</i>	<i>Upper Bound</i>
Participation									
Getting along with others HQoL ^d	8.02	1	30	0.008**	0.21	-79649.25	28134.23	-137107.01	-22191.48
<i>Interaction</i>	<i>2.08</i>	<i>1</i>	<i>30</i>	<i>0.16</i>	<i>0.07</i>				
Participation in society HQoL	3.61	1	30	0.07	0.11	-3.82	2.01	-7.92	0.29
<i>Interaction</i>	<i>0.01</i>	<i>1</i>	<i>30</i>	<i>0.93</i>	<i>0.00</i>				
Environmental									
Relationship YQoL ^d	0.84	1	29	0.37	0.03	31926.53	34766.05	-39178.02	103031.07
<i>Interaction</i>	<i>0.02</i>	<i>1</i>	<i>29</i>	<i>0.88</i>	<i>0.00</i>				
Environment YQoL ^d	0.21	1	30	0.65	0.01	15333.84	33738.67	-53569.71	84237.39
<i>Interaction</i>	<i>1.00</i>	<i>1</i>	<i>30</i>	<i>0.33</i>	<i>0.03</i>				
Personal									
Self YQoL ^d	2.09	1	29	0.16	0.07	-56456.13	39055.03	-136332.63	23420.38
<i>Interaction</i>	<i>3.22</i>	<i>1</i>	<i>29</i>	<i>0.08</i>	<i>0.10</i>				
Physical Self Perception	0.02	1	27	0.90	0.00	-0.01	0.06	-0.14	0.12
<i>Interaction</i>	<i>0.01</i>	<i>1</i>	<i>27</i>	<i>0.93</i>	<i>0.00</i>				
Positive Affect ^c	0.23	1	29	0.63	0.01	0.38	0.80	-1.24	2.01
<i>Interaction</i>	<i>1.78</i>	<i>1</i>	<i>29</i>	<i>0.19</i>	<i>0.06</i>				
Negative Affect ^b	4.23	1	28	0.049†	0.13	0.05	0.02	0.00	0.10
<i>Interaction</i>	<i>0.01</i>	<i>1</i>	<i>28</i>	<i>0.94</i>	<i>0.00</i>				

* $p < .025$, alpha adjusted for 2 separate ANOVAS

** $p < .0125$, alpha adjusted for 3 separate ANOVAS

† $p < .05$ and at least medium effect size

a = square root transformation applied; *b* = log10 transformation

c = squared transformation applied; *d* = cubed transformation applied

YOUTH ADAPTED SPORTS CAMP

Table 5 .
ANOVA Summaries from the beginning to the end of camp with file split by baseline activity.

Overall ICF Model	<i>multi F</i>	<i>df</i>	<i>Error df</i>	<i>p</i>	η_p^2	<i>Mean Difference</i>	<i>SE</i>	<i>95% CI for Difference</i>	
								<i>Lower Bound</i>	<i>Upper Bound</i>
Health Quality of Life^d									
<i>High Activity</i>	4.47	1	19	0.048 [†]	0.19	-41775.57	19749.89	-83112.56	-438.58
<i>Low Activity</i>	3.25	1	10	0.10	0.25	-49854.13	27639.89	-111439.65	11731.39
Youth Quality of Life^d									
<i>High Activity</i>	2.75	1	19	0.11	0.13	-38739.37	23371.05	-87655.55	10176.81
<i>Low Activity</i>	0.46	1	10	0.52	0.04	32625.65	48299.27	-74991.82	140243.13
Physical Self Perception									
<i>High Activity</i>	0.04	1	19	0.850	0.002	-0.01	0.07	-0.17	0.14
<i>Low Activity</i>	0.00	1	8	0.98	0.00	0.00	0.10	-0.23	0.23
ICF Model Grouped by Factor									
<u>Body function</u>									
Pain Intensity									
<i>High Activity</i>	4.76	1	19	0.04 [†]	0.20	-8.83	4.05	-17.31	-0.36
<i>Low Activity</i>	1.05	1	10	0.33	0.10	-4.24	4.15	-13.48	5.00
Children's Somatization Inventory^a									
<i>High Activity</i>	1.93	1	17	0.18	0.10	-0.40	0.29	-1.00	0.21
<i>Low Activity</i>	3.40	1	10	0.10	0.25	-0.61	0.33	-1.36	0.13
Cognitive HQoL^d									
<i>High Activity</i>	4.15	1	20	0.06	0.17	-61989.42	30429.52	-125464.29	1485.45
<i>Low Activity</i>	1.63	1	10	0.23	0.14	-62343.43	48886.98	-171270.42	46583.55

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† $p < .05$ and at least medium effect size

a = square root transformation applied; *b* = log10 transformation

c = squared transformation applied; *d* = cubed transformation applied

YOUTH ADAPTED SPORTS CAMP

Table 5 continued

ANOVA Summaries from the beginning to the end of camp with file split by baseline activity.

