A Comparative Study of Middle and Junior High School Athlete and Non-athlete Self-Perceptions of Body Image and Satisfaction with Apparel Fit using 3D Body Scan Technology

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Human Environmental Sciences

By Lauren Speight
University of Arkansas
Bachelor of Science in Human Environmental Sciences, 2010

May 2013
University of Arkansas
ABSTRACT

The purpose of this study was to explore the role of athletic program participation in middle and junior high school students’ self-perceptions of body image, body satisfaction and apparel fit satisfaction. A survey was used to assess the students’ self-perception of individual body image, satisfaction with different areas of the body and satisfaction with apparel fit. The research also assessed the accuracy between the students’ perceived body image on a body image scale and their 3D body scan image. By using 3D body scanning technology, body scan images were obtained to accurately determine the size and shape for male and female athlete and non-athlete middle and junior high school students. A total of 120 middle and junior high school students participated in this study; 81 were athletes and 39 were non-athletes.

No statistically significant differences between athletes and non-athletes were discovered for self-perception of body image, body satisfaction, self-perception of body image using a body image scale and 3D body scan, apparel fit satisfaction, frequency of apparel alterations and difficulty purchasing apparel. Overall, the sample reported scores indicating important self-ideal congruities across all physical attributes as well as satisfaction with their bodies. Additionally, both athletes and non-athletes indicated overall dissatisfaction with the fit of their apparel. Neither athletes nor non-athletes reported a high frequency of apparel alterations or difficulty purchasing clothing in retail stores.
This thesis is approved for recommendation to the Graduate Council.

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ACKNOWLEDGEMENTS

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My deepest gratitude goes to my family. Their faithful prayer, encouragement, support, understanding and love have led me throughout my education.
DEDICATION

I dedicate this thesis to my parents, brother and grandparents. Your years of inspiration and guidance have made the last two years possible. I could never truly express how much I love each of you and appreciate everything you have done for me.
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CHAPTER I

Introduction

Adolescence is the intermediary phase between childhood and adulthood and is a delicate phase of life that includes periods of increased awareness of bodily cues and self-reflection. Substantial physical and psychological changes are expected throughout this phase and foster the foundation of future adult patterns and behaviors (Dixit, Agarwal, Singh, Kant, & Singh, 2011). Male and female adolescents in the United States are frequently inundated with social cues regarding idealistic lifestyles and definitions of beauty. A significant discrepancy exists between a socially idealized body image and the true physical shape and size of adolescents (Skemp-Arlt, 2006). The disconnect between the actual and the ideal perception of one’s body and the willingness to alter one’s body and shape to reflect a standardized social concept of image are central contributing factors of adolescents’ increased effort to follow society’s standards (Dixit et al., 2011).

Adolescents’ social environments project an idealized body image through many avenues, such as television, magazines and peer group interaction. Thinness is revered, whereas heaviness is criticized. The frequent social reliance on promotions of a thin ideal for women and a muscular ideal for men potentially exposes adolescent vulnerabilities. The belief that an ideal body shape or image exists poses many threats to the physical, psychological and emotional heath of adolescents.

According to Rudd and Lennon (2001), the body possesses significant meaning to individuals and group members. The researchers emphasized that it is a personal characteristic that influences appearance management behaviors, self-esteem, self-worth, shopping behaviors and social interactions. Their research provided justification for the addition of body image into
the clothing and textiles field of study. Body image was established as a decisive component of self that impacts the social construction of appearance and self-esteem.

Body dissatisfaction, negative body image and concern with body shape and size represent attitudinal aspects of body image (Meland, Haugland, & Breidablik, 2007). An unrealistic social ideal for body image plays a substantial role in the development of body image dissatisfaction in female and male adolescents (Smolak, 2004). Lee (2006) indicated that adolescents’ perceptions of their body sizes differ from other perceptions. Mahajan (2009) reported that women typically perceive their bodies as heavier and larger as well as inaccurately self-report their body measurements. In Mahajan’s study of adolescent girls ages 12 to 14 and female college students, the adolescent girls viewed their bodies as smaller by one interval on a body image scale as compared to the female college students. Body image dissatisfaction is defined as subjective feelings of dissatisfaction (negative thoughts and feelings) with personal physical appearance. Body image dissatisfaction occurs when there is an inconsistency between one’s actual and ideal body image (Cash & Strachan, 1999). Body image dissatisfaction stems from many issues and is associated with preoccupation with physical appearance, emotional distress, depression, maladaptive eating behaviors and unnecessary cosmetic surgery (Ohri-ving, Graber, & Brooks-Gunn, 2002; Stice, Hayward, Cameron, Killen, & Taylor, 2000; Stice & Shaw, 2002). Ricciardelli and McCabe (2001) discovered that only 12.0% of adolescent females and 16.6% of adolescent males displayed satisfaction with their body size.

The age of onset for body image dissatisfaction and related issues is childhood (ages 8 to 12), increasing and peaking during early adolescence (Littleton & Ollendick, 2003). Low levels of body satisfaction are apparent as students transition from middle school to high school (Xiao, Huon, & Qian, 2001). According to Ge, Elder, Regenerus and Cox (2001), a significant
developmental challenge during adolescent transition involves adaptation to the physical transformation of puberty. The biological changes of pubertal growth involve adolescent maturation and subsequent discernment of physical changes. As these physical changes ensue, social identities among peer groups follow suit and generate new social expectations and pressures.

Akos and Levitt (2002) communicated the following developmental changes as contributing factors to body image: physical changes, the increasing importance of peers and the search of personal and peer identity. Physical change throughout middle and junior high school is different between genders and onset fluctuates among each gender. Early pubertal growth is often regarded as beneficial for male adolescents. Females whose development is early or delayed according to the timelines of fellow female peers often struggle with the timing of these physical changes and the feelings and emotions that proceed (Brooks-Gunn, Attie, Burrow, Rosso, & Warren, 1989). Peer group interaction and attention often intensifies during the transition from child to adolescent and adolescent to teenager. Peers become increasingly aware of each other’s physical changes. Scrutiny, whether positive or negative, is inevitable. Throughout adolescence the increased levels of scrutiny and interaction among peers heavily influences identity formation (Akos & Levitt, 2002).

The President’s Council on Physical Fitness and Sports (1999) reported that physical activity and participation in organized athletics improve body image and increase self-esteem. Kirkcaldy, Shephard and Siefen (2002) observed that many studies regarding the effects of physical activity focused on adult populations and disregarded children and adolescents. Their review of literature that explored the benefits of physical activity in mature populations revealed positive shifts of mood and perceived health, increased self-sufficiency and personal adjustment,
improved body image, facilitated cognitive and perceptual processing, reduced type A behavior, improved stress management skills, and superior psychological performance. These observations provide a foundation for the assumption that a physically active lifestyle promotes similar characteristics in adolescent populations.

A sense of social belonging is paramount to an adolescent’s potential for healthy development (Harrison & Narayan, 2003). Common social settings for adolescents include family and school. Interaction with peers in an educational environment guides adolescent development. According to Resnick et al. (1997), connectedness is typically measured by assessments of interpersonal relationships. Adolescents are submitted to prosocial activities, especially during school and school-related activities. Healthy development is fostered through an offering of consequential involvement within influential social units (McNeely, Nonnemaker, & Blum, 2002).

According to Daniels and Leaper (2006), the conventional perception is that athletic participation contributes to self-worth and is associated with positive self-evaluations. Participation has exposed immediate positive effects on self-image during adolescence (Bluechardt, Wiener, & Shephard, 1995). Conversely, Smolak, Murnen and Ruble (2000), indicated that participation in athletics is a factor that places adolescents at an increased risk for body image dissatisfaction and eating disorders.

In a longitudinal study conducted by Gordon-Larsen, Nelson, and Popkin (2004), trends in achieving five or more sessions of moderate to vigorous physical activity per week (MVPA) were examined across the fundamental and understudied transition period from adolescence to young adulthood. The study revealed longitudinal shifts in the achievement of five or more sessions of MVPA per week from adolescence to young adulthood; these shifts suggested that
the majority of males, and especially females, did not achieve five or more sessions of MVPA in either period. Additionally, among the adolescents who did achieve that amount, one third did not complete five or more sessions of MVPA per week as adults. Overall, the data conveys a deficiency of weekly physical activity throughout adolescence and into young adulthood.

Participation in consistent physical activity has been linked to improved physical and mental wellness among general populations, but Thogerson-Ntoumani and Ntoumanis (2007) communicated the complexity of the relationship between physical activity and body image concerns. The literature presents contradictory information regarding physical activity. As determined by Gordon-Larsen et al. (2004), physical activity is low among adolescents and adults, and inactivity can create numerous health concerns. Adolescents who participate in organized sports and, therefore, regularly engage in physical activity often attain more favorable health reports. A central issue that needs to be further studied is effect sport participation has on adolescents at the middle and junior high school levels with regards to the levels of body satisfaction. As established by Rudd and Lennon (2001), body image has been theoretically validated as a fundamental element of the textiles and clothing industry and field of study. The researchers emphasized that body image entails immense social impact and promise for social reform to current cultural preoccupation with body size and beauty.

Statement of the Problem

The level of satisfaction with personal body shape, size and image among adolescents is essential in guiding development throughout high school and into young adulthood. Physical development during middle and junior high school years (grades 7, 8 and 9) affects psychological development and vice versa. Body image disturbances contribute to long-term individual and societal consequences. Research regarding physical education and sport
participation at the middle and junior high school levels reveals varying data; the literature presents both positive and negative findings. It is important to further explore the level of influence that sport participation has on self-perception of body image and body satisfaction and at the middle and junior high school levels. Additionally, self-perception of body image is a principal influencer of clothing purchase decisions and satisfaction with the fit of apparel. Increased understanding of satisfaction and comfort with the fit of clothing among adolescent athletes and non-athletes is an essential extension of current body image research as well as a contribution to the understanding of clothing needs and shopping behaviors of adolescents.

Purpose of the Study

The purpose of this study was to explore the role of athletic program participation in middle and junior high school students’ self-perceptions of body image, body satisfaction and apparel fit satisfaction. A survey was used to assess the students’ self-perception of individual body image, satisfaction with different areas of the body and satisfaction with apparel fit. The research also assessed the accuracy between the students’ perceived body image on a body image scale and their 3D body scan image. By using 3D body scanning technology, body scan images were obtained to accurately determine the size and shape for male and female athlete and non-athlete middle and junior high school students.

Research Questions

1. Does participation in organized sports at the middle and junior high school level affect adolescents’ body image perception as compared to non-athletes?

2. Does participation in organized sports at the middle and junior high school level affect adolescents’ body image satisfaction as compared to non-athletes?

3. Do middle and junior high school athletes accurately perceive their body image using a 3D body scan and a body image scale as compared to non-athletes?
4. Are middle and junior high school athletes satisfied with the overall fit of their apparel as compared to non-athletes?

5. Do middle and junior high school athletes experience a difference in alteration frequency for their clothing purchased in retail stores as compared to non-athletes?

6. Do middle and junior high school athletes experience a difference in difficulty purchasing clothing in retail stores as compared to non-athletes?

Key Terms

1. Middle School: for the purpose of this study, participants enrolled in seventh grade were considered middle school students.

2. Junior High School: for the purpose of this study, participants enrolled in eighth and ninth grades were considered junior high school students.

3. Body Image: an individual’s feelings, perceptions and thoughts about his or her body, usually conceptualized as incorporating body size estimation, evaluation of body attractiveness and emotions associated with body shape and size (Grogan, 2006).

4. Body Satisfaction: satisfaction or dissatisfaction with one’s body (Cash & Pruzinsky, 2002).

5. Adiposity: body fatness; deposition of adipose tissue leads to excess adiposity, which is related to obesity (Cornier et al., 2011).

