COLLEGIATE FEMALE ATHLETES' BODY IMAGE AND CLOTHING BEHAVIORS

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by
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ABSTRACT

This study investigates the body image experiences unique to collegiate female athletes in connection with their apparel wear. Both their athletic apparel and the apparel they wear outside of their athletic environment are addressed. Female athlete participants were categorized as lean sport or non-lean sport athletes. Lean sports are those in which athletes place a competitive and/or aesthetic value on leanness; Non-lean sports are those in which body weight and aesthetic appearance are less central to athletic success. For Phase I of this study, 36 NCAA Division I collegiate female athletes participated in in-person interviews, body image survey collection (Stunkard Figure Rating Scale and Multidimensional Body-Self Relations Questionnaire), photography of garment fit concerns, and 3D body scanning for anthropometric data collection. Lean sports included cross country and rowing (coxswains); Non-lean sports included basketball and volleyball. Phase II involved the data analysis of Phase I female athletes' anthropometric data obtained from 3D body scanning. During Phase III of this study, collegiate female athletes and collegiate female non-athletes completed the MBSRQ through Qualtrics. MBSRQ results from Phase I were combined with Phase III data for a total of 78 collegiate female athletes (lean-36, non-lean-42) and 101 collegiate female non-athletes represent. Lean sports represented include: cross country, equestrian, gymnastics, rowing (coxswains), swimming and diving, track and field (running events). Non-lean sports include basketball, fencing, field hockey, lacrosse, rowing, soccer, softball, tennis, and volleyball. Results indicate no significant difference in body image between lean and non-lean sports groups but high body image scores in comparison to non-athletes. Anthropometric data analysis revealed similar body proportions and shape between lean and non-lean sports groups supporting similar garment fit concerns discussed in Phase I of this study.

BIOGRAPHICAL SKETCH

Mary Claire Nemeth received her Bachelor's degree in Art History and Visual Arts from Columbia University, Columbia College. While at Cornell, she studied techniques in pattern drafting, fashion draping, the application of anthropometrics to the apparel industry, the vast history of dress, and fashion theory.

To my parents- for their unwavering love, encouragement, and support

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CHAPTER I

Introduction

Sociocultural theory (Vygotsky, 1978) and feminist theory (Grogan, 2008), two common theoretical approaches to understanding body image, stress the role of social and cultural variables in the communication, shaping, and reinforcing of appearance standards which include beauty and body shape ideals (Forbes, 2008). Western media plays a pivotal role in the distribution of these appearance standards (Paludi, 2010). While body shape ideals for women have changed and evolved throughout time, in Western culture, a significant cultural shift occurred in the female body ideal at the turn of the 20th century. The ideal transitioned from a more voluptuous fuller figured body type to the thin, toned body type depicted in fashion magazines today (Grogan, 2008). Starting at the end of the last century, slenderness and muscularity have become symbols of control, willpower, and energy (Bordo, 2003). However, while a more muscled body has become increasingly important in the ideal female body aesthetic (Grogan, 2008), not all muscle tone is regarded as gender appropriate for women and considered culturally unattractive (Bordo, 1993; Choi, 2000; Krane, Choi, Baird, Aimar, & Kauer, 2004; Krane, Waldron, Michalenok, & Stiles-Shipley, 2001).

The majority of people do not naturally possess slim and toned bodies. Therefore, in order to conform to the current body shape ideal, people must be vigilant about diet and exercise (Grogan, 2008). According to literature (The Renfrew Center Foundation for Eating Disorders, 2003), only 5% of American females naturally possess the body shape ideal depicted in the media, which implies that most women fall short of this narrow appearance standard. Perceiving a discrepancy between her own body and the ideal body, they may experience body dissatisfaction, "… a person's negative thoughts and feelings about his or her body…" (Grogan,

2008, p. 4). Body dissatisfaction is one component of the multidimensional construct of body image "… a person's perceptions, thoughts, and feelings about his or her body…" (Grogan, 2008, p. 3).