ICF Model Grouped by Factor	<i>multi F</i>	<i>df</i>	<i>Error df</i>	<i>p</i>	η_p^2	<i>Mean Difference</i>	<i>SE</i>	<i>95% CI for Difference</i>	
								<i>Lower Bound</i>	<i>Upper Bound</i>
<u>Activity</u>									
Total Leisure Time Activity ^a									
<i>High Activity</i>	0.76	1	20	0.39	0.04	-0.34	0.39	-1.16	0.47
<i>Low Activity</i>	0.01	1	9	0.92	0.00	-0.04	0.38	-0.89	0.81
Mobility HQoL ^c									
<i>High Activity</i>	2.03	1	19	0.17	0.10	-351.20	246.78	-867.71	165.31
<i>Low Activity</i>	0.47	1	10	0.51	0.05	384.00	559.45	-862.53	1630.53
Self-Care HQoL ^d									
<i>High Activity</i>	2.08	1	20	0.17	0.09	-15595.24	10808.42	-38141.20	6950.72
<i>Low Activity</i>	5.46	1	10	0.04 [†]	0.35	-80784.09	34580.71	-157834.72	-3733.46
<u>Participation</u>									
Getting along with others HQoL ^d									
<i>High Activity</i>	1.36	1	20	0.26	0.06	-39030.86	33430.86	-108766.40	30704.69
<i>Low Activity</i>	7.36	1	10	0.02 [†]	0.42	-120267.64	44340.20	-219063.77	-21471.50
Participation in society HQoL									
<i>High Activity</i>	2.69	1	20	0.12	0.12	-4.00	2.44	-9.09	1.09
<i>Low Activity</i>	1.45	1	10	0.26	0.13	-3.64	3.02	-10.38	3.10

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† $p < .05$ and at least medium effect size

a = square root transformation applied; *b* = log10 transformation applied

c = squared transformation applied; *d* = cubed transformation applied

YOUTH ADAPTED SPORTS CAMP

Table 5 continued

ANOVA Summaries from the beginning to the end of camp with file split by baseline activity.

ICF Model Grouped by Factor	<i>multi F</i>	<i>df</i>	<i>Error df</i>	<i>p</i>	η_p^2	<i>Mean Difference</i>	<i>SE</i>	<i>95% CI for Difference</i>	
								<i>Lower Bound</i>	<i>Upper Bound</i>
Environmental									
Relationship YQoL ^d									
<i>High Activity</i>	0.99	1	19	0.33	0.05	37163.60	37284.06	-40872.83	115200.03
<i>Low Activity</i>	0.17	1	10	0.69	0.02	26689.45	65141.56	-118454.98	171833.89
Environment YQoL ^d									
<i>High Activity</i>	0.37	1	20	0.55	0.02	-18451.64	30406.34	-81878.14	44974.87
<i>Low Activity</i>	0.44	1	10	0.52	0.04	49119.32	73715.75	-115129.60	213368.23
Personal									
Self YQoL ^d									
<i>High Activity</i>	6.26	1	19	0.02 [†]	0.25	-126502.80	50544.91	-232294.52	-20711.08
<i>Low Activity</i>	0.07	1	10	0.80	0.01	13590.55	50886.95	-99792.64	126973.74
Physical Self Perception									
<i>High Activity</i>	0.04	1	19	0.85	0.00	-0.01	0.07	-0.17	0.14
<i>Low Activity</i>	0.00	1	8	0.98	0.00	0.00	0.10	-0.23	0.23
Positive Affect ^c									
<i>High Activity</i>	0.56	1	19	0.47	0.03	-0.68	0.91	-2.58	1.22
<i>Low Activity</i>	1.11	1	10	0.32	0.10	1.45	1.37	-1.61	4.50
Negative Affect ^b									
<i>High Activity</i>	2.18	1	18	0.16	0.11	0.05	0.03	-0.02	0.11
<i>Low Activity</i>	3.08	1	10	0.11	0.24	0.05	0.03	-0.01	0.11

* $p < .025$, alpha adjusted for 2 separate ANOVAS

** $p < .0125$, alpha adjusted for 3 separate ANOVAS

† $p < .05$ and at least medium effect size

a = square root transformation applied

b = log10 transformation applied

c = squared transformation applied

d = cubed transformation applied

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Table 6

Summary of multiple ANOVAs for mood levels and somatic symptoms over the course of the camp.