6. Body Cathexis: the degree of satisfaction or dissatisfaction with the various parts or processes of the body (Secord & Jourard, 1953).

7. 3D Body Scanner: Body scanning technology produces contoured digital images of real people without exposing any identifying physical characteristics (Aghekyan, Ulrich, & Connell, 2012). “[TC]”s scanning technology scans the whole body in seconds and rapidly produces a true-to-scale 3D body model. The included automatic body measurement software can extract over 400 unique measurements many of which can be user customized. The 3D
The scanner is world leading in terms of price, small size (3.75 x 5.5 feet), ease of use, subject privacy and safety” ([TC]², 2011). The scanner used for this study was the [TC]² KX-16.

Assumptions

1. The student sample was representative of the population being studied.
2. Self-reporting of body image perception, body satisfaction and apparel fit experiences were reliable.
3. Respondents answered truthfully.
4. Perception of body image can be measured.
5. Satisfaction with body image can be measured.
6. Satisfaction with apparel fit can be measured.
7. Researcher-conducted comparisons between participants’ self-perception of body image on the body image scale and their corresponding 3D body image were accurate.
8. Reliable results can be obtained using survey questionnaires.
9. Sport participation during adolescence influences body image.

Limitations

1. This study was limited to students in public and private school districts located in a mid-South region of the United States.
2. The study was representative of middle and junior high school age adolescents within a mid-South region of the United States but may not be nationally representative.
3. Due to the structure of the school systems within the school districts that were used for this study, grade levels 7 through 9 will be studied and considered middle school and junior high school.
4. Comparisons between participants’ self-perception of body image on the body image scale and their corresponding 3D body image were conducted by the researcher and, therefore, subjective.

5. Silhouette images on the body image scale may not be representative of each participant.

6. Self-report measures may have pressured participants to respond in a certain way, thus, answering dishonestly.
CHAPTER II

Review of Literature

*Body Image and Body Satisfaction*

According to Cash and Pruzinsky (1990), body image is a multifaceted construct that encompasses one’s perceptions, thoughts, feelings and actions regarding one’s body, particularly its appearance. McKay-Parks and Read (1997) defined body image as a complex phenomenon that is comprised of physiological, psychological and sociological components. When developing the body image ideals questionnaire (BIQ), Cash and Szymanski (1995) noted the degree to which the two modalities of body image—perceptual and attitudinal—are individualized. Perceptual body image involves body size estimation, whereas attitudinal body image is composed of two independent components. Attitudinal body image includes body image evaluation and body image investment. Body image evaluation involves cognitive assessments and associated emotions in relation to one’s appearance. Body image investment indicates the importance, centrality or extent of cognitive-behavioral emphasis on one’s appearance (Cash & Pruzinsky, 1990; Cash, 1994). Grogan (2006) concurred that body image relates to one’s perceptions, feelings and thoughts about his or her body and is typically conceptualized as incorporating body size estimation, evaluation of body attractiveness and emotions associated with body shape and size.

Body satisfaction is a correlate of adolescent distress; it is positively correlated with self-esteem (Siegel, 2002). Body dissatisfaction is defined as the subjective, negative evaluation of one’s body shape or parts (Presnell et al., 2004). Body dissatisfaction is prevalent among adolescents and has a significant effect on self-image and self-esteem. It is also considered a precursor of disturbed behaviors, particularly anorexia nervosa and bulimia nervosa eating
disorders in females (Stice & Shaw, 2002). Longitudinal research studies have revealed that low levels of body satisfaction during early and middle adolescence are indicative of lower self-esteem later in life (Holsen, Kraft, & Roysamb, 2001). Kostanksi and Gullone (1998) discovered that over 80% of girls reported body dissatisfaction. Levine and Smolak (2002) found that between 40% and 70% of girls were dissatisfied with two or more body features; hips, buttocks, stomach and thighs were among the most common.

Frost and McKelvie (2004) surveyed 227 elementary school, high school and university male and female students about self-esteem, body satisfaction and body build. Overall, self-esteem among females was lower than self-esteem among males. Across the three academic levels, self-esteem was lower for high school students than for elementary and university students. Self-esteem was positively correlated with body satisfaction. For this study, body satisfaction included body cathexis, body image and weight satisfaction.

Recent studies including large samples reported that 24% to 46% of adolescent girls and 12% to 26% of adolescent boys displayed body dissatisfaction (Neumark-Sztainer, Story, Hannan, Perry, & Irving, 2002; Presnell et al., 2004; Stice & Whitenton, 2002). In a recent study conducted by Wilkosz, Chen, Kennedy and Rankin (2011), over 1,800 California adolescents (Caucasian, Latino and Asian) between the ages of 12 and 17 were included in the California Health Interview Survey. Approximately 24% of female adolescents and 22% of male adolescents were dissatisfied with their bodies.

**Body Cathexis**

In a pioneer study by Secord and Jourard (1953), body cathexis was defined as the degree of satisfaction or dissatisfaction with the various parts or processes of the body. This study assisted in developing a method for evaluating one’s feelings towards his or her body. A Likert-
type scale was designed to measure the degree of satisfaction or dissatisfaction toward various parts of the body. After administering the test, as well as a test measuring self-cathexis, to 43 female and 45 male college students, the researchers discovered that body cathexis was positively correlated to satisfaction with the self. In a later study, Jourard and Secord (1955) found that satisfaction with specific body parts fluctuates with the level of deviation between actual size and what is considered to be ideal. Body dissatisfaction increases as the deviation increases.

Body cathexis is closely related to body image, but its central focus is on the degree of satisfaction with various aspects of the body rather than image alone (Kaiser, 1997). The degree of body satisfaction is a guiding factor for perceived body image among adolescents. Attention to and satisfaction or dissatisfaction with physical components of the body often precede psychological connections within overall body image.

**Pubertal Timing and Developmental Changes**

Puberty is a biological development milestone for adolescents. During this period of physical transformation, emotional and psychological changes and developments ensue. Normal pubertal development occurs between the ages of 9 and 13 for girls and 10 and 14 for boys (Bitar, Vernet, Coudert, & Vermorel, 2000). Pubertal timing is a decisive component in regard to the degree of body satisfaction in both female and male adolescents. Early pubertal development has the most negative impact on females, whereas late development is most stressful for males (Siegel, Yancey, Aneshensel, & Schuler, 1999). According to Bitar et al. (2000), puberty is characterized by rapid somatic growth and anatomical changes in body composition and hormonal status and intensity. Increases in height and weight, altered body proportions and distribution of body fat are among the observable changes that adolescents
experience (Blyth, Simmons, & Zakin, 1985). Physical maturation throughout puberty involves a normative increase in body fat for females. For many males, puberty increases muscle mass (McCabe, Ricciardelli, & Finemore, 2002). These findings indicate that pubertal maturation assists in adolescent male progression toward the accepted societal body image and shape ideal, whereas it further separates adolescent females from the ideal.

In a survey of 1,185 adolescents (598 female and 527 male) in grades seven and nine, McCabe et al. (2002) discovered consistencies with previous research. The study’s results indicated that adolescent girls were more dissatisfied with their bodies than adolescent boys and were more likely to adopt eating behaviors to decrease weight. The female sample was also more likely to exercise to lose weight. The male sample was designated more likely to adopt eating and exercise behaviors to increase muscle tone but not weight.

**Influence of Weight Status**

Biological factors, such as body mass, can control the development of body dissatisfaction (Presnell et al., 2004). Adolescent weight status at the onset of puberty can differ considerably from the weight status through the remainder of the maturation process. Pubertal development results in an increase in adipose tissue in adolescents, especially girls. Elevated adiposity advances body dissatisfaction. According to Presnell et al. (2004), the often rapid deposit of adipose tissue on the bodies of adolescent girls is a deviation from their environment’s slim body ideal. McCreary and Sasse (2000) indicate that body mass can function differently for adolescent boys due to a common desire for a body shape that adheres to society’s muscular ideal for males. The muscular ideal represents a mesomorphic body shape, which is strong and athletic with defined muscles.
Evolving physical characteristics and body image in an adolescent can manipulate his or her level of body satisfaction. A study conducted by McCabe and Ricciardelli (2001) included 1,266 adolescents (644 female, 622 male) enrolled in grades 7 through 10. The respondents with the highest body mass indices (BMI) displayed the highest levels of body dissatisfaction. A study conducted by Wilkosz et al. (2011), revealed that more than twice as many adolescents (37%) whose BMI was \( \geq 85^{th} \) percentile were dissatisfied with their body. Only 15% within that percentile displayed body satisfaction.

The national Youth Risk Behavior Survey (YRBS) is conducted every two years during the spring semester and provides data representative of 9th through 12th grade students in public and private schools throughout the United States. According to the 2009 YRBS, 8.3% of female students and 15.3% of male students were obese. The obesity scale included students who were \( \geq 95^{th} \) percentile for body mass index. 15.9% of females and 15.7% males were overweight. This scale included students who were \( \geq 85^{th} \) percentile but < 95th percentile for body mass index (Centers for Disease Control and Prevention [CDC], 2009). The 2005 Middle School YRBS indicated that a median of 14.0% of students in the 7th grade and a median of 14.9% of students in the 8th grade were overweight. Of all the students surveyed, 44.2% in the 7th grade and 45.9% in the 8th grade were trying to lose weight (Centers for Disease Control [CDC], 2005).

Neumark-Sztainer et al. (2002) conducted a study on a large sample of 4,476 adolescents from public middle schools and high schools to evaluate weight-related concerns and behaviors. The study also compared the weight-related concerns and behaviors across gender and weight status. The sample population revealed significant prevalence of weight-related concerns and behaviors. Healthy weight practices, such as decreasing fat consumption, were more common than unhealthy and extreme practices. A high percentage of average-weight females inaccurately
perceived themselves as overweight. Accurate weight perceptions were acquired from a large percentage of the overweight youth. In addition to accurately perceiving themselves as overweight, they also reported concern for controlling their weight by adopting healthy weight control behaviors.

Sociocultural Influences

Society occupies a pivotal role in the development of self. Self-perception of body image is often based on the norms that are established and reinforced by families, peer groups, cultural connections, mass media, corporations and health care professionals (Rudd & Carter, 2006). McCabe and Ricciardelli (2001) conducted a study on parent, peer and media influences on body image and strategies for increasing and decreasing weight in adolescents. Their findings were consistent with previous studies that specify the behaviors that many adolescents will acquire to conform to society’s ideals. This study also indicated that adolescents ages twelve and older adopted controlling behaviors. In a study on adolescent girls conducted by Stice and Whitenton (2002), the following predicted increases in body dissatisfaction: early elevations in adiposity, perceived pressure to be thin, internalization of the thin ideal and insufficient social support. Cohane and Pope (2001) posited that males’ drive for muscularity is potentially as dangerous as females’ drive for thinness. Their review of related literature generalized that body satisfaction among boys was positively correlated with self-esteem; concurrent findings for adolescent female populations are also available in the literature.

In a cross-sectional study of 49 younger (ages 19 to 23) and 51 older (ages 65 to 74) women, Bedford and Johnson (2006) determined that younger women’s body evaluations experienced increased sensitivity to the media. The study investigated associations among body image dissatisfaction, societal influences and concern for appropriateness (or conforming to
societal pressure) (Lennox & Wolfe, 1984). Approximately three-quarters of the women in the sample reported negative body image. This suggested that there were no age-related differences in body image dissatisfaction; BID is common among all female age groups.

McCabe et al. (2002) examined the role of sociocultural influences and pubertal development on body dissatisfaction and body change strategies among a sample of adolescents in grades seven and nine. Their results regarding sociocultural influences exhibited heightened awareness of media pressure. For girls, this pressure was perceived to be to lose weight; for boys, it was to gain weight and improve muscle definition. Gender differences in the perceived pressures to manipulate body size and shape and the strategies employed to achieve such changes did not change from early to middle adolescence (sample grades seven and nine).