Women encounter unique body image-related concerns due to their experiences with menstruation, pregnancy, and menopause (Thompson et al., 1999). Puberty for girls, specifically, is an especially influential time for body image concern. The physical changes that girls' bodies experience may not seem to be reinforced by the cultural appearance standard which would be the preference for a slim body shape. However, the physical changes that boys undergo during puberty are supported by the current cultural appearance standard, because society values a large and muscular physique for men (Thompson et al., 1999).

Female athletes find themselves particularly at odds with the Western cultural body ideal. Their pursuit for athletic characteristics such as power, strength, and endurance contradict traditional femininity (Krane et al., 2004; O'Reilly, 2007). Bordo (1993) defines femininity as a socially constructed standard for a woman's appearance, demeanor, and values. Previous studies suggest that female athletes struggle with the contradiction of desiring strength and athletic success, but not developing 'oversized' muscles (Krane et al. 2004; Wright & Clarke, 1999; Young, 1997). Female athletes understand their athletic bodies as necessary for achieving success in their sport but their athletic bodies become a source of concern and body dissatisfaction in social settings (Krane et al., 2001; Krane et al., 2004; Russell, 2004). Russell (2004) describes this concern as a 'tension' between the 'sporting body' and the 'social body'. This 'lived paradox' affects the body image of female athletes (Krane et al., 2004). A female athlete may feel a discrepancy between her current body and her ideal body as well as a

discrepancy between her current body and her ideal sport body, which may differ from the cultural ideal.

In addition to cultural appearance standards, college athletes experience a variety of body image pressures directly related to their sport. Athletic body stereotypes, gender, connections between weight/body fat and performance, and type of sport all contribute to the body image pressures experienced by college athletes (Rudd & Carter, 2006). Performance and aesthetic demands of sports place college athletes at risk of developing disordered eating behaviors (Thompson & Sherman, 1999). In order to better understand the impact of aesthetic and performance demands of sports, body image researchers frequently categorize sports as 'lean sports' (sports in which athletes place a competitive and/or aesthetic value on leanness) and 'non-lean sports' (sports in which body weight and aesthetic appearance are less central to athletic success) (Rudd & Carter, 2006). Research indicates collegiate female athletes, particularly lean sport athletes, possess a greater risk for disordered eating than non-athletes (Brownell & Rodin, 1992; Smolak, Murnen & Ruble, 2000).

Body image is a critical component in the research field of Apparel Design. Educators in the fields of textiles and clothing possess a significant responsibility in education, research, and outreach efforts related to body image and appearance-related behaviors (Rudd & Lennon, 2001). Apparel research indicates strong connections between clothing fit and body image. Clothing is highly associated with body satisfaction (Anderson et al., 2000; Chattaraman & Rudd, 2006; Labat & Delong, 1990). While clothing has the potential to improve an individual's body satisfaction and acceptance (Feather, Ford & Herr, 1996), clothing can also induce negative feelings about the body particularly if the clothing does not fit the individual well (Feather et al., 1996; Labat & Delong, 1990).

Female athletes experience unique body image concerns regarding apparel wear. Her apparel wear can be observed in two environments: the apparel she wears in her athletic environment and the apparel she wears outside her athletic environment. Understanding that female athletes experience body image pressures from a variety of sources, assessing the body image of female athletes in connection with their apparel wear is an avenue for the field of Apparel Design research to positively affect the body image of female athletes.

Research Objectives

Research objectives for this study are as follows:

- Assess body image of collegiate female athletes (lean and non-lean) and collegiate non-athletes.
- Investigate clothing behaviors of collegiate female athletes (lean and non-lean).
- Provide implications to the fashion and sportswear industry so that these apparel industries may positively affect the body image of the female athlete.

CHAPTER II

Literature Review

2.1. Assessing Body Image

An overview of literature indicates the term body image lacks uniformity in definition (Cash & Pruzinsky, 2002; Thompson et al., 1999). Cash & Pruzinsky (2002) lists 16 definitions of body image which include "… weight satisfaction, size perception accuracy, body satisfaction, appearance satisfaction, appearance evaluation, appearance orientation, body esteem, body concern, body dysphoria, body dysmorphia, body schema, body percept, body distortion, body image, body image disturbance, and body image disorder"(p. 7). Lack of a singular definition of body image can be explained by understanding body image as a multidimensional construct. Body image is an individuals' attitudinal dispositions toward the physical self. The physical self includes one's physical appearance as well as the body's fitness and biological integrity. These attitudinal dispositions include evaluative, cognitive, and behavioral components (Cash, 1990). Attitudinal body image consists of the following two independent components (Brown, Cash, & Mikulka, 1990; Cash, 1994):

1.) Body image evaluation- This includes cognitive assessments and associated emotions concerning one's physical appearance
2.) Body image investment- This refers to the extent of one's cognitive-behavioral emphasis on appearance. (Szymanski & Cash, 1995).