Overall ICF Model	<i>multi F</i>	<i>df</i>	<i>Error df</i>	<i>p</i>	η_p^2
Children's Somatization Inventory	3.89	2	24	0.03 [†]	0.25
Positive Affect	0.78	2	24	0.47	0.06
Negative Affect	3.47	2	26	0.046 [†]	0.21

* $p < .0125$, alpha adjusted for 3 separate ANOVAS

† $p < .05$ and at least medium effect size

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Table 7
Intraclass correlation coefficients of ICF model factor measures

	ICC	Confidence Interval		<i>F</i>	Df1	Df2	<i>p</i>
		lower	upper				
Activity	0.35	-0.12	0.65	1.54	31	93	0.06
Body Function	0.44	-0.01	0.71	1.78	31	62	0.03†
Participation	0.61	0.21	0.81	2.58	31	31	0.005*
Environmental	0.89	0.78	0.95	9.14	31	31	0*
Personal Factors	0.11	-0.60	0.50	1.08	31	93	0.38

* $p < .0125$, alpha adjusted for 3 separate ANOVAS

† $p < .05$ and at least medium effect size

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Table 8

Correlation matrix of ICF factors using z-scored measures within model

	Activity	Body Function	Participation	Environmental	Personal Factors
Activity	-	0.116	.421*	0.237	0.219
Body Function	0.116	-	0.159	0.283	0.192
Participation	.421*	0.159	-	.630**	.601**
Environmental	0.237	0.293	.630**	-	.801**
Personal Factors	0.219	0.192	.601**	.801**	-

N = 32

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

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Appendix A

Demographic Information – Protocol 2018-0582

Gender: ____ Male ____ Female

Date of Birth: _____

Age _____

Grade in School: _____

Race: Check One

- Black
- Hispanic/Latin
- Asian
- White
- American Indian
- Other

Family Status: Please check the line that best describes the adults living in your home right now.

- Mother and Father
- Mother only
- Father only
- Mother and Stepfather
- Father and Stepmother
- Other Relatives
- Foster Home
- Other (please specify): _____

Reason for disability:

- Congenital (born with it)
- Injury

Level of Spinal Cord Injury: _____

What is your primary form of physical movement?

- Walking
- Assisted walking (braces)
- Assisted walking (crutches)
- Assisted walking (walker)
- Wheelchair

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If your primary form of physical movement is a wheelchair, how long have you been using a wheelchair on a daily basis? _____

Do you play on a wheelchair basketball team at home? _____

How many years of basketball have you played? _____

How many adapted sports camps have you attended? _____

When you are at home, how often do the following things keep you from physical activity?

	Never	Sometimes	Very Often
No facilities or space to exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not knowing where to go to exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of adapted exercise equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of transportation to get to place to exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How long does it take you to get to a place to exercise? _____

Why did you come to camp? Circle the most accurate answer on the 7 point scale for each statement

	Not True At All		Somewhat True			Very True	
Because it gives me pleasure to learn more about my sport.	1	2	3	4	5	6	7
Because people I care about would be upset with me if I didn't.	1	2	3	4	5	6	7
Because people around me reward me when I do.	1	2	3	4	5	6	7
Because I find it enjoyable to discover new performance strategies.	1	2	3	4	5	6	7
Because it is very interesting to learn how I can improve.	1	2	3	4	5	6	7
Because I think others would disapprove of me if I did not.	1	2	3	4	5	6	7

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Appendix B

This questionnaire asks about problems you may have due to health conditions. Health conditions include diseases, illnesses, or other health problems that may be short- or long-lasting injuries, mental or emotional problems, or problems with alcohol or drugs.

Think back over the last 30 days and answer these questions, thinking about how much difficulty you have had doing the following activities. For each question, please circle only one response.

H1	How do you rate your health overall health in the past 30 days?	Very good	Good	Moderate	Bad	Very bad
In the last 30 days, how much difficulty did you have in:						
Understanding and communicating						
D1.1	Concentrating for 10 minutes at a time or more while doing homework, playing a game, or doing something you were asked to do?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.2	Remembering to do important things, such as crossing the street safely, taking the right books to school, and remembering to do homework assignments?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.3	Finding a way to deal with common, everyday problems that other people your age can manage?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.4	Learning how to do something new, for example, how to play a new game, or learning something new at school?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.5	Generally understanding what people say?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.6	Telling your family or friends about things you have done, or people you have met, or places you have been?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
Getting around						
D2.1	Standing for a reasonable period of time, for example, in PE or school assembly or church/temple?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.2	Getting up from a sitting position?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.3	Moving around inside your home?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.4	Getting around at school or at a friend's?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.5	Walking for as long a distance as other people our age can?	None	Mild	Moderate	Severe	Extreme/ Cannot Do