The current social climate in the United States incorporates intense reliance on technology. As adolescents spend more time using the numerous technologies available to them, the mass media have increased opportunity to submit idealized images. The 2009 YRBS indicated that 32.1% of female students and 33.5% of male students watched three or more hours of television on an average school day; 21.2% of females and 28.3% of males used computers for three or more hours per day on an average school day for non-school purposes (CDC, 2009).

Brown and Cantor (2000) related that the literature on media influence indicates adolescent identification with media representations that engage in unfavorable behaviors, resulting in the development of unrealistic and unhealthy standards of physical appearance.

**Gender Ideals**

As adolescents receive an overwhelming number of cues suggesting what is socially acceptable and unacceptable, vulnerabilities are exposed that threaten to disengage them from reality during a formative period of their lives. Sociocultural messages convey explicit standards
of attractiveness, and gender-specific expectations and ideals are communicated. Pervasive images of thin females and muscular males throughout media outlets such as television, movies, magazines, etc. disrupt healthy physical and psychological development. Real versus ideal body image is a critical issue that is hastened by the media. Adolescents have a tendency to internalize these ideals as accurate judgments of their body image, shape and size. According to Heinberg (2001), the mass media produce the most forceful communication of sociocultural standards. Peer and familial influences often act as a subculture, reinforcing the pressures exerted by the media. For all populations, these standards are often unattainable without the reliance on extreme or maladaptive behaviors.

In a study conducted by Clay, Vignoles and Dittmar (2005), adolescent girls ages 11 to 16 were affected by the viewing of ultra-thin and average-size models. The viewing of these images directed decreases in both body satisfaction and self-esteem. Ricciardelli and McCabe (2003) found that the influence of media was a significant predictor of body dissatisfaction and weight loss strategies for adolescent females. For adolescent males, the influence of media did not predict body dissatisfaction, but it did predict body image importance and strategies to decrease weight.

Stice, Spanger and Agras (2001) recruited 219 adolescent females ages 13 to 17 to study the effects of long-term exposure to the media-portrayed thin ideal. This study revealed that there were no main effects of long-term exposure to fashion magazines on development of internalization of the thin ideal or body dissatisfaction. However, the data did support the assumption that exposure to thin ideal images resulted in the following: increased negative affect for adolescents vulnerable to the pressure to be thin and increased body dissatisfaction, dieting and bulimic symptoms among adolescents deficient in social support.
Martin and Govender (2011) surveyed a purposive sample of 508 adolescent boys regarding body image discrepancy, conformity to masculine ideology, self-esteem and pursuit of muscularity. The results of a multiple regression analysis provided predictors for the pursuit of muscularity. The most significant predictor was devotion to fulfilling the image of traditional masculine ideology. Body image discrepancy and low self-esteem were subsequent predictors.

**Influence of Physical Activity**

Physical activity is typically perceived as necessary for overall physical health and mental well-being throughout all ages and phases of life. According to Fox (1999), body image is a central component of everyday life and is a key influencer of daily habits, patterns of food choice and consumption, clothing choices, social confidence and overall mood. Fox also specified that the literature presents contradictory data regarding physical activity. Existing data suggests that physical activity provides avenues for improving body image through loss of body mass and attainment of muscle definition and mass. Opposing research states that physical activity raises body awareness to a level of unhealthy expectation, which is counterproductive to body satisfaction and positive self-esteem (Davis, 1997).

As previously indicated, the 2009 YRBS revealed the frequency of adolescent sedentary behavior related to use of technology. The survey also included data on physical activity; 29.9% of female students and 17.0% of male students did not participate in at least sixty minutes of physical activity on any day during the seven days before the survey was administered (CDC, 2009).

DeBate, Gabriel, Zwald, Huberty and Zhang (2009) emphasized that physical activity habits established during adolescence are critical to the continuance of healthy behaviors throughout adulthood. A study conducted by Hallal, Victora, Azevedo and Wells (2006)
reported that physical activity during adolescence is positively linked to levels of physical activity throughout adulthood. The researchers also concluded that sedentary behavior and reduced physical fitness as an adolescent are associated with negative health outcomes as an adult.

Tremblay, Inman and Willms (2000) analyzed the relationships between increased physical activity, self-esteem, academic achievement and BMI for over 6,000 sixth grade students. Their examination confirmed that physical activity levels were significantly related to self-esteem. Increased participation in vigorous physical activity was related to improved self-esteem in females and males.

In a meta-analysis of the relationship between exercise and body image, Hausenblaus and Fallon (2006) conducted an extensive review of literature to discover that physical activity was associated with a more positive body image. A recommendation of this research included future exploration of moderating factors that potentially affect the relationship between body image and physical activity. These factors include health status, attitudes toward physical activity, current exercise behavior and body composition. After reviewing 121 studies, the researchers found a small effect exposing that exercisers had a more positive body image than nonexercisers. The researchers noted that this could have resulted due to the following: (1) physically active male and female body image and physique are more closely aligned with the aesthetic body image ideals of society and (2) physical activity is linked to increases in psychological welfare that are related to positive body image.

Organized Sport Participation

Body image is a key determinant of defining oneself. Adolescents have been socialized to believe that appearance is essential in evaluating self and others (Thompson, Heinberg,
Altable, & Tantleff-Dunn, 1999). The connection between body image perception and self-esteem is inevitable; perceived appearance has surfaced as the strongest predictor of self-esteem among female and male adolescents (Clay et al., 2005).

Larson (2000) communicated that involvement in sports is related to positive adolescent development. Participation in sports is positively associated with high self-esteem (Pedersen & Siedman, 2004). According to Rees, Howell and Miracle (1990), “popular sport culture, conventional social wisdom and promotional ideology by athletic associations suggest that participation in high school varsity sports programs has positive effects on prosocial personality traits (i.e., sport ‘builds character’).” Koivula (1999) highlighted that individuals who participate in sports perceive their body image in a more positive manner than individuals who do not participate in sports.

Bowker, Gadbois and Cornock (2003) emphasized that self-esteem concerning personal physical characteristics and overall body image satisfaction is susceptible to positive development through involvement in athletics. The 2009 YRBS revealed that females were more likely to not play on a sports team run by their school or community groups than males; 47.7% of females and 36.2% of males did not play on a sports team (CDC, 2009).

Bowker et al. (2003) considered that adolescent males might possess a more positive body image than female adolescents due to their increased participation in athletics. Additionally, the researchers stated that females who do not indicate a significant deficit in self-esteem or perceived body image might be those who participate in athletics. Their study included 100 (60 female, 40 male) students in the 11th grade. The results included significant differences between males and females on satisfaction with weight, appearance and perceived
physical attraction. However, there were no significant differences in general self-worth or positive self-esteem.

Athletic build varies among sport. Rudd and Carter (2006) reported that certain body sizes and shapes characterize specific sports. Skemp-Arlt (2006) noted that the most vulnerable adolescents are athletes who complete in sports that encourage the following: lean build, such as dance and cheerleading; low body weight, such as gymnastics, cross-country and track; and weight classification, such as weight lifting and wrestling. An NCAA study (Dick, 1990) regarding eating disorders revealed that the sports at increased risk for development of disordered eating patterns were women’s gymnastics, women’s cross-country and men’s wrestling. These sports emphasize lean athletic build and precise body and muscle mass.

A convenience sample of 74 adolescent male football players and cross-country runners between the ages of 14 to 18 were administered a packet of questionnaires that addressed body esteem, body size, eating attitudes and motivation for exercise (McKay-Parks & Read, 1997). Football and cross-country were the chosen sports due to contrasting body type and size (muscular football players versus lean cross-country runners). The results of this study indicated that 83% of football players wanted to gain weight. The football players also reported more positive body satisfaction as well as attitudes and behaviors toward eating and weight control. The researchers suggested that this satisfaction was likely a result of the players’ alignment with the mesomorphic body shape. The cross-country runners exhibited accurate perceptions of more lean body builds and increasingly negative responses regarding body esteem. This study underlined the importance of distinguishing sport type among the researched sample.

Tiggemann and Williamson (2000) investigated the relationship between amount of exercise and psychological well being in a sample of 252 participants between the ages of 16 and
The participants were divided into four groups based on age and gender. A positive relationship between the two variables was established among the groups except for young women in the 16 to 21 age group. This sample experienced a significant negative relationship; body satisfaction and self-esteem decreased as the amount of exercise they engaged in increased. The researchers suggested that keen reception of thin ideal messages during this stage intensifies young women’s desire to exercise but ultimately fosters an environment for disappointment when a certain ideal is not achieved.

While it has been found that increased amounts of physical activity for young females can lead to greater disappointment when comparing personal body characteristics to a social ideal (Tiggemann & Williamson, 2000), the influence of sport participation has been linked with the development of physical competence and instrumentality. The results of sport participation often merge to create increasingly positive body image outlooks among adolescent females. Participation in high school athletic programs was proven to afford the opportunity for girls to cultivate physical skills, develop strength, and acquire leadership skills and assertiveness. Male and female adolescents who perceived themselves as physically competent and instrumental to the team experienced greater body satisfaction (Greenleaf, Boyer, & Petrie, 2009).

Adolescents in middle school and junior high school exist in an environment that instills pivotal social norms and values. As adolescents transition from high school to young adulthood, behaviors—specifically risky behaviors—that were initiated in middle school and high school are prone to continue and become increasingly problematic (Fromme, Corbin, & Kruse, 2008). Body image has been consistently linked with eating disorders (Thompson & Stice, 2001; Polivy & Herman, 2004), and college athletes are at an increased risk of developing disordered eating behaviors (Rudd & Carter, 2006).
Rudd and Carter (2006) conducted a baseline study of over 1,200 male and female athletes participating in 34 sports at a Division 1 National Collegiate Athletic Association (NCAA) college. The study reported that one in seven athletes demonstrated symptoms of disordered eating. Disordered eating behaviors were more common among athletes participating in sports that emphasized leanness. Among the female teams, leanness was typically emphasized for aesthetic (appearance, judging criteria, etc.) purposes. Among the male teams, one team emphasized aesthetic leanness, whereas another team emphasized leanness for enhanced performance.

Adolescence is a phase of fundamental development. Pivotal ideas concerning personal and social body image are formed; these ideas—and subsequent behaviors—accompany girls and boys throughout adolescence and into young adulthood. Participation in athletics during middle school, junior high school and/or high school instills additional body size, shape and image norms that can continue throughout participation in college athletic programs. The literature presents an array of findings regarding body image (and related issues) and organized sport participation.

Role of Apparel in Adolescent Lifestyles

Satisfaction with Fit

As previously determined, the adolescent consumer market is vulnerable to sociocultural messages regarding physical appearance; these messages can also influence attitude toward apparel and satisfaction with fit (Drake-Bridges & Burgess, 2010). Fit is defined as the way an article of clothing conforms to the body (Workman & Lentz, 2000). Ashdown and DeLong (1995) defined fit as the relationship between a piece of clothing and the body.
In a recent study conducted by Drake-Bridges and Burgess (2010), a sample of 206 adolescent females between the ages of 9 and 15 were surveyed. In regards to satisfaction with apparel fit, the participants responded with moderately high levels of satisfaction. The youngest group of participants exhibited the highest levels of satisfaction. The researchers indicated that this finding was similar to that of MacGillivray and Wilson (1997); in a study of sixth, ninth and twelfth graders’, these researchers discovered that the level of satisfaction with apparel fit decreased with age. No differences among gender and satisfaction with apparel were found. The study analyzed urban and rural demographics and discovered that urban adolescents were more likely to employ clothing practices for approval, nonconformity and independence. Rural adolescents displayed a greater need to use clothing as a method of conforming to peer groups.