In order to properly assess body image, researchers utilize various psychologist measures understanding that the construct must be assessed with a multidimensional approach.

2.1.1. Self-report questionnaires. Body image questionnaires are designed to provide quantitative measures of aspects of body image including body attitudes. Most body image questionnaires ask participants to indicate level of agreement or disagreement with statements pertaining to appearance, body, and body part satisfaction (Grogan, 2008).

2.1.1a. The Multidimensional Body-Self Relations Questionnaire. Thompson et al. (1999) refers to the Multidimensional Body-Self Relations Questionnaire developed by Cash and his colleagues (Brown, Cash, & Mikulka, 1990; Cash, 1996, 1997) as arguably the most comprehensive instrument available for the assessment of the multiple components of body image. The well-validated self-report assessment of body image (Brown et al., 1990) consists of 69 questions aimed to address the multidimensional construct of body image. The MBSRQ includes 'factor subscales' which reflect two disposition dimensions- 'Evaluation' and cognitive-behavioral "Orientation" applied to the domains of appearance, fitness, and biological integrity. In addition, the body image questionnaire includes three special multi-item subscales- The Body Areas Satisfaction Scale, The Overweight Preoccupation Scale, and the Self-Classified Weight Scale. The MBSRQ has been used extensively in body image research including national survey research, investigations of obesity, eating disturbance, androgenetic alopecia, facial acne, physical exercise, studies of 'normal' college students, and outcome studies of body-image therapy (Cash, 2000).

2.1.2. Figural rating scales. Figural rating scales are another method of body image assessment. Understanding the strong visual component of body image, body image researchers chose to quantitatively assess body image using various forms of figural rating scales. These scales typically consists of frontal, silhouette figural drawings range from very thin to very obese (Gardner & Brown, 2010; Grogan, 2008). The first scales were developed in the 1950s (Grogan,

2008). In recent decades, over thirty of these scales have been developed for research purposes (Vartanian, 2012). A participant is instructed to choose the silhouette that best resembles her own body, or current body shape (CBS). Then she is instructed to choose the silhouette that represents her ideal body shape (IBS). The difference between the two figures indicates her level of body (dis)satisfaction. Her IBS choice indicates whether her ideal is thinner or fatter than, or the same as her current body type. Studies using this technique have found that women show a reliable tendency to pick a thinner ideal than their current figure (Grogan, 2008; Vartanian, 2012). First developed for use by the Danish Adoption Register for a study investigating the genetics of obesity and thinness, the Stunkard, Sorensen, and Schulsinger scale (Fig. 1) is a commonly used in body image research studies and has been involved in several influential studies (Grogan, 2008).