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In the last 30 days, <u>how much difficulty</u> did you have in:						
Self-care						
D3.1	Keeping yourself and your clothes clean, taking baths or showers, and brushing your teeth without being asked?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D3.2	Getting dressed on your own?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D3.3	Eating meals without help?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D3.4	Staying safe when you are alone or not putting yourself in danger when there are no adults around?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
Getting along with people						
D4.1	Getting along with people you do not know well?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.2	Keeping a friendship?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.3	Getting along with family members?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.4	Making new friends?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.5	Getting along with your teachers or adults who aren't in your family?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
Life activities						
D5.1	Doing chores or other things you are expected to do at home to help out?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D5.2	Finishing chores or home activities that you are supposed to do?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D5.3	Doing chores or other home activities well?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D5.4	Doing these home activities quickly when it is important?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
IF YOU GO TO SCHOOL, COMPLETE QUESTIONS D5.5–D5.9 BELOW. OTHERWISE, SKIP TO D6.1						
	<i>In the last 30 days that you were in school, how much difficulty did you have in:</i>					
D5.5	Doing your regular school assignments?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D5.6	Studying for important school tests?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D5.7	Completing all of the school assignments and activities that you needed to do?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D5.8	Getting your school work done as quickly as needed?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D5.9	How much difficulty do you have in following rules or fitting in with others at school?	None	Mild	Moderate	Severe	Extreme/ Cannot Do

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H2	Overall, how much did these difficulties interfere with your life?	Not at all	Mildly	Moderately	Severely	Extremely
H3	Overall, in the past 30 days, how many days were these difficulties present?	RECORD NUMBER OF DAYS /				
H4	In the past 30 days, for how many days were you totally unable to carry out your usual activities or school/work because of any health condition?	RECORD NUMBER OF DAYS /				
H5	In the past 30 days, not counting the days that you were totally unable, for how many days did you cut back or reduce your usual activities or school/work because of any health condition?	RECORD NUMBER OF DAYS /				
H6	In the past 30 days, how many days were you absent from school?	RECORD NUMBER OF DAYS /				
H7	In the past 30 days, how many days were you late for school?	RECORD NUMBER OF DAYS /				

Participation in society

	In the last 30 days:					
D6.1	Do you have more of a problem joining in on community activities (for example, clubs, religious groups, or after-school activities) than you thought you should?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D6.2	How much do you feel that you are not getting invited to many as parties, play dates, or just hanging out, as you would like?	None	Mild	Moderate	Severe	Extreme
D6.3	How much time do your parents or other family member spend on your health condition problems you may have?	None	A Little	Some	Quite a bit	A Lot/ Nearly All the Time
D6.4	How much have you been upset by your health condition?	None	Mild	Moderate	Severe	Extreme
D6.7	How much of a problem do you have in doing things by yourself for relaxation or pleasure (do you have any problems keeping yourself busy doing things that you like to do)?	None	Mild	Moderate	Severe	Extreme

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Appendix C

This questionnaire asks about problems you may have due to health conditions. Health conditions include diseases, illnesses, or other health problems that may be short- or long-lasting injuries, mental or emotional problems, or problems with alcohol or drugs.

Think back over the last 3 days and answer these questions, thinking about how much difficulty you have had doing the following activities. For each question, please circle only one response.

H1	How do you rate your health overall health in the past 3 days?	Very good	Good	Moderate	Bad	Very bad
In the last 3 days, how much difficulty did you have in:						
Understanding and communicating						
D1.1	Concentrating for 10 minutes at a time or more while doing homework, playing a game, or doing something you were asked to do?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.2	Remembering to do important things, such as crossing the street safely, taking the right books to school, and remembering to do homework assignments?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.3	Finding a way to deal with common, everyday problems that other people your age can manage?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.4	Learning how to do something new, for example, how to play a new game, or learning something new at school?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.5	Generally understanding what people say?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D1.6	Telling your family or friends about things you have done, or people you have met, or places you have been?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
Getting around						
D2.1	Standing for a reasonable period of time, for example, in PE or school assembly or church/temple?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.2	Getting up from a sitting position?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.3	Moving around inside your home?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.4	Getting around at school or at a friend's?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D2.5	Walking for as long a distance as other people our age can?	None	Mild	Moderate	Severe	Extreme/ Cannot Do

In the last 3 days, <u>how much difficulty</u> did you have in:						
Self-care						
D3.1	Keeping yourself and your clothes clean, taking baths or showers, and brushing your teeth without being asked?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D3.2	Getting dressed on your own?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D3.3	Eating meals without help?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D3.4	Staying safe when you are alone or not putting yourself in danger when there are no adults around?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
Getting along with people						
D4.1	Getting along with people you do not know well?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.2	Keeping a friendship?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.3	Getting along with family members?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.4	Making new friends?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D4.5	Getting along with your teachers or adults who aren't in your family?	None	Mild	Moderate	Severe	Extreme/ Cannot Do

H2	Overall, how much did these difficulties interfere with your life?	Not at all	Mildly	Moderately	Severely	Extremely
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Participation in society

In the last 3 days:						
D6.1	Did you have more of a problem joining in on camp activities than you thought you should?	None	Mild	Moderate	Severe	Extreme/ Cannot Do
D6.2	How much do you feel that you are not getting invited to many as parties, play dates, or just hanging out, as you would like?	None	Mild	Moderate	Severe	Extreme
D6.3	How much time do your parents or other family member spend on your health condition problems you may have?	None	A Little	Some	Quite a bit	A Lot/ Nearly All the Time
D6.4	How much have you been upset by your health condition?	None	Mild	Moderate	Severe	Extreme
D6.7	How much of a problem did you have in doing things by yourself for relaxation or pleasure (do you have any problems keeping yourself busy doing things that you like to do)?	None	Mild	Moderate	Severe	Extreme

Appendix D

Physical Activity Scale for Individuals with Physical Disabilities

Instructions: This questionnaire is about your current level of physical activity and exercise. Please remember there are no right or wrong answers. We simply need to assess your current level of activity.