Literature regarding apparel fit satisfaction among athletes, specifically adolescent athletes, is scarce. One study conducted by Feather, Herr and Ford (1997) examines body image perception and garment fit among black and white female collegiate athletes. In this study, 290 (168 white and 122 black) female college basketball players were analyzed. Black females were more positive about their bodies than the white females. The two groups did not differ in their satisfaction with apparel fit.

Tselepis and de Klerk (2004) noted that the strong physical, sociopsychological and cognitive changes that adolescents experience could directly affect the problems, needs and expectations they experience with apparel. Physical development can create functional and appearance problems with the fit of clothing. Sociopsychological development includes conforming to peer group fashion norms. Tselepis and de Klerk (2004) suggested that an adolescent’s body type may not be aligned with his or her peer group’s declared fashion choices, establishing additional fit issues. With regards to cognitive development, the authors proposed
that early adolescence may include limited understanding of garment fit and the construction components that influence the fit.

**Body Cathexis and Body Image**

According to Chattaraman and Rudd (2006), body image is an element that has received minimal focus in the study of clothing aesthetics. Aesthetic characteristics are vital to consumer purchase evaluations. DeLong (1998) communicated that a relationship exists between aesthetics and consumers; consumers choose clothing for personal and social acceptance and appreciation. According to de Klerk and Lubbe (2004), there is a definite assumption that aesthetics influence, consciously or unconsciously, consumer purchase decisions.

Cash (1990) suggested that body image can influence appearance management behaviors. These behaviors include the utilization of clothing to control and alter the aesthetics of physical appearance and self-presentation. Rudd and Lennon (2000) discovered that 29.5% of the sample of female college students in their qualitative study used clothing as a method of hiding one or more aspects of their bodies.

Chattaraman and Rudd (2006) posited that proper aesthetic attributes of apparel act as a coping mechanism. This mechanism allows individuals to decrease the inconsistency between sociocultural ideals and their perceived appearance, ultimately instilling more positive self-esteem and self-image. The purpose of their study was to verify if female college undergraduates’ (ranging from ages 18 to 56) aesthetic responses to apparel were related to their body size, body cathexis and body image. A 13-item survey adapted from a modified body cathexis scale was administered to acquire the participants’ level of body satisfaction. The highest levels of dissatisfaction were with thighs, weight and waist. The study also addressed the relationship between preferences for aesthetic styling characteristics in clothing in a specific
environment and individual body image. The results of the study indicated that the lower levels of body satisfaction are correlated with the desire for increased body coverage and less revealing clothing. After exploring the relationship between body size and preferences for aesthetic attributes in clothing in a specific environment, the researchers determined that individuals with a larger body size preferred increased coverage and less revealing clothing, whereas those who were smaller were more likely to indicate a preference for fitted clothing with less coverage. Chattaraman and Rudd (2006) communicated that, overall, the study suggests that individuals consider their body size while evaluating the aesthetic characteristics of apparel.

3D Body Scanning

The image captured by a 3D body scanner is a precise three-dimensional reproduction of the scanned subject. The image is viewed on a computer screen. According to the Textile Clothing Technology Corporation [TC]²:

[TC]²’s scanning technology scans the whole body in seconds and rapidly produces a true-to-scale 3D body model. The included automatic body measurement software can extract over 400 unique measurements many of which can be user customized. The 3D scanner is world leading in terms of price, small size (3.75 x 5.5 feet), ease of use, subject privacy and safety. ([TC]², 2011)

According to Simmons and Istook (2003), three-dimensional body scanning is “capable of extracting an infinite number of data types and measurements” and allows for body measurement techniques that “can be non-contact, instant and accurate.” Body scanning technology produces contoured digital images of real people without exposing any identifying physical features (see Figure 1) (Aghekyan, Ulrich, & Connell, 2012).
Figure 1. Sample 3D Body Scan.
The measurements obtained from 3D body scanning technology are more accurate, consistent and reproducible than measurements acquired through the traditional, physical measurement methods (Istook & Hwang, 2001). To ensure precise measurements, scan subjects are encouraged to wear form-fitting garments or undergarments (Istook & Hwang, 2001). Simmons and Istook (2003) emphasized that body scanning is a more desirable method of measuring the human body; the scan subject’s privacy can be guaranteed since no physical contact is required. Traditional anthropometric measuring requires physical contact and is not always reliable.
CHAPTER III

Methods

*General Introduction & Purpose*

Adolescence consists of many physical, psychological and emotional developments. A particular concern for adolescents at the middle school and junior high school levels is body image. The age of onset for body image dissatisfaction and related issues is childhood (ages 8 to 12); the levels of dissatisfaction increase and peak during early adolescence (Littleton & Ollendick, 2003). One study discovered that only 12.0% of adolescent females and 16.6% of adolescent males were satisfied with their body size (Ricciardelli & McCabe, 2001).

Participation in athletics has been observed as a contributing factor to self-worth and positive self-esteem (Daniels & Leaper, 2006). It has also been considered to spur negative effects. Smolak et al. (2000) indicated that sport participation creates an environment conducive to the development of body image dissatisfaction and eating disorders.

The purpose of this study was to explore the role of athletic program participation in middle and junior high school students’ self-perceptions of body image, body satisfaction and apparel fit satisfaction. A survey was used to assess the students’ self-perception of individual body image, satisfaction with different areas of the body and satisfaction with apparel fit. The research also assessed the accuracy between the students’ perceived body image on a body image scale and their 3D body scan image. By using 3D body scanning technology, body scan images were obtained to accurately determine the size and shape for male and female athlete and non-athlete middle and junior high school students.

*Research Questions*

1. Does participation in organized sports at the middle and junior high school level affect adolescents’ body image perception as compared to non-athletes?
2. Does participation in organized sports at the middle and junior high school level affect adolescents’ body image satisfaction as compared to non-athletes?

3. Do middle and junior high school athletes accurately perceive their body image using a 3D body scan and a body image scale as compared to non-athletes?

4. Are middle and junior high school athletes satisfied with the overall fit of their apparel as compared to non-athletes?

5. Do middle and junior high school athletes experience a difference in alteration frequency for their clothing purchased in retail stores as compared to non-athletes?

6. Do middle and junior high school athletes experience a difference in difficulty purchasing clothing in retail stores as compared to non-athletes?

Sample

This study employed non-probability, purposive sampling. The subjects for this study were athlete and non-athlete students enrolled in seventh, eighth and ninth grades in public and private schools within three school districts in a mid-South region of the United States. The institution’s Institutional Review Board granted approval before beginning the study and collecting any data. The superintendent and athletic director of each school district were contacted and informed about the purpose of the study. Superintendents and athletic directors of middle and junior high schools in the region were first contacted with a formal letter requesting permission to conduct the research within the specified schools. The researcher received responses from three school districts. A total of four schools, one middle school and three junior high schools, participated in the study. The study consisted of 120 participants with 15 seventh grade students, 46 eighth grade students and 59 ninth grade students.

Data Collection

Upon receiving permission from school administration, the researcher contacted a health and physical education faculty member from each school. The researcher explained that student
participation would require completing a survey and a non-invasive body scan. A date to conduct the study was coordinated and confirmed for each school. Parental consent forms were taken to each school to allow time for parental signatures and questions before beginning the study. An informational website for the schools and parents was set up on the college program’s website. The website included pictures of the body scanner, information about appropriate clothing to wear during scan, a PDF version of the parental consent form, the \([TC]^2\) KX-16 3D Body Scanner risk assessment and researcher/advisor contact information.

When collecting data at each school, the researcher explained the body scanning process to each group of participants. After explaining the survey, the researcher introduced the participants to the 3D body scanner and demonstrated the proper stance to assume when completing the body scan. Parental consent forms were collected individually and assigned codes. Participants were required to submit the signed form before beginning the process and could terminate participation at any time. As each participant turned in the consent form, the same code was also assigned to the survey. After completing the survey, the participant would turn in the survey to the researcher. At this time, the participant would enter the body scanner. The participant’s code was entered into the name field of the scanner; each scan was saved under its respective code.

At each school, the \([TC]^2\) KX-16 3D body scanner was set up in a private locker room or gymnasium area. Medical screens separated the body scanner and computer controller. Dark-colored sheets were draped over the medical screens to provide additional privacy. The computer controller was set up outside of the scanner with the monitor turned so that only the researcher could access and view the scans.
To obtain an accurate body scan, each participant was required to wear form-fitting clothing. When entering the body scanner, each participant had complete privacy to change before and after completing a successful scan. Participants were asked to tell the researcher when he or she was ready to start the scan. The researchers then started the scan and checked to be sure the image was captured before asking the participant to exit the scanner. After completing the survey and body scan, each participant was given the opportunity to enter his or her name into a drawing for a free iPad. Participation in the study concluded at this point.

**Instrumentation**

The survey used in this study was comprised of three individual questionnaires. These individual questionnaires consisted of a total of 34 questions which were used to obtain data on self-perception of body image, body satisfaction and satisfaction with apparel fit. In addition, questions 1 through 6 collected demographic data.

**Body-Image Ideals Questionnaire (BIQ)**

The Body-Image Ideals Questionnaire (BIQ) is a 22-item developed by Cash and Syzmanski (1995). Participants indicated body image ideals on a 4-point Likert-type scale. Each question has two components—physical ideals (with the scale including *exactly as I am* (0), *almost as I am* (1), *fairly unlike me* (2), and *very unlike me* (3)) and the importance of that particular physical feature (with the scale including *not important* (0), *somewhat important* (1), *moderately important* (2), and *very important* (3)). The following physical ideals are addressed: height, skin complexion, hair texture/thickness, facial features, muscle tone/definition, body proportions, weight, chest/bust size, physical strength, physical coordination and overall appearance. According to Cash’s website regarding body image assessments:

> The Body-Image Ideals Questionnaire (BIQ) uniquely measures evaluative body image from the perspective of Self-Discrepancy Theory. It assesses body-image satisfaction-
dissatisfaction by measuring the degree of discrepancy of self-perceived and idealized physical attributes, while also considering the importance of each of the physical ideals to the person. Self-ideal discrepancy and ideal importance are rated for 11 physical attributes (e.g., weight, facial features, muscle tone/definition, physical strength, overall appearance, etc.). Research has established the BIQ as an internally consistent and valid measure of evaluative body image. The BIQ is responsive to therapeutic body-image interventions. (Body-Images, 2008)

According to Jefferson and Stake (2009), the BIQ assess the degree to which participants perceive their bodies are discrepant from their personal ideals for the specific appearance features as well as the importance they place on those same features. According to Cash and Szymanski (1995), “subjects are asked to think about their personal ideal (how they wish or prefer to be) and evaluate how well their body resembles or matches this ideal…then, subjects indicate the strength or importance they place on each ideal.”

According to the BIQ Users’ Manual, “Cash and Szymanski (1995) conducted the initial validation study of the BIQ with 284 college women and provided strong evidence of the reliability and validity of the measure. As expected, the results indicated that the BIQ consists of two relatively distinct and internally consistent components—discrepancy (from ideals) and importance (of ideals)” (Cash, 2000a). Internal consistencies were calculated using Cronbach’s alpha, resulting in $\alpha = .81$ for males and $\alpha = .76$ for females (Cash, 2000a).

**Body Areas Satisfaction Scale (BASS)**

The Body Areas Satisfaction Scale (BASS) is a subscale of Cash’s (2000b) Multidimensional Body-Self Relations Questionnaire (MBSRQ). This scale “approaches body image evaluation as dissatisfaction-satisfaction with body areas and attributes” (Cash, 2000b). The BASS consists of nine items, which indicate how satisfied or dissatisfied the subject is with each eight areas of his/her body, including face, hair, lower torso, mid torso, upper torso, muscle tone, weight and height. The final item asks for the participant’s assessment of his/her overall
appearance. Participants indicated satisfaction with these areas on a 5-point Likert-type scale; the scale included very dissatisfied (1), mostly dissatisfied (2), neither satisfied nor dissatisfied (3), mostly satisfied (4), and strongly satisfied (5). According to Cash (2000b), high composite scorers are generally content with most areas of their body. Low scorers are unhappy with the size or appearance of several areas.