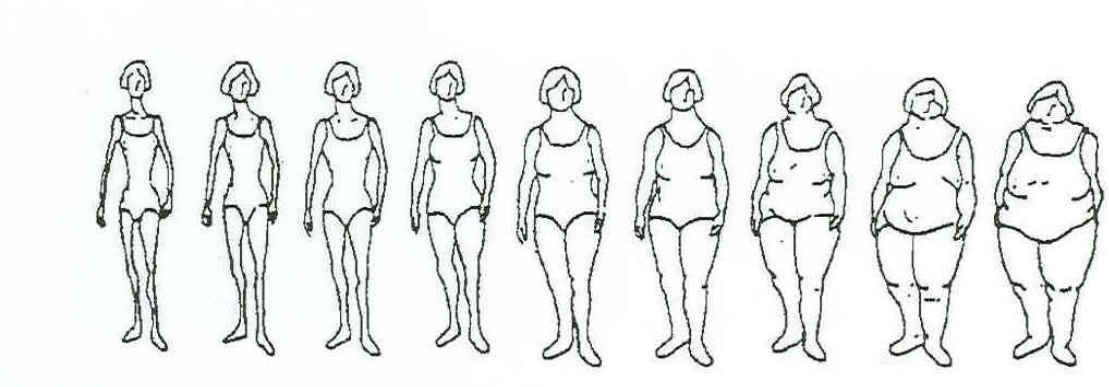

Figure 1. The Stunkard Figure Rating Scale. Developed by Stunkard, A. J., Sorenson, T., & Schulsinger, F. (1983). Use of the Danish adoption register for the study of obesity and thinness. In S.Kety (Ed.), *The Genetics of Neurological and Psychiatric Disorders* (115-120). New York: Raven Press.

2.1.3. Interviews. A structured or semi-structured interview is another method utilized in the assessment of body image. In a semi-structured interview with intended flexibility for further investigation, participants are able to talk freely and openly about body image

experiences. Participants are able to discuss issues that are uniquely important to them, allowing more freedom and flexibility than the scales and questionnaires discussed previously (Grogan, 2008). When used in conjunction, these three methods, self-report questionnaires, figural body rating scales, and interview techniques, allow for a rich understanding of the multidimensional construct of body image.

2.2. Body Dissatisfaction and Disordered Eating Behaviors

Body dissatisfaction is more frequently experienced by women- Body image literature reports body dissatisfaction frequencies anywhere from 75 % to 95 % for women and between 33 % and 45 % for men (Rudd & Carter, 2006). Body image dissatisfaction is a common component of eating disorders (DSM-V, 2014). Consequently, women are much more likely than men to develop an eating disorder. An estimated 5 to 15 percent of people with anorexia nervosa or bulimia nervosa are male (The National Institute of Mental Health, 2002).

Eating disorders that do not fully meet the criteria for eating disorders in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM- V) and the American Psychiatric Association (1994) but are still indicative of disordered eating patterns that may be harmful to the individual are classified as subthreshold eating disorders. Thompson and Sherman (1999) found that subthreshold eating disorders are believed to be higher than clinical level eating disorders. Many patients who possess clinically relevant eating problems do not meet the full criteria for a specific eating disorder such as anorexia nervosa or bulimia nervosa (Barnhill, 2014). For example, a patient may meet all the criteria for anorexia nervosa- including significant weight loss- but remain as a normal or above- normal weight. This presentation would require a diagnosis of atypical anorexia nervosa. It is important to assess all disordering eating behaviors, not only clinically diagnosed eating disorders. Disordered eating (DE) refers to

a range of abnormal eating behaviors which includes poor nutritional habits as well as clinical eating disorders (Rudd & Carter, 2006).

2.3. Female Participation in Athletics

While all women experience a greater risk of body dissatisfaction, female athletes experience unique concerns with body image in their pursuit for athletic excellence. Athletic characteristics including power, strength, and endurance contradict traditional femininity (Krane et al., 2004; O'Reilly, 2007). Potentially these unique body image concerns have increased due to in the increase of female participation in sports. With the passing of Title IX in 1972, a federal civil rights law that prohibited sex discrimination in education, female participation in athletics increased dramatically (Brake, 2010; Carty, 2005; O'Reilly & Cahn, 2007). More women than ever are participating in sports (Women Sports Foundation, 2011). Before Title IX, 1 in 27 high school girls played a sport. Now 1 in 2.5 high school girls play a sport (National Federation of State High School Association, 2010). Additionally, Title IX provided greater opportunity for women to break into the world of stereotypically 'male sports' such as football, rugby, wrestling, and ice hockey expanding the types of sports women can play (Carty, 2005).

Participating in physical exercise provides physiological, psychological, and emotional benefits. Before the passing of Title IX, the benefits of exercise were significantly restricted for women, as participation in sports was primarily reserved for men (O'Reilly & Cahn, 2007). Exercise allows women to discover their physical potential and improve their health and fitness. Researchers also emphasize the contribution of physical exercise in the development of psychological and emotional health (Proios, 2008).