Leisure Time Activity

1. During the past 7 days how often did you engage in *stationary activities* such as reading, watching TV, computer games, or doing handcrafts?

- Never (Go to question #2)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What were these activities?

On average, how many hours per day did you spend in these *stationary activities*?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

2. During the past 7 days, how often did you *walk, wheel, push outside* your home *other than specifically for exercise*. For example, getting to work or class, walking the dog shopping, or other errands?

- Never (Go to question #3)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

On average, how many hours per day did you spend wheeling or pushing outside your home?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

3. During the past 7 days, how often did you engage in *light sport or recreational activities* such as bowling, golf with a cart, hunting or fishing, darts, billiards or pool, therapeutic exercise (physical or occupational therapy, stretching, use of a standing frame) or other similar activities?

- Never (Go to question #4)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What were these activities?

On average, how many hour per day did you spend in these *light sport or recreational* activities?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

4. During the past 7 days, how often did you engage in *moderate sport and recreational* activities such as doubles tennis, softball, golf without a cart, ballroom dancing, wheeling or pushing for pleasure or other similar activities?

- Never (Go to question #5)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What were these activities?

On average, how many hours per day did you spend in these *moderate sport and recreational* activities?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

5. During the past 7 days, how often did you engage in *strenuous sport and recreational* activities such as jogging, wheelchair racing (training), off-road pushing, swimming, aerobic dance, arm cranking, cycling (hand or leg), singles tennis, rugby, basketball, walking with crutches and braces, or other similar activities

- Never (Go to question #6)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What were these activities?

On average, how many hours per day did you spend in these *strenuous sport or recreational* activities?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

6. During the past 7 days, how often did you do any exercise *specifically to increase muscle strength and endurance* such as lifting weights, push-ups, pull-ups, dips, or wheelchair push-ups, etc?

- Never (Go to question #7)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What were these activities?

On average, how many hours per day did you spend in these *exercises to increase muscle strength and endurance*?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

Appendix E

Physical Activity Scale for Individuals with Physical Disabilities

Instructions: This questionnaire is about your plans for physical activity and exercise. Please remember there are no right or wrong answers. We simply need to assess your plans for activity and exercise.

Leisure Time Activity

1. During the next 7 days how often do you plan to engage in *stationary activities* such as reading, watching TV, computer games, or doing handcrafts?

- Never (Go to question #2)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What types of activities do you plan to do?

On average, how many hours per day do you plan to spend in these *stationary activities*?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

2. During the next 7 days, how often do you plan to *walk, wheel, push outside* your home *other than specifically for exercise*. For example, getting to work or class, walking the dog shopping, or other errands?

- Never (Go to question #3)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

On average, how many hours per day do you plan to spend wheeling or pushing outside your home?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

3. During the next 7 days, how often do you plan to engage in *light sport or recreational activities* such as bowling, golf with a cart, hunting or fishing, darts, billiards or pool, therapeutic exercise (physical or occupational therapy, stretching, use of a standing frame) or other similar activities?

- Never (Go to question #4)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What types of activities do you plan to do?

On average, how many hour per day do you plan to spend in these *light sport or recreational* activities?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

4. During the next 7 days, how often do you plan to engage in *moderate sport and recreational* activities such as doubles tennis, softball, golf without a cart, ballroom dancing, wheeling or pushing for pleasure or other similar activities?

- Never (Go to question #5)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What types of activities do you plan to do?

On average, how many hours per day do you plan to spend in these *moderate sport and recreational* activities?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

5. During the next 7 days, how often do you plan to engage in *strenuous sport and recreational* activities such as jogging, wheelchair racing (training), off-road pushing, swimming, aerobic dance, arm cranking, cycling (hand or leg), singles tennis, rugby, basketball, walking with crutches and braces, or other similar activities

- Never (Go to question #6)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What types of activities do you plan to do?

On average, how many hours per day do you plan to spend in these *strenuous sport or recreational* activities?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

6. During the next 7 days, how often do you plan to do any exercise *specifically to increase muscle strength and endurance* such as lifting weights, push-ups, pull-ups, dips, or wheelchair push-ups, etc?

- Never (Go to question #7)
- Seldom (1–2 days)
- Sometimes (3–4 days)
- Often (5–7 days)

What types of activities do you plan to do?