Reliability of the BASS was established through Cronbach’s alpha and a 1-month test-retest obtained from combined college student samples with Ns = 804 females and 335 males. Internal consistencies ranged from .73 to .74 for females and .77 to .86 for males (Cash, 2000b).

**Body Image Scale**

*The Body Test* body image scale, developed by the Dietitians of Canada (1988), was included in the survey. The scale included two sets of silhouettes, one for males and one for females. Each scale included seven body image silhouettes, ranging from underweight to extremely obese. Each silhouette figure (male and female) was assigned a number, ranging from 1 for the smallest silhouette to 7 for the largest silhouette. Students were asked to circle the silhouette they believed best represented their current body shape (Keith, 2010).

**Apparel Fit Questionnaire**

For the purpose of this study, a questionnaire based on apparel fit was developed by the researcher. Two Apparel Studies faculty members reviewed the instrument; improvements and changes were made based on their critiques. A convenience sample of 50 subjects participated in the pilot study. Participant responses did not indicate any necessary modifications.

The apparel fit questionnaire consisted of 13 questions regarding apparel fit experience when shopping. Participants indicated satisfaction with the fit of various garment components (sleeves, bust/chest, length, shoulders, waistband, hip, thigh, etc.) on a 5-point Likert-type scale.
Questions 22 through 32 included the following scale: *too short/tight* (1), *somewhat short/tight* (2), *just right* (3), *somewhat long/loose* (4), and *too long/loose* (5). Questions 33 and 34 included the following scale: *often* (1), *somewhat often* (2), *sometimes* (3), *almost never* (4), *never* (5).

**Data Analysis**

Descriptive statistics of frequency and percentage distributions were applied to the data using means, percentages, standard deviation and standard error for all questions. Group means were compared using independent samples *t*-tests for the variable of sport participation. Six major research questions were addressed in this study with data analysis performed on each question.

**Research Question One**: Does participation in organized sports at the middle and junior high school level affect body image perception as compared to non-athletes? Body image perception data was collected from the Body Image Ideals Questionnaire (BIQ), questions 1 through 11. A composite BIQ score was calculated for each participant. Frequency and percentage distributions were applied to the data using means, percentages and standard deviations for the body image perception questions. Group means were compared using independent samples *t*-tests for sport participation.

**Research Question Two**: Does participation in organized sports at the middle and junior high school level affect body image satisfaction as compared to non-athletes? Body image satisfaction data was collected from the Body Areas Satisfaction Scale (BASS), questions 13 through 21. A composite BASS score was calculated for each participant. Frequency and percentage distributions were applied to the data using means, percentages and standard
deviations for the body image satisfaction questions. Group means were compared using independent samples t-tests for sport participation.

**Research Question Three:** Do middle and junior high school athletes accurately perceive their body image using a body image scale and 3D body image scan as compared to non-athletes? Question 12 included a body image scale, *The Body Test*, for both males and females. Each scale (male/female) included seven body image silhouettes, ranging from underweight to extremely obese. Each silhouette figure (male and female) was assigned a number, ranging from 1 for the smallest silhouette to 7 for the largest silhouette. Students were asked to circle the silhouette they believed best represented their current body shape (Dietitians of Canada, 1988; Keith, 2010). Each participant also completed a 3D body scan utilizing the [TC]$^2$ KX-16 scanner. The researcher used each participant’s 3D body scan image to compare to the silhouette image that the participant chose in the survey. When conducting the comparisons, the researcher assigned each participant a new number (1 through 7) that represented his/her accurate body image silhouette as determined by the 3D body scan. An absolute value difference between the number (1 through 7) from each participant’s body image selection from *The Body Test* and the comparison number (1 through 7) from the 3D body scan was calculated. If a participant chose a silhouette image that matched their body scan image, the calculated difference equaled zero. All other calculated differences indicated that the participant chose an inaccurate silhouette image, that is, the image chosen on the survey did not match the 3D body scan image. For data analysis purposes, the accurate scores (those scoring 0) were recoded as 1. A range was established to include all other scores; all scores within this range were recoded as 2. This allowed the researcher to compare the means between athletes and non-athletes and test for any significant differences.
Research Question Four: Are middle and junior high school athletes satisfied with the overall fit of their apparel as compared to non-athletes? Apparel fit satisfaction data was collected from the apparel fit portion of the survey, questions 22 through 32. A composite score was calculated for each participant. A crosstab was created to examine the percentages of ‘Apparel Fit Satisfaction’ versus ‘Apparel Fit Dissatisfaction’ for athletes and non-athletes. Frequency and percentage distributions were applied to the data using means, percentages and standard deviations for the apparel fit satisfaction questions. Group means for the participants who reported dissatisfaction with apparel fit were compared using independent samples $t$-tests for sport participation.

Research Question Five: Do middle and junior high school athletes experience a difference in frequency for their clothing purchased in retail stores as compared to non-athletes? Clothing alteration frequency data was collected from the apparel fit portion of the survey, questions 33. Frequency and percentage distributions were applied to the data using means, percentages and standard deviations for the body image satisfaction questions. Group means were compared using independent samples $t$-tests for sport participation.

Research Question Six: Do middle and junior high school athletes experience a difference in difficulty purchasing clothing in retail stores as compared to non-athletes? Clothing purchasing difficulty data was collected from the apparel fit portion of the survey, questions 34. Frequency and percentage distributions were applied to the data using means, percentages and standard deviations for the body image satisfaction questions. Group means were compared using independent samples $t$-tests for sport participation.
CHAPTER IV

Results

Purpose of the Study

The purpose of this study was to explore the role of athletic program participation in middle and junior high school students’ self-perceptions of body image, body satisfaction and apparel fit satisfaction. A survey was used to assess the students’ self-perception of individual body image, satisfaction with different areas of the body and satisfaction with apparel fit. The research also assessed the accuracy between the students’ perceived body image on a body image scale and their 3D body scan image. By using 3D body scanning technology, body scan images were obtained to accurately determine the size and shape for male and female athlete and non-athlete middle and junior high school students.

The two comparison groups employed in this study were athletes and non-athletes enrolled in seventh, eighth and ninth grades in public and private schools within three school districts in a mid-South region of the United States. Once all data was collected from the student participants, frequencies, percent distributions and independent samples t-tests were used to analyze the data between the two groups to explore the role that sport participation has in body image perception, body satisfaction and apparel fit satisfaction while in middle and junior high school. The results could provide insight into body image perception and body image satisfaction at the pivotal early adolescent stage. The participating school districts could utilize this insight to identify gaps in current curriculum or programs in health and physical education classes as well as current athletic programs. The results could also provide the apparel industry with insight regarding the participants’ satisfaction/dissatisfaction with the junior sizing of the apparel they purchase in retail stores.
Significance of the Study

According to Skemp-Arlt (2006), a considerable discrepancy exists between a socially idealized body image and the true physical shape and size of adolescents. This study separates adolescents in middle and junior high school into two groups: (1) athletes and (2) non-athletes. According to Larson (2000), involvement in sports is related to positive adolescent development. Pederson and Siedman (2004) stated that participation in sports is positively associated with high self-esteem. Koivula (1999) highlighted that individuals who participate in sports perceive their body image in a more positive manner than individuals who do not participate in sports.

The results of this study were examined for perceived body image, body satisfaction, accuracy of perceived body image on a body image scale and apparel fit satisfaction; comparisons were made between the athlete and non-athlete groups. The results of this study contribute to the overall body of research regarding sport participation at the middle and junior high school grade levels. School districts, specifically those participating in the study, could be impacted by the results. An assessment of this study could result in curriculum alterations in health and physical education courses as well as changes in the structure of athletic programs that would benefit students. The apparel industry could be impacted by this knowledge to seek junior sizing standards that would produce better fitting junior apparel.

Data Collection Results

Students enrolled in 7th, 8th and 9th grades in three major school districts in a mid-South region of the U.S. were asked to complete the survey and 3D body scan during a health or physical education class. A total of 120 students (88 female, 32 male) participated in the study. All data was collected on-site at each individual school. Participation was voluntary; participants
were given the opportunity to add their name to a drawing for an iPad after their participation was complete.

Demographic data of gender, age, grade level, ethnicity, sport participation and sport type were collected from respondents and were used as independent variables in the data analysis. Ethnicity was regrouped into three categories (Caucasian, Hispanic and Other) due to small numbers of participants in some categories. The demographic characteristics of the students participating in the study are shown in Table 1. The frequencies of sport participation by individual sport are shown in Table 2; many athletes participated in more than one sport.

Table 1.

Demographic profile of participating students, N = 120

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>32</td>
<td>26.7</td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>73.3</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>83</td>
<td>69.2</td>
</tr>
<tr>
<td>Hispanic</td>
<td>16</td>
<td>13.3</td>
</tr>
<tr>
<td>Other</td>
<td>21</td>
<td>17.5</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-13</td>
<td>43</td>
<td>35.8</td>
</tr>
<tr>
<td>14-15</td>
<td>77</td>
<td>64.2</td>
</tr>
<tr>
<td>Grade Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>15</td>
<td>12.5</td>
</tr>
<tr>
<td>8th</td>
<td>46</td>
<td>38.3</td>
</tr>
<tr>
<td>9th</td>
<td>59</td>
<td>49.2</td>
</tr>
<tr>
<td>Sport Participation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>81</td>
<td>67.5</td>
</tr>
<tr>
<td>No</td>
<td>39</td>
<td>32.5</td>
</tr>
</tbody>
</table>
Table 2.

Frequency of sport participation by individual sport

<table>
<thead>
<tr>
<th>Sport Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseball</td>
<td>6</td>
</tr>
<tr>
<td>Basketball</td>
<td>26</td>
</tr>
<tr>
<td>Cheer</td>
<td>5</td>
</tr>
<tr>
<td>Cross Country</td>
<td>4</td>
</tr>
<tr>
<td>Dance</td>
<td>16</td>
</tr>
<tr>
<td>Football</td>
<td>7</td>
</tr>
<tr>
<td>Golf</td>
<td>6</td>
</tr>
<tr>
<td>Soccer</td>
<td>6</td>
</tr>
<tr>
<td>Softball</td>
<td>4</td>
</tr>
<tr>
<td>Swimming</td>
<td>3</td>
</tr>
<tr>
<td>Tennis</td>
<td>3</td>
</tr>
<tr>
<td>Track</td>
<td>10</td>
</tr>
<tr>
<td>Volleyball</td>
<td>19</td>
</tr>
<tr>
<td>Wrestling</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
</tbody>
</table>

Data Analysis

Group means were compared using independent samples $t$-tests. Six research questions were addressed in this study. Data analysis was conducted for each research question.

Research Question One: Does participation in organized sports at the middle and junior high school level affect body image perception as compared to non-athletes? According to Cash and Szymankski (1995), “a person’s physical self-evaluations are based on the extent of congruence/discrepancy between self-perceived physical attributes and internalized standards or ideals. . .body image satisfaction will depend upon (1) the extent to which an individual believes that his/her physical characteristics match his/her physical ideals, and (2) the importance associated with having or attaining those ideals.
Body image perception for athletes and non-athletes was examined using the Body Image Ideals Questionnaire (BIQ) (Cash and Szymanksi, 1995). The BIQ is an 11-item questionnaire that includes 10 physical characteristics (height, skin complexion, hair texture and thickness, facial features, muscle tone and definition, body proportions, weight, chest/bust size, physical strength and physical coordination). The 11th item includes overall physical appearance. Each of the 11 items consists of an ‘A’ and a ‘B’ response for a total of 22 responses for the questionnaire. Part A (discrepancy) items ask respondents to think about how they actually are and then to think about how they wish they were. Part B (importance) items ask respondents to indicate how important it was that they represent each physical ideal.