Physical exercise positively effects self-esteem (Fox, 2000; Hayes et al, 1999; Moses, Steptoe, Matthews, & Edwards, 1989; Taylor, 1995; Young & Bursik, 2000), and aids in the development of other psychological traits such as self-concept, self–confidence, and self-efficacy (Proios, 2008). Exercise possesses the potential to improve body satisfaction (Grogan, 2008). Furnham, Titman and Sleeman (1994) and Richards, Boxer, Petersen, & Albrecht (1990) found that physically active woman possessed more positive body perception and increased acceptance of their muscularity. The passing of Title IX has enabled more women to experience the benefits of a physically active lifestyle.

2.3.1. The Female Athlete Triad. Despite the many benefits of exercise, sports participation is not without health risks (Gordon & LeBoff, 2015). Body image dissatisfaction is a critical factor in the development of eating disorders among athletes (Williamson et al, 1995). Collegiate athletes are particularly at risk of developing eating disorders and other distorted behaviors related to body image (Rudd & Carter, 2006). While many female athletes have a healthy body image, strong self-esteem, good health, and low depression (Putukian, 1998), some female athletes develop a health concern to which medical experts refer to as the Female Athlete Triad.

The Triad involves three conditions:

1) Disordered Eating (DE)- includes a range of poor nutritional behaviors
2) Amenorrhea- irregular or absent menstrual periods
3) Osteoporosis- low bone mass which leads to fragile bones and increased risk of fracture) (American College of Sports Medicine, 2011)

The Triad usually begins with disordered eating but the presence of any Triad symptom indicates a need to assess for the others. The health concern arises out of inadequate energy intake relative to energy expenditure. Disordered eating could include a preoccupation with food, drive for thinness, and pathogenic eating and weight control practices (Sherman & Thompson, 2001).

Research indicates collegiate female athletes possess a greater risk for disordered eating than non-athletes (Brownell & Rodin, 1992; Smolak, Murnen, & Ruble, 2000). In addition to experiencing the same societal appearance standards as non-athletes, female athletes experience unique body image pressures associated with participating in college athletics (Sherman & Thompson, 2005). College athletes are at risk of disordering eating and other distorted behavioral patterns due to:

1) *Gende*r- Female athletes are more at risk for eating disorders than male athletes. (Dick, 1991; Johnson, Powers, & Dick, 1999).
2) *Link between weight/body fat and performance*- The belief that body fat and/or weight reduction will enhance athletic performance contributes to unhealthy body image and risky behaviors (Wilmore, 1991). Coaches frequently recommend decrease in body fat percentage or weight loss when an athletes' performance is not meeting the coach's expectations (Thompson and Sherman, 1999).
3) *Athletic body stereotypes* – Particular body shapes have come to characterize certain sports. The stereotype may describe which body type occurs most frequently in the particular sport or it can also represent what coaches, athletes and the general public "expect" of an athlete in the sport (Rudd & Carter, 2006).
4) *Desired athletic characteristics vs. disordered behaviors*- A narrow line exists between desired athletic traits and disordered behavioral characteristics. An athlete may appear to

be exhibiting a strong work ethic and athletic dedication, but may also be suffering from disordered behaviors such as excessive exercising despite pain or injury. (Rudd & Carter, 2006).

5) *Type of Sport*- Research indicates that sports that emphasize leanness as an aesthetic and/or competitive advantage possess higher rates of disordered eating behaviors (Rudd & Carter, 2006).

2.3.2. Lean and non-lean sports categorizations. As stated previously, certain types of sports possess a greater risk of the Female Athlete Triad than others. "At risk" sports are those in which there are weight classes (e.g., wrestling, boxing, judo, taekwondo, lightweight rowing, and weight lifting), have gravitational demands (e.g., distance running, cross-country skiing, cycling, and ski jumping) and those that are aesthetically judged (e.g., figure skating, artistic gymnastics, equestrian, diving, and synchronized swimming) (Gordon & LeBoff, 2015; Torres et al., 2011). Body image researchers frequently categorize these "at risk" sports as 'lean sports'. Not listed in the categorization above, Rudd & Carter (2006) and Reinking and Alexander (2005) categorize competitive swimming as lean sport. Non-lean sports are those in which body weight and aesthetic appearance are less central to succeeding in the sport. Basketball, volleyball, soccer, field hockey, softball, golf, football, tennis, lacrosse, hockey (Gordon & LeBoff, 2015) and open-weight rowing (Ross et al., 2007) are classified as non-lean sports.