On average, how many hours per day do you plan to spend in these *exercises to increase muscle strength and endurance*?

- Less than 1 hour each day
- More than 1 but less than 2 hours each day
- 2–4 hours each day
- More than 4 hours each day

Appendix F

Following are some statements that you might make about yourself. Please circle the one number on each scale that best describes how closely the statement applies to you IN GENERAL. There are no right or wrong answers, we are only interested in how you feel about your life.

1. I am able to do most things as well as I want *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

2. I feel good about myself *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

3. I feel I am important to others *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

4. I am pleased with how I look *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

5. I feel understood by my parents or guardians *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

6. I feel I am getting along with my parents or guardians *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

7. I feel alone in my life *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

8. I am happy with the friends I have *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

9. I feel I can take part in the same activities as others my age *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

10. People my age treat me with respect *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

11. I feel my life is full of interesting things to do *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

12. I look forward to the future *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

13. I feel safe when I am at home *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

14. I feel I am getting a good education *(please circle one number)*

NOT AT ALL	0	1	2	3	4	5	6	7	8	9	10	VERY MUCH
------------	---	---	---	---	---	---	---	---	---	---	----	-----------

15. I am satisfied with the way my life is now *(please circle one number)*

--	--	--	--	--	--	--	--	--	--	--	--	--

NOT AT ALL 0 1 2 3 4 5 6 7 8 9 10 VERY MUCH

Appendix G

What I Am Like!

Instructions

First, read the two statements and pick the one that *best* describes you. When you've done that then select the response that is most right for you - really true for me or sort of true for me.

So for each item you have four choices. After you have made your choices, you will have ticked *only one box per item*. For example,

SAMPLE SENTENCE

	Really True for me	Sort of True for me			Sort of True for me	Really True for me	
a.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids would rather play out doors in their spare time	BUT	Other kids would rather watch T.V.	<input type="checkbox"/>	<input type="checkbox"/>

1.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids do very well at all kinds of sports	BUT	Other kids <i>don't</i> feel that they are very good when it comes to sports.	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids don't feel that they are very physically fit	BUT	Other kids feel that they always have excellent fitness.	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel that they have a good looking (fit looking) body compared to other kids	BUT	Other kids feel that compared to most, their body <i>doesn't</i> look so good.	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel that they are stronger than other kids of their age	BUT	Other kids feel that they <i>lack</i> strength compared to others of their age.	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are <i>proud</i> of themselves physically	BUT	Other kids don't have much to be proud of physically.	<input type="checkbox"/>	<input type="checkbox"/>

	Really True for me	Sort of True for me			Sort of True for me	Really True for me	
6.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids wish they could be a lot better at sports	BUT	Other kids feel that they are good enough at sports.	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids try to take part in energetic physical exercise whenever they can	BUT	Other kids try to <i>avoid</i> doing energetic exercise if they can.	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think that it's <i>hard</i> to keep their bodies looking fit and in good shape	BUT	Other kids find it easy to keep their bodies looking fit and in good shape.	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think that they have stronger muscles than other kids their age	BUT	Other kids feel that they have weaker muscles than other kids their age.	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are <i>happy</i> with how they are and what they can do physically	BUT	Other kids are <i>unhappy</i> with how they are and what they can do physically.	<input type="checkbox"/>	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think they could do well at just about any new sports activity they haven't tried before	BUT	Other kids are afraid they might <i>not</i> do well at sports they haven't ever tried.	<input type="checkbox"/>	<input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> usually have much fitness and endurance	BUT	Other kids always have lots of fitness and endurance.	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think that that their bodies <i>don't</i> look good in just shorts and T-shirt	BUT	Other kids feel that their bodies look fine in just shorts and T-shirt.	<input type="checkbox"/>	<input type="checkbox"/>

	Really True for me	Sort of True for me			Sort of True for me	Really True for me	
14.	<input type="checkbox"/>	<input type="checkbox"/>	When strong muscles are needed, some kids are the <i>first</i> to step forward	BUT	Other kids are the <i>last</i> to step forward when strong muscles are needed.	<input type="checkbox"/>	<input type="checkbox"/>
15.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> feel very confident about themselves physically	BUT	Other kids really feel good about themselves physically.	<input type="checkbox"/>	<input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel that they are <i>better</i> than others their age at sports	BUT	Other kids <i>don't</i> feel that they can play so well	<input type="checkbox"/>	<input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel <i>uneasy</i> when it comes to exercising for fitness	BUT	Other kids feel confident when it comes to doing fitness exercises.	<input type="checkbox"/>	<input type="checkbox"/>
18.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel that they are <i>often</i> admired for their fit, good-looking bodies	BUT	Other kids feel that they are <i>rarely</i> admired for the way their bodies look.	<input type="checkbox"/>	<input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>lack</i> confidence when it comes to strength activities	BUT	Other kids are very confident when it comes to strength activities.	<input type="checkbox"/>	<input type="checkbox"/>
20.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids have a positive feeling about themselves physically	BUT	Other kids feel somewhat negative about themselves physically.	<input type="checkbox"/>	<input type="checkbox"/>
21.	<input type="checkbox"/>	<input type="checkbox"/>	In games and sports some kids usually <i>watch</i> instead of play	BUT	Other kids usually <i>play</i> rather than watch.	<input type="checkbox"/>	<input type="checkbox"/>