Scoring of the BIQ responses was done according to the *BIQ Users’ Manual* (Cash, 2000a). The scoring involved a calculation of a mean of the item-by-item cross-products of discrepancy X importance ratings. All Part A response ratings of 0 were recoded to -1 to permit the extension of the range of scores to include importance-weighted self-ideal congruence for each item. No Part B response ratings were recoded. After recoding the Part A response ratings, the computation of the cross-products was carried out for each item in the questionnaire (i.e. BIQA1*BIQB1; BIQA2*BIQB2; etc.). Finally, the mean of the cross products was computed which resulted in a composite BIQ score for each participant. The cross-product and composite BIQ scores were calculated in Microsoft Excel. The potential range of the composite BIQ scores is -3 (for maximum congruence across all physical attributes) to +9 (for very important and maximum discrepancies across all physical attributes). Higher scores reflect greater self-ideal disparity with strongly held physical ideals (Cash, 2000a).

Frequency and percentage distributions were applied to the data using means, percentages, standard deviations and standard error. Using the Statistical Package for the Social
Sciences (SPSS), a *t*-test produced group statistics on body image perceptions based upon sport participation.

Athletes displayed greater congruence across all physical attributes (*M* = 1.31, SE = .17) than non-athletes (*M* = 1.77, SE = .23). This difference was not significant for equality of means *t*(112) = 1.526, *p* > .05. The frequencies and percentages for body image perception based on sport participation are shown in Table 3. The results of the independent samples *t*-test for body image perception based on sport participation are shown in Table 4.

Table 3.
Frequencies and percentages for the independent variable sport participation for body image perception

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image Perception</td>
<td>Athlete</td>
<td>79</td>
<td>1.31</td>
<td>1.51</td>
<td>.17</td>
</tr>
<tr>
<td></td>
<td>Non-athlete</td>
<td>35</td>
<td>1.77</td>
<td>1.34</td>
<td>.23</td>
</tr>
</tbody>
</table>

Table 4.
Comparison of sample means by sport participation using independent samples *t*-tests for body image perception

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th><em>T</em></th>
<th><em>df</em></th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image Perception</td>
<td>Athlete vs. Non-athlete</td>
<td>1.526</td>
<td>112</td>
<td>.130</td>
</tr>
</tbody>
</table>

*p* < .05

Research Question Two: Does participation in organized sports at the middle and junior high school level affect body image satisfaction as compared to non-athletes? Body image satisfaction for athletes and non-athletes was examined using the Body Areas Satisfaction Scale.
(BASS) (Cash, 2000b). The BASS is a 9-item questionnaire that asks respondents to indicate how satisfied or dissatisfied the subject is with the following eight areas of his/her body: face, hair, lower torso, mid torso, upper torso, muscle tone, weight and height. The 9th item asks for respondents’ assessment of his/her overall appearance.

Scoring of the BASS responses was done according to the MBSRQ Users’ Manual (Cash, 2000b). The scoring involved the calculation of a mean score for the nine items of the questionnaire. This resulted in a composite BASS score for each participant. The composite BASS scores were calculated in Microsoft Excel. High composite scorers were generally satisfied with most areas of their body; low scorers were unhappy with the size or appearance of several areas (Cash, 2000b).

Frequency and percentage distributions were applied to the data using means, percentages, standard deviations and standard error. Using the Statistical Package for the Social Sciences (SPSS), a t-test produced group statistics on body image satisfaction based upon sport participation.

Athletes displayed greater body image satisfaction ($M = 3.58$, $SE = .08$) than non-athletes ($M = 3.38$, $SE = .10$). This difference was not significant for equality of means $t(111) = 1.472$, $p > .05$. The frequencies and percentages for body image satisfaction based on sport participation are shown in Table 5. The results of the independent samples t-test for body image satisfaction based on sport participation are shown in Table 6.
Table 5.
Frequencies and percentages for the independent variable sport participation for body image satisfaction

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image Satisfaction</td>
<td>Athlete</td>
<td>79</td>
<td>3.58</td>
<td>.71</td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td>Non-athlete</td>
<td>34</td>
<td>3.38</td>
<td>.60</td>
<td>.10</td>
</tr>
</tbody>
</table>

Table 6.
Comparison of sample means by sport participation using independent samples t-tests for body image satisfaction

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image Satisfaction</td>
<td>Athlete vs. Non-athlete</td>
<td>1.472</td>
<td>111</td>
<td>.144</td>
</tr>
</tbody>
</table>

*Research Question Three*: Do middle and junior high school athletes accurately perceive their body image using a body image scale and 3D body image scan as compared to non-athletes? The researcher conducted a comparison between the body image silhouette figure that each participant chose and his/her corresponding 3D body scan image. Each silhouette figure (male and female) was assigned a number, ranging from 1 for the smallest silhouette to 7 for the largest silhouette. When conducting the comparisons, the researcher assigned each participant a new number (1 through 7) that represented his/her accurate body image silhouette as determined by the 3D body scan. An absolute value difference between the number (1 through 7) from each participant’s body image selection from *The Body Test* and the comparison number (1 through 7) from the 3D body scan was calculated. For data analysis purposes, the accurate scores (those
scoring 0) were recoded as 1. A range was established to include all other scores (inaccurate perception of body image on *The Body Test*); all scores within this range were recoded as 2. This allowed the researcher to compare the means between athletes and non-athletes and test for any significant differences.

Frequency and percentage distributions were applied to the data using means, percentages, standard deviations and standard error. Using the Statistical Package for the Social Sciences (SPSS), a *t*-test produced group statistics on body image perception using a body image scale and 3D body scan based upon sport participation.

A difference between athletes and non-athletes was not statistically significant for equality of means \( t(118) = 1.762, p > .05 \); however, there was a nearly significant difference indicated between athletes and non-athletes for body image perception using a body image scale and 3D body scan, \( p = .081 \). The frequencies and percentages for body image perception using a body image scale and 3D body scan based on sport participation are shown in Table 7. The results of the independent samples *t*-test for body image perception using a body image scale and 3D body scan based on sport participation are shown in Table 8.

**Table 7.**

Frequencies and percentages for the independent variable sport participation for body image perception using a body image scale and 3D body scan

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image Perception</td>
<td>Athlete</td>
<td>81</td>
<td>1.44</td>
<td>.50</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>Non-athlete</td>
<td>35</td>
<td>1.62</td>
<td>.49</td>
<td>.08</td>
</tr>
</tbody>
</table>
Research Question Four: Are middle and junior high school athletes satisfied with the overall fit of their apparel as compared to non-athletes? A composite score for questions 22 through 32 of the apparel fit portion of the survey was calculated to examine overall satisfaction with fit. The scores were calculated in Microsoft Excel. If a respondent’s composite score was a 0, he/she indicated absolutely no problem with apparel fit. If a respondent’s composite score was anything other than a 0, he/she indicated some type of problem with apparel fit. Using the Statistical Package for the Social Sciences (SPSS), a crosstab was created to examine the percentages of ‘Apparel Fit Satisfaction’ versus ‘Apparel Fit Dissatisfaction’ for athletes and non-athletes. Frequency and percentage distributions were applied to the data using means, percentages, standard deviations and standard error. A t-test produced group statistics on apparel fit dissatisfaction based upon sport participation.

Athletes and non-athletes displayed greater overall apparel fit dissatisfaction (96.1% and 91.9% respectively) than overall apparel fit satisfaction (3.9% and 8.1% respectively). For the participants who reported dissatisfaction with apparel fit, the mean score for athletes was $M = .54$; the mean score for non-athletes was $M = .56$. This difference was not significant for equality of means $t(47.93) = .280$, $p > .05$. The crosstab for apparel fit satisfaction and

---

### Table 8.

Comparison of sample means by sport participation using independent samples $t$-tests for body image perception using a body image scale and 3D body scan

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>$T$</th>
<th>$df$</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image Perception</td>
<td>Athlete vs. Non-athlete</td>
<td>1.762</td>
<td>118</td>
<td>.081</td>
</tr>
</tbody>
</table>

$p < .05$
dissatisfaction for athletes and non-athletes is shown in Table 9. The frequencies and percentages for apparel fit dissatisfaction based on sport participation are shown in Table 10. The results of the independent samples t-test for apparel fit dissatisfaction based on sport participation are shown in Table 11.

Table 9.

Crosstab for apparel fit satisfaction and dissatisfaction for athletes and non-athletes

<table>
<thead>
<tr>
<th>Sport Participation</th>
<th>Athlete</th>
<th>Non-athlete</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparel Fit Satisfaction</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>3.9%</td>
<td>8.1%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Apparel Fit Dissatisfaction</td>
<td>74</td>
<td>34</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>96.1%</td>
<td>91.9%</td>
<td>94.7%</td>
</tr>
</tbody>
</table>

Table 10.

Frequencies and percentages for the independent variable sport participation for apparel fit dissatisfaction

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athlete</td>
<td>74</td>
<td>.54</td>
<td>.26</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Non-athlete</td>
<td>34</td>
<td>.56</td>
<td>.38</td>
<td>.07</td>
<td></td>
</tr>
</tbody>
</table>
Table 11.

Comparison of sample means by sport participation using independent samples $t$-tests for apparel fit dissatisfaction

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>$T$</th>
<th>$df$</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparel Fit Dissatisfaction</td>
<td>Athlete vs. Non-athlete</td>
<td>.280</td>
<td>47.93</td>
<td>.781</td>
</tr>
</tbody>
</table>

$p < .05$

Research Question Five: Do middle and junior high school athletes experience a difference in alteration frequency for their clothing purchased in retail stores as compared to non-athletes? A 5-point Likert-type scale was employed for question 33 of the apparel fit portion of the survey, ranging from (1) often to (5) never. Frequency and percentage distributions were applied to the data using means, percentages, standard deviations and standard error. Using the Statistical Package for the Social Sciences (SPSS), a $t$-test produced group statistics on clothing alteration frequency based upon sport participation.

Non-athletes indicated lower frequency of clothing alterations ($M = 3.85$, SE = .17) than athletes ($M = 3.78$, SE = .11). This difference was not significant for equality of means $t(118) = .352, p > .05$. The frequencies and percentages for clothing alteration frequency based on sport participation are shown in Table 12. The results of the independent samples $t$-test for clothing alteration frequency based on sport participation are shown in Table 13.
Table 12.

Frequencies and percentages for the independent variable sport participation for clothing alteration frequency

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing Alteration Frequency</td>
<td>Athlete</td>
<td>81</td>
<td>3.78</td>
<td>.96</td>
<td>.11</td>
</tr>
<tr>
<td></td>
<td>Non-athlete</td>
<td>39</td>
<td>3.85</td>
<td>1.06</td>
<td>.17</td>
</tr>
</tbody>
</table>

Table 13.

Comparison of sample means by sport participation using independent samples t-tests for clothing alteration frequency

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>T</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing Alteration Frequency</td>
<td>Athlete vs. Non-athlete</td>
<td>.352</td>
<td>118</td>
<td>.725</td>
</tr>
</tbody>
</table>

p < .05

Research Question Six: Do middle and junior high school athletes experience a difference in difficulty purchasing clothing in retail stores as compared to non-athletes? A 5-point Likert-type scale was employed for question 33 of the apparel fit portion of the survey, ranging from (1) often to (5) never. Frequency and percentage distributions were applied to the data using means, percentages, standard deviations and standard error. Using the Statistical Package for the Social Sciences (SPSS), a t-test produced group statistics on difficulty purchasing clothing based upon sport participation.