Supporting the categorization of lean sports as possessing a greater risk of disordered behaviors, Sundgot-Borgen (1994), Johnson et al. (1999), Rudd and Carter (2006) all found a greater occurrence of disordered eating with lean sport athletes than non-lean sport athletes. Reinking and Alexander (2005) found that lean sport athletes are at a greater risk for disordered eating for lean sport athletes thank non-lean sport athletes. In this study, results also indicated

that lean-sport athletes possessed higher body dissatisfaction and lower actual and desired body weight than non-lean sport athletes.

Brownell & Rodin (1992) and Smolak, Murnen, & Ruble (2000) both conducted meta-analyses of research studies investigating body image and athletic populations. In an analysis of 23 research studies, Brownell & Rodin (1992) concluded that athletes show more concern with body image issues and with eating and dieting than non-athletes. Examining the overall relationship between athletic participation and eating problems in 34 research studies, Smolak, Murnen, & Ruble (2000) found that athletes, particularly elite, lean-sport athletes, were somewhat more at risk for eating problems than non-athletes. Additionally, this study found that non-elite athletes, particularly high school athletes, possessed a reduced risk of eating problems when compared to the control group. This indicates that in some situations, athletic participation may be defensive against disordered eating.

2.4. Body Image and Apparel

The field of Apparel Design possesses a significant responsibility in the research of body image and appearance-related behaviors (Rudd & Lennon, 2001). Apparel research indicates strong correlations between clothing fit and body image. Increase in body size, low body image, and low body cathexis all correlate with a preference for greater body coverage in clothing (Chattaraman and Rudd, 2006). Feather, Ford, and Herr (1996) found a correlation with an increase in body size correlates with lower degree of satisfaction with garment fit. Women are more likely to wear fitted clothing if they feel positive about their bodies (Anderson et al, 2000; Chattaraman and Rudd, 2006).

Clothing possesses the ability to improve an individual's body satisfaction and acceptance (Feather, Ford, & Herr, 1996). However, clothing can also induce negative feelings about the body. Labat and Delong (1990) found that when clothing does not fit an individual correctly, the individual may perceive the cause as related to the body and not the clothing, which manifests itself into negative feelings about the body. Therefore, a female athlete's clothing, whether with her athletic uniform or the clothing she wears in a non-athletics setting, can serve as a positive or negative influence on body image.

Since the female body shape has changed over the years, it is necessary to re-evaluate the body shapes and body measurements of consumers in order to improve garment fit and better serve the demographic of today (Labat, 1987). Due to the increase in female participation in athletics, understanding the characteristics of the female athlete body shape is a valuable research endeavor for the field of apparel design. Obtaining anthropometric body measurements is the essential first step in developing garments that fit the body (Bye et al., 2006). Methods range from low tech (manually obtaining measurements via measuring tape) to high tech (e.g., 3D body scanning technology).

2.4.1. Female athletes' clothing behaviors and challenges. Female athletes experience unique concerns with garment fit. Their athletic uniform plays a significant role in their athletic culture. Uniforms emerged in social culture "…as a means of centralizing authority, identifying hierarchy, and claiming expertise over a specific body of knowledge" (Rubenstein, 1995, p. 73). Athletes wear uniforms to claim 'expertise' over their sport as well as to visually display a group identity. Uniforms serve as a means to convey which team an athlete is representing for the purpose of the spectators as well as his or her teammates.

The manner in which an athletic uniform fits the female athlete informs her body image. Investigating women's sports uniforms through time, McCullough (2007) develops three classifications for uniform fit: tight, form-fitting, and loose. 'Tight fit' is defined as a 'second skin' and is the most revealing of every body contour. This fit reveals all so-called 'imperfections' of the body, which could include the natural curves of the body. 'Form-fit' tailors clothing to the body line, but does not conform directly to the shape of the body as does 'tight-fit'. 'Loose fit' uniforms drape off the body, concealing the shape and form of the body. While form-fitting clothing is associated with women's fashions, loose fit is more typically associated with men's fashions. 'Loose fit' is the most comfortable of the uniform fits as in it does not restrict body movement and it hides 'body imperfections' (McCullough, 2007). Uniform fit can influence disordering eating behaviors, particularly 'tight fit' uniforms. Revealing uniforms may cause the athlete to feel physically exposed and uncomfortable. This discomfort can encourage the athlete to attempt weight and/or body fat loss which increases her risk for disordered eating (Sherman & Thompson, 2005).