YOUTH ADAPTED SPORTS CAMP

	Really True for me	Sort of True for me			Sort of True for me	Really True for me	
22.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel confident about being able to do enough exercise to stay very fit	BUT	Other kids <i>don't</i> feel confident about doing enough exercise to keep fit.	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think that compared to others their bodies <i>don't</i> look in good shape physically	BUT	Other kids feel that their bodies look in great shape compared to others.	<input type="checkbox"/>	<input type="checkbox"/>
24.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think that they are strong, and have good muscles compared to other kids their age	BUT	Other kids feel that they are weaker, and don't have such good muscles as other kids their age.	<input type="checkbox"/>	<input type="checkbox"/>
25.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids wish that they could feel better about themselves physically	BUT	Other kids <i>always</i> seem to feel good about themselves physically	<input type="checkbox"/>	<input type="checkbox"/>
26.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>don't</i> do well at new outdoor games	BUT	Other kids are good at new games right away.	<input type="checkbox"/>	<input type="checkbox"/>
27.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids think that they can always do more exercise than other kids their age	BUT	Other kids feel that they <i>couldn't</i> do as much exercise as other kids their age.	<input type="checkbox"/>	<input type="checkbox"/>
28.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are <i>happy</i> about the appearance of their bodies	BUT	Other kids wish that their bodies looked in better shape.	<input type="checkbox"/>	<input type="checkbox"/>
29.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel that they are <i>not</i> as good as others when physical strength is needed	BUT	Other kids feel that they are among the <i>best</i> when physical strength is needed.	<input type="checkbox"/>	<input type="checkbox"/>

YOUTH ADAPTED SPORTS CAMP

	Really True for me	Sort of True for me			Sort of True for me	Really True for me	
30.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are very <i>satisfied</i> with themselves physically	BUT	Other kids are often <i>dissatisfied</i> with themselves physically.	<input type="checkbox"/>	<input type="checkbox"/>
31.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are often <i>unhappy</i> with themselves	BUT	Other kids are pretty <i>pleased</i> with themselves.	<input type="checkbox"/>	<input type="checkbox"/>
32.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids don't like the way they are leading their life	BUT	Other kids do like the way they are leading their life.	<input type="checkbox"/>	<input type="checkbox"/>
33.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are <i>happy</i> with themselves as a person	BUT	Other kids are often <i>not</i> happy with themselves as a person.	<input type="checkbox"/>	<input type="checkbox"/>
34.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids <i>like</i> the kind of person they	BUT	Other kids often wish they were someone else.	<input type="checkbox"/>	<input type="checkbox"/>
35.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are very <i>happy</i> being the way they are	BUT	Other kids wish they were <i>different</i> .	<input type="checkbox"/>	<input type="checkbox"/>
36.	<input type="checkbox"/>	<input type="checkbox"/>	Some kids are not very happy with the way they do a lot of things	BUT	Other kids think the way they do things is <i>fine</i> .	<input type="checkbox"/>	<input type="checkbox"/>

YOUTH ADAPTED SPORTS CAMP

Appendix H

Below is a list of symptoms that children and teenagers sometimes have. Circle a number telling how much you were bothered by each symptom during the past day.

In the past day, how much were you bothered by each symptom?

		Not at all	A little	Some	A lot	A whole lot
1	Headaches	0	1	2	3	4
2	Faintness or dizziness (feeling faint or dizzy)	0	1	2	3	4
3	Pain in your heart or chest	0	1	2	3	4
4	Feeling low in energy or slowed down	0	1	2	3	4
5	Pains in your lower back	0	1	2	3	4
6	Sore muscles	0	1	2	3	4
7	Trouble getting your breath (when you are not exercising)	0	1	2	3	4
8	Hot or cold spells (suddenly feeling hot or cold for no reason)	0	1	2	3	4
9	Numbness or tingling in parts of your body	0	1	2	3	4
10	Weakness (feeling weak) in parts of your body	0	1	2	3	4
11	Heavy feelings in your arms or legs (when they feel too heavy to move)	0	1	2	3	4
12	Nausea or upset stomach (feeling like you might throw up, or having an upset stomach)	0	1	2	3	4
13	Constipation (when it's hard to have a B.M. or go poop)	0	1	2	3	4
14	Loose (runny) B.M.'s or diarrhea	0	1	2	3	4
15	Pain in your stomach or abdomen (stomach aches)	0	1	2	3	4
16	Your heart beating too fast (even when you are not exercising)	0	1	2	3	4
17	Difficulty swallowing	0	1	2	3	4
18	Losing your voice	0	1	2	3	4
19	Blurred vision (when things look blurry, even with glasses on)	0	1	2	3	4
20	Vomiting (or throwing up)	0	1	2	3	4