Athletes indicated less difficulty purchasing clothing ($M = 3.75, SE = .12$) than non-athletes ($M = 3.32, SE = .21$). Although not statistically significant for equality of means $t(117)$
= 1.96, \( p > .05 \), the results did indicate a nearly significant difference between athletes and non-athletes in difficulty of clothing purchase, \( p = .053 \). The frequencies and percentages for difficulty purchasing clothing based on sport participation are shown in Table 14. The results of the independent samples t-test for difficulty purchasing clothing based on sport participation are shown in Table 15.

Table 14.

Frequencies and percentages for the independent variable sport participation for difficulty purchasing clothing

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty Purchasing Clothing</td>
<td>Athlete</td>
<td>81</td>
<td>3.75</td>
<td>1.07</td>
<td>.12</td>
</tr>
<tr>
<td></td>
<td>Non-athlete</td>
<td>38</td>
<td>3.32</td>
<td>1.28</td>
<td>.21</td>
</tr>
</tbody>
</table>

Table 15.

Comparison of sample means by sport participation using independent samples t-tests for difficulty purchasing clothing

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Sport Participation</th>
<th>( T )</th>
<th>( df )</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty Purchasing Clothing</td>
<td>Athlete vs. Non-athlete</td>
<td>1.96</td>
<td>117</td>
<td>.053</td>
</tr>
</tbody>
</table>

\( p < .05 \)

Chapter Summary

The current study was designed to identify differences between middle and junior high school athlete and non-athlete students’ self-perceptions of body image, body satisfaction and apparel fit satisfaction. The findings did not include significant differences between the two comparison groups for body image perception, body satisfaction or apparel fit satisfaction.
Overall, both groups reported scores indicating important congruence (athlete: $M = 1.31$; non-athlete: $M = 1.77$) across all ideal/important physical attributes used in the Body Image Ideals Questionnaire; data analysis did not reveal any significant differences between the two groups. Both groups also reported overall satisfaction with their bodies (athlete: $M = 3.58$; non-athlete: $M = 3.38$) using the Body Areas Satisfaction Scale; data analysis did not reveal any significant differences between the two groups. Data analysis did not reveal a significant difference between athlete and non-athlete accurate/inaccurate self-perceptions of body image using a body image scale.

Both athletes ($n = 74, 96.1\%$) and non-athletes ($n = 34, 91.9\%$) indicated at least one problem with apparel fit. Only 3.9% ($n = 3$) of athletes and 8.1% ($n = 3$) of non-athletes indicated no problem with apparel fit. Overall, both groups reported low frequency of needing apparel that is purchased in retail stores altered (athlete: $M = 3.78$; non-athlete: $M = 3.85$). On the 5-point scale, both groups averaged between 3 (sometimes) and 4 (almost never). Data analysis did not reveal any significant differences between the two groups. The two groups also reported little difficulty purchasing apparel in retail stores (athlete: $M = 3.75$; non-athlete: $M = 3.32$). On the 5-point scale, both groups averaged between 3 (sometimes) and 4 (almost never). Data analysis did not reveal any significant differences between the two groups. Although no statistically significant differences were found between athletes and non-athletes for the research questions, meaningful differences between the two groups were found for accuracy of self-perception of body image on a body image scale and difficulty purchasing clothing. Data analysis for these two questions revealed differences closest to $p$ value of .05.
CHAPTER V

Summary, Conclusions and Recommendations

Introduction

Sport participation is typically perceived as beneficial and as a contributor to self-worth and positive self-evaluation (Daniels & Leaper, 2006). Bluechardt et al. (1995) indicated that sport participation has immediate positive effects on self-image throughout adolescence. Literature provided by Smolak et al. (2000) contradicts these findings, suggesting that participation in athletics is a factor that positions adolescents to be increasingly susceptible to body image dissatisfaction. Overall, research regarding the influence of sport participation on perceived body image and body image satisfaction at the middle and junior high school levels reveals both positive and negative findings. The literature regarding apparel fit satisfaction among athletes, specifically adolescent athletes, is scarce. Feather et al. (1997) conducted a study that examined body image perception and apparel fit satisfaction among female collegiate athletes. A gap exists in the present research regarding fit satisfaction among adolescent athletes.

Purpose of the Study

The purpose of this study was to explore the role of athletic program participation in middle and junior high school students’ self-perceptions of body image, body satisfaction and apparel fit satisfaction. A survey was used to assess the students’ self-perception of individual body image, satisfaction with different areas of the body and satisfaction with apparel fit. The research also assessed the accuracy between the students’ perceived body image on a body image scale and their 3D body scan image. By using 3D body scanning technology, body scan images were obtained to accurately determine the size and shape for male and female athlete and non-athlete middle and junior high school students.
Statement of the Research Questions and Results

Research Question One: Does participation in organized sports at the middle and junior high school level affect body image perception as compared to non-athletes? Based on the scoring system established by Cash (2000a), overall, both athletes and non-athletes reported scores indicating important self-ideal congruities across all physical attributes. This indicates that both groups of participants perceive their body images reasonably accurately. However, data analysis did not reveal any significant differences between the two groups.

Research Question Two: Does participation in organized sports at the middle and junior high school level affect body image satisfaction as compared to non-athletes? Based on the scoring system established by Cash (2000b) for the Body Areas Satisfaction Scale, overall, both athletes and non-athletes reported moderately high body satisfaction. Data analysis did not reveal any significant differences between the two groups.

Research Question Three: Do middle and junior high school athletes accurately perceive their body image using a body image scale and 3D body scan as compared to non-athletes? Data analysis did not reveal a statistically significant difference between the accuracy of athlete and non-athlete self-perception of body image using a body image scale and 3D body scan. However, there was a difference indicated between athletes and non-athletes for body image perception using a body image scale and 3D body scan, $t(118) = 1.762, p = .081$.

Research Question Four: Are middle and junior high school athletes satisfied with the overall fit of their apparel as compared to non-athletes? Overall, the majority of both the athlete and non-athlete groups reported dissatisfaction with apparel fit. When comparing this dissatisfaction between the two groups, no significant differences were discovered.
**Research Question Five:** Do middle and junior high school athletes experience a difference in alteration frequency for their clothing purchased in retail stores as compared to non-athletes? Overall, athletes and non-athletes reported low frequency of needing apparel that is purchased in retail stores altered. On average, the two groups reported between “sometimes” and “almost never” on the 5-point scale. Data analysis did not reveal any significant differences between the two groups.

**Research Question Six:** Do middle and junior high school athletes experience a difference in difficulty purchasing clothing in retail stores as compared to non-athletes? Overall, athletes and non-athletes reported little difficulty purchasing apparel in retail stores. On average, the two groups reported between “sometimes” and “almost never” on the 5-point scale. Although data analysis did not reveal any statistically significant differences between athletes and non-athletes in difficulty of clothing purchases, the results did indicate a nearly significant difference between the two groups $t(117) = 1.96, p = .053$. The athletes experienced less difficulty purchasing clothing.

**Conclusions**

**Self-Perceptions of Body Image**

Athletes and non-athletes indicated moderately important congruence across all ideal/important physical attributes. Overall, both groups demonstrated accurate self-perceptions of body image. Athletes displayed a higher level of congruence across the physical attributes (height, skin complexion, hair texture/thickness, facial features, muscle tone/definition, body proportions, weight, chest/bust size, physical strength, physical coordination and overall physical appearance) used to test body image perception. However, the difference was not enough to be statistically significant.
These results support current research regarding sport participation as a key component to positive adolescent development, high self-esteem and accuracy of perceived appearance (Clay et al., 2005; Larson, 2000; Pederson & Siedman, 2004). However, Koivula (1999) stated that individuals who participate in sports perceive their body image in a more positive manner than individuals who do not participate in sports. The results from this study do not support this previous research. Both groups displayed overall accurate self-perceptions of body image. Sport participation did not play a statistically significant role in body image perception.

**Body Image Satisfaction**

Athletes and non-athletes reported overall satisfaction with their bodies. While athletes did exhibit greater body satisfaction than non-athletes, the difference was not enough to be statistically significant. Three recent studies examined body satisfaction among adolescent males and females. Overall, 12% to 26% of adolescent males and 24% to 46% of adolescent females displayed body dissatisfaction (Neumark-Sztainer et al., 2002; Presnell et al., 2004; Stice & Whitenton, 2002). Kostanski and Gullone (1997) reported that 80% of the girls in their study were dissatisfied with their bodies. In a study conducted by Levine and Smolak (2002), 40% to 70% of girls were dissatisfied with two or more physical features. The current study did not compare body satisfaction between genders but did discover that the overall adolescent sample was satisfied with their physical features.

**Accuracy of Self-Perception of Body Image Using a Body Image Scale**

Lee (2006) indicated that adolescents’ perceptions of their body sizes differ from other perceptions. Mahajan (2009) communicated that it is common to ask participants to self-report their current body size by choosing a figure on a figure rating scale that most closely resembles their actual body shape and size. According to Aghekyan et al. (2012), body perception studies
have typically relied on the following two types of visual presentation formats: (1) line
drawings, silhouette outlines or simple sketches and (2) photographs. The researchers suggest
using 3D images in an attempt to advance the exploration of the perception of body size and
shape. The current study used a body image scale with silhouette images in the survey. Each
participant’s 3D body scan was used to compare to his/her selection on the body image scale.

Mahajan (2009) stated that women typically perceive their bodies as heavier and larger as
well as inaccurately self-report their body measurements. In Mahajan’s study of adolescent girls
(ages 12 to 14) and female college students, the adolescent girls viewed their bodies as smaller
by one interval on a body image scale as compared to the female college students.

The current study did not reveal statistically significant differences between the athletes
and non-athletes’ self-perceptions of body image using The Body Test and 3D body scan images
but did reveal meaningful results. Although not statistically significant, the athletes more
accurately perceived their body image on the body image scale than the non-athletes. As stated
previously, these findings support recent research regarding sporting participation as an
important factor for positive adolescent development, high self-esteem and accuracy of perceived
appearance (Clay et al., 2005; Larson, 2000; Pederson & Siedman, 2004).

Apparel Fit Satisfaction

Drake-Bridges and Burgess (2010) recently surveyed a sample of 206 adolescent females
between the ages 9 and 15. The participants reported moderately high levels of satisfaction with
the fit of their apparel; the youngest group of participants in the sample reported the highest
levels of satisfaction. In an earlier study conducted by MacGillivray and Wilson (1997), it was
discovered that the level of satisfaction with apparel fit decreased with age. The results of the
current study do not support the previous research. Sport participation did not influence the
sample’s satisfaction with apparel fit. The questionnaire assessed apparel fit for the following areas: chest/bust, shoulders, collar, waistband, hip, thigh, pant length, top length, top circumference, sleeve length and sleeve circumference. The majority of athletes and non-athletes reported at least one issue with the fit of their apparel. Although the majority of both groups reported apparel fit dissatisfaction, neither athletes nor non-athletes reported a high frequency of apparel alterations or difficulty purchasing clothing in retail stores.

Implications and Recommendations for Future Research

The results of this study provide information about self-perceptions of body image, body image satisfaction and apparel fit satisfaction among middle and junior high school athletes and non-athletes. No statistically significant differences were found between athletes and non-athletes for self-perceptions of body image, body image satisfaction, accuracy of self-perception of body image on a body image scale, apparel fit satisfaction, frequency of apparel alterations or difficulty purchasing clothing in retail stores. Although no statistically significant differences were found between athletes and non-athletes for the research questions, meaningful differences between the two groups were found for accuracy of self-perception of body image on a body image scale and difficulty purchasing clothing. Data analysis for these two questions revealed differences closest to $p$ value of .05.

Additional research with larger samples may be needed to more accurately assess differences between adolescent athletes and non-athletes. Overall, athletes and non-athletes perceived their body images accurately. It is important for educators to recognize this result as positive as compared to the typical discrepancy that exists between idealized and actual body image. Overall body satisfaction between both groups is also notable. Recognizing these positive trends will allow the educators in the participating school districts as well as other
school districts to target programs to continue to promote and educate students on the benefits of healthy body image perceptions and body image satisfaction. Educators may find it beneficial to evaluate current health education curriculum so that they can continue to instill and encourage healthy body image perceptions and satisfaction.