Athletic uniforms can be both a source of body confidence and body dissatisfaction. Female athletes who wear revealing athletic uniforms (e.g. swimmers, cross country runners, volleyball players), expressed dissatisfaction with how their bodies look in their uniforms (Krane et al., 2004; Krane et al., 2001; Steinfeldt et al., 2013). In a research study of collegiate volleyball players, Steinfeldt et al. (2013) found that the revealing volleyball uniforms distracted players and impacted on-court performance. Additionally, participants indicated a contradiction between their bodies in sporting context and their bodies in a social context, desiring muscularity to benefit athletic ability and, in effect, not adhering to the cultural body ideal. This supports previous research (Krane et al., 2004; Krane et al., 2001; Russell, 2004). Torres et al. (2011)

found that equestrian athletes, categorized as lean sport athletes due to the aesthetic component to the sport, expressed a desire to be significantly smaller in both competitive uniforms and normal apparel.

Investigating the body perception, uniform garment fit and design preferences of collegiate female basketball players, Feather et al. (1996) founds that satisfaction with uniform fit correlates with (dis)satisfaction with the body. Wearing the basketball uniform improved the participants' body perception. Krane et al. (2004) found that female athletes felt more ready to compete when wearing their uniform- likening putting the uniform on to 'putting on their gameface' (p. 89). This indicates that clothing has the potential to improve an individual's body image and self-esteem.

In addition to athletic uniforms, female athlete experience unique concerns with nonathletic clothing, although these concerns are less frequently addressed in research studies. Krane et al. (2004) found that female athletes express difficulty in finding clothing that fit their muscular bodies. In this study, participants expressed difficulty finding jeans and pants that properly fit their thigh, leg, and gluteal muscles. Finding shirts that allowed for their muscular developed arms was also a cause of concern. Additionally, participants were uncomfortable with the appearance of their muscular bodies in skirts and dresses, garments associated with femininity further signifying how female athletes are at odds with the social construct of femininity. Because female athlete experience self-consciousness in and difficulty finding regular clothing, they are reminded about how different they are from nonathletic women (Krane et al. 2004).

CHAPTER III

Methodology

Based on the research purpose, this study consists of the following three phases:

- Phase I: interview with female athletes, collection of body image surveys, photography of garment fit, and 3D body scanning
- Phase II: Quantitative analysis of anthropometric characteristics of female athletes: comparison of collegiate lean sport athletes and non-lean sport athletes.
- Phase III: Distribution of body image online survey: comparison of collegiate female athletes and non-athletes.

Interview questions in Phase I are designed to determine which factors most strongly influence body image in the female athlete and how body image and clothing interact for the female athlete, both in an athletic setting and a non-athletic setting. This includes assessing her body image concerns, her relationship with her clothing, her garment fit concerns and preferences, and the effect of media trends and fashion imagery. Photography of garment fit in Phase I further assesses and provides a visual representation of garment fit concerns and preferences.

The body image survey collection in Phase I quantitatively assesses the body image of female athletes. In Phase III, quantitative assessment of body image is pursued further distributes a body image questionnaire to a much larger population of female athletes and non-athletes.

During Phase II, the anthropometric data of female athletes collected in Phase I is analyzed through the lens of lean and non-lean sports categories. Data analysis will be utilized to better understand how and where lean and non-lean sports categories are similar and different and what implications this can provide for the apparel industry.

3.1. Phase I: Recruitment

36 Division I collegiate female athlete between the ages of 18 and 22 participated in Phase I of this research study. The research session took place in a Mid-Atlantic research university in the United States. Research protocol of this project was approved by the university's Institutional Review Board (IRB) as well as was in compliance with the university's NCAA (National Collegiate Athletic Association) guidelines. Division I basketball, cross country, rowing (open-weight), and volleyball were represented in Phase I (Table 