YOUTH ADAPTED SPORTS CAMP

		Not at all	A little	Some	A lot	A whole lot
21	Feeling bloated or gassy	0	1	2	3	4
22	Food making you sick	0	1	2	3	4
23	Pain in your knees, elbows or other joints	0	1	2	3	4
24	Pain in your arms or legs	0	1	2	3	4

YOUTH ADAPTED SPORTS CAMP

Appendix I

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way today.

	Very slightly	A little	Moderately	Quite a bit	Extremely
Interested	1	2	3	4	5
Sad	1	2	3	4	5
Frightened	1	2	3	4	5
Alert	1	2	3	4	5
Excited	1	2	3	4	5
Ashamed	1	2	3	4	5
Upset	1	2	3	4	5
Happy	1	2	3	4	5
Strong	1	2	3	4	5
Nervous	1	2	3	4	5
Guilty	1	2	3	4	5
Energetic	1	2	3	4	5
Scared	1	2	3	4	5
Calm	1	2	3	4	5
Miserable	1	2	3	4	5
Jittery	1	2	3	4	5
Cheerful	1	2	3	4	5
Active	1	2	3	4	5
Proud	1	2	3	4	5
Afraid	1	2	3	4	5
Joyful	1	2	3	4	5
Lonely	1	2	3	4	5
Mad	1	2	3	4	5
Fearless	1	2	3	4	5

YOUTH ADAPTED SPORTS CAMP

	Very slightly	A little	Moderately	Quite a bit	Extremely
Disgusted	1	2	3	4	5
Blue	1	2	3	4	5
Daring	1	2	3	4	5
Gloomy	1	2	3	4	5
Lively	1	2	3	4	5

YOUTH ADAPTED SPORTS CAMP

Appendix J

1. How would you rate your pain level right now? Use a 0-10 scale where 0 is 'no pain' and 10 is 'pain as bad as it could be?'

No Pain											Pain as bad as it could be
0	1	2	3	4	5	6	7	8	9	10	

2. In the past month, how intense was your worst pain? Use the 0-10 scale like above.

No Pain											Pain as bad as it could be
0	1	2	3	4	5	6	7	8	9	10	

3. In the past month, on average, how intense was your pain? This is how bad it usually gets when you feel pain. Use the 0-10 scale like above.

No Pain											Pain as bad as it could be
0	1	2	3	4	5	6	7	8	9	10	

4. About how many days in the last month have you been kept from your usual activities (work, school, housework) because of this pain?

Number of days _____

5. In the past month, how much has this pain interfered with your daily activities? Use a 0-10 scale where 0 is 'no interference' and 10 is 'extreme change'?

Did not interfere											Extreme change
0	1	2	3	4	5	6	7	8	9	10	

6. In the past month, how much has this pain changed your ability to take part in recreational, social, and family activities? Use the 0-10 scale like above.

Did not interfere											Extreme change
0	1	2	3	4	5	6	7	8	9	10	

7. In the past month, how has this pain changed your ability to work (including housework our schoolwork)? Use the 0-10 scale like above.

Did not interfere											Extreme change
0	1	2	3	4	5	6	7	8	9	10	

YOUTH ADAPTED SPORTS CAMP

8. In the past month, how often did you take medicine to help reduce your pain level?

Did not take										Maximum allowed
0	1	2	3	4	5	6	7	8	9	10

YOUTH ADAPTED SPORTS CAMP

Appendix K

Thank you for taking a few minutes to talk with me. I am going to ask you a few questions. There is no right or wrong answer to any of the questions. I just want to hear what you think. Please try your best to answer all the questions, but if you feel uncomfortable or don't like a question you don't have to answer it. If you tell me something that is confusing to me, I might ask you to help me understand it better, just to make sure I know what you are telling me. I am going to record this, just so I can remember what you said later on. But your names won't be part of the recording, just your voices.

Are there any questions?

Okay, let's begin.

1. Have you ever been to an overnight camp before?
2. If yes, how many times?
3. Have you been to a basketball camp?
4. If yes, how many times?
5. How did you find out about this camp?
6. How far did you travel to get here?
7. Did your parents come with you?
8. If yes, where are they staying?
9. How did you feel about your parents coming? Or not coming?
10. Did you sign up with any friends?
11. What reasons did your parents give you for wanting you to come to this camp?
12. Before you came to camp how excited were you about coming?
13. What made it most exciting?
14. How worried were you about coming?
15. What kind of things make it hard to come to a camp like this?
16. What reason did you want to come to this camp?
17. In what ways do you think this camp will be good for you (help you)?