The present study revealed overall dissatisfaction with apparel fit for both athletes and non-athletes. However, both groups reported low frequency of apparel alterations and little difficulty purchasing apparel in retail stores. These findings suggest the need for additional studies to determine why middle and junior high school students expressed dissatisfaction.

Future studies should analyze participant satisfaction/dissatisfaction with various areas of fit for garments from specific retail stores where adolescents frequently purchase clothing. Future findings could have implications for the apparel industry’s junior sizing system.
REFERENCES


APPENDICES
APPENDIX A

SURVEY
Please answer the following questions.

1. Gender
   _____ Male   _____ Female

2. Age
   _____ 12-13   _____ 14-15   _____ 16-17   _____ 18-19

3. Grade Level
   _____ 7th   _____ 8th   _____ 9th   _____ 10th   _____ 11th   _____ 12th

4. Ethnicity
   _____ American Indian/Alaska Native
   _____ Asian
   _____ African American
   _____ Caucasian
   _____ Hispanic/Latino
   _____ Native Hawaiian/Pacific Islander
   _____ Other

5. Do you participate in organized school sports?
   _____ Yes
   _____ No

6. If so, please check each sport you participate in.
   _____ Baseball         _____ Softball
   _____ Basketball       _____ Swimming
   _____ Cheer            _____ Tennis
   _____ Cross Country    _____ Track
   _____ Dance            _____ Volleyball
   _____ Football         _____ Wrestling
   _____ Golf             _____ Other (Please specify below)
   _____ Soccer
   ____________________________
PART I. Body Image Ideals Questionnaire (BIQ)

**Instructions. Please read carefully:**
Each item on this questionnaire deals with a different physical characteristic. For each characteristic, think about how you would describe yourself as you actually are. Then think about how you wish you were. The difference between the two reveals how close you come to your personal ideal. In some instances, your looks may closely match your ideal. In other instances, they may differ considerably. On Part A of each item, rate how much you resemble your personal physical ideal by circling a number from 0 to 3.

Your physical ideals may differ in their importance to you, regardless of how close you come to them. You may feel strongly that some ideals embody the way you want to look or to be. In other areas, your ideals may be less important to you. On Part B of each item, rate how important your ideal is to you by circling a number on the 0 to 3 scale.

1. A. My ideal **height** is:

   0       1       2       3
   Exactly As  Almost As  Fairly  Very
   I Am       I Am       Unlike Me  Unlike Me

   B. How important to you is your ideal height?

   0       1       2       3
   Not Important  Somewhat Important  Moderately Important  Very Important

2. A. My ideal **skin complexion** is:

   0       1       2       3
   Exactly As  Almost As  Fairly  Very
   I Am       I Am       Unlike Me  Unlike Me

   B. How important to you is your ideal skin complexion?

   0       1       2       3
   Not Important  Somewhat Important  Moderately Important  Very Important

3. A. My ideal **hair texture and thickness** are:

   0       1       2       3
   Exactly As  Almost As  Fairly  Very
   I Am       I Am       Unlike Me  Unlike Me
B. How important to you are your ideal hair texture and thickness?

<table>
<thead>
<tr>
<th>Importance</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>0</td>
<td>Somewhat Important</td>
<td>Moderately Important</td>
<td>Very Important</td>
</tr>
</tbody>
</table>

4. A. My ideal **facial features** (eyes, nose, ears, facial shape) are:

<table>
<thead>
<tr>
<th>Similarity</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As I Am</td>
<td>0</td>
<td>Almost As I Am</td>
<td>Fairly Unlike Me</td>
<td>Very Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you are your ideal facial features?

<table>
<thead>
<tr>
<th>Importance</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>0</td>
<td>Somewhat Important</td>
<td>Moderately Important</td>
<td>Very Important</td>
</tr>
</tbody>
</table>

5. A. My ideal **muscle tone and definition** is:

<table>
<thead>
<tr>
<th>Similarity</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As I Am</td>
<td>0</td>
<td>Almost As I Am</td>
<td>Fairly Unlike Me</td>
<td>Very Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you is your ideal muscle tone and definition?

<table>
<thead>
<tr>
<th>Importance</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>0</td>
<td>Somewhat Important</td>
<td>Moderately Important</td>
<td>Very Important</td>
</tr>
</tbody>
</table>

6. A. My ideal **body proportions** are:

<table>
<thead>
<tr>
<th>Similarity</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As I Am</td>
<td>0</td>
<td>Almost As I Am</td>
<td>Fairly Unlike Me</td>
<td>Very Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you are your ideal body proportions?

<table>
<thead>
<tr>
<th>Importance</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>0</td>
<td>Somewhat Important</td>
<td>Moderately Important</td>
<td>Very Important</td>
</tr>
</tbody>
</table>

7. A. My ideal **weight** is:

<table>
<thead>
<tr>
<th>Similarity</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As I Am</td>
<td>0</td>
<td>Almost As I Am</td>
<td>Fairly Unlike Me</td>
<td>Very Unlike Me</td>
</tr>
</tbody>
</table>
B. How important to you is your ideal weight?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very</td>
</tr>
<tr>
<td>Important</td>
<td>Important</td>
<td>Important</td>
<td>Important</td>
</tr>
</tbody>
</table>

8. A. My ideal **chest size** is:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As</td>
<td>Almost As</td>
<td>Fairly</td>
<td>Very</td>
</tr>
<tr>
<td>I Am</td>
<td>I Am</td>
<td>Unlike Me</td>
<td>Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you is your ideal chest size?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very</td>
</tr>
<tr>
<td>Important</td>
<td>Important</td>
<td>Important</td>
<td>Important</td>
</tr>
</tbody>
</table>

9. A. My ideal **physical strength** is:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As</td>
<td>Almost As</td>
<td>Fairly</td>
<td>Very</td>
</tr>
<tr>
<td>I Am</td>
<td>I Am</td>
<td>Unlike Me</td>
<td>Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you is your ideal physical strength?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very</td>
</tr>
<tr>
<td>Important</td>
<td>Important</td>
<td>Important</td>
<td>Important</td>
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</tbody>
</table>

10. A. My ideal **physical coordination** is:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As</td>
<td>Almost As</td>
<td>Fairly</td>
<td>Very</td>
</tr>
<tr>
<td>I Am</td>
<td>I Am</td>
<td>Unlike Me</td>
<td>Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you is your ideal physical coordination?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very</td>
</tr>
<tr>
<td>Important</td>
<td>Important</td>
<td>Important</td>
<td>Important</td>
</tr>
</tbody>
</table>
11. A. My ideal **overall physical appearance** is:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exactly As I Am</td>
<td>Almost As I Am</td>
<td>Fairly Unlike Me</td>
<td>Very Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you is your overall physical appearance?

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>Somewhat Important</td>
<td>Moderately Important</td>
<td>Very Important</td>
</tr>
</tbody>
</table>

(BIQ ©Thomas F. Cash, Ph.D.)

PART II.

12. Please **circle** the body shape under the appropriate category (i.e. women or men) that you think best represents you.

[Diagram of body shapes for women and men]
PART III. Body Areas Satisfaction Scale (BASS)

13-21. Instructions: Use this 1 to 5 scale to indicate how dissatisfied or satisfied you are with each of the following areas or aspects of your body:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very Dissatisfied</td>
<td>Mostly Dissatisfied</td>
<td>Neither Satisfied</td>
<td>Mostly Satisfied</td>
<td>Very Satisfied</td>
</tr>
<tr>
<td></td>
<td>Nor Dissatisfied</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

____ 13. Face (facial features, complexion)
____ 14. Hair (color, thickness, texture)
____ 15. Lower torso (buttocks, hips, thighs, legs)
____ 16. Mid torso (waist, stomach)
____ 17. Upper torso (chest or breasts, shoulders, arms)
____ 18. Muscle tone
____ 19. Weight
____ 20. Height
____ 21. Overall appearance

(MBSRQ ©Thomas F. Cash, Ph.D.)

PART IV. Apparel Fit

Instructions: For each question below, please circle the number that most accurately describes your experience when shopping for clothing.

22. When purchasing tops I find that the sleeves are:

   Too Short   Somewhat Short   Just Right   Somewhat Long   Too Long

   1  2  3  4  5

23. When purchasing tops I find the body of the top to be:

   Too Tight   Somewhat Tight   Just Right   Somewhat Loose   Too Loose

   1  2  3  4  5
24. When purchasing tops I find the chest/bust of the top to be:

<table>
<thead>
<tr>
<th>Too Tight</th>
<th>Somewhat Tight</th>
<th>Just Right</th>
<th>Somewhat Loose</th>
<th>Too Loose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

25. When purchasing tops I find the length of the top to be:

<table>
<thead>
<tr>
<th>Too Short</th>
<th>Somewhat Short</th>
<th>Just Right</th>
<th>Somewhat Long</th>
<th>Too Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

26. When purchasing tops I find the collar to be:

<table>
<thead>
<tr>
<th>Too Tight</th>
<th>Somewhat Tight</th>
<th>Just Right</th>
<th>Somewhat Loose</th>
<th>Too Loose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

27. When purchasing tops I find the shoulders to be:

<table>
<thead>
<tr>
<th>Too Tight</th>
<th>Somewhat Tight</th>
<th>Just Right</th>
<th>Somewhat Loose</th>
<th>Too Loose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

28. When purchasing tops I find the sleeves to be:

<table>
<thead>
<tr>
<th>Too Tight</th>
<th>Somewhat Tight</th>
<th>Just Right</th>
<th>Somewhat Loose</th>
<th>Too Loose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

29. When purchasing pants I find the length to be:

<table>
<thead>
<tr>
<th>Too Short</th>
<th>Somewhat Short</th>
<th>Just Right</th>
<th>Somewhat Long</th>
<th>Too Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

30. When purchasing pants I find the waistband to be:

<table>
<thead>
<tr>
<th>Too Tight</th>
<th>Somewhat Tight</th>
<th>Just Right</th>
<th>Somewhat Loose</th>
<th>Too Loose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
31. When purchasing pants I find the hip area to be:

<table>
<thead>
<tr>
<th>Too Tight</th>
<th>Somewhat Tight</th>
<th>Just Right</th>
<th>Somewhat Loose</th>
<th>Too Loose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

32. When purchasing pants I find the thighs to be:

<table>
<thead>
<tr>
<th>Too Tight</th>
<th>Somewhat Tight</th>
<th>Just Right</th>
<th>Somewhat Loose</th>
<th>Too Loose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

33. Clothing I purchase in the store has to be altered:

<table>
<thead>
<tr>
<th>Often</th>
<th>Somewhat Often</th>
<th>Sometimes</th>
<th>Almost Never</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

34. I have difficult time buying clothing in retail stores:

<table>
<thead>
<tr>
<th>Often</th>
<th>Somewhat Often</th>
<th>Sometimes</th>
<th>Almost Never</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL FORM
October 1, 2012

MEMORANDUM

TO: Lauren Speight
    Kathleen Smith

FROM: Ro Windwalker
      IRB Coordinator

RE: New Protocol Approval

IRB Protocol #: 12-09-091

Protocol Title: A Comparative Study of Middle and Junior High School Athlete and Non-Athlete Self-Perceptions of Body Image and Satisfaction with Apparel Fit using 3D Body Scanning Technology

Review Type: ☑ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Approved Project Period: Start Date: 09/28/2012 Expiration Date: 09/27/2013

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form Continuing Review for IRB Approved Projects, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 1,000 participants. If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval prior to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.

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Voice (479) 575-2208 • Fax (479) 575-3846 • Email irb@uark.edu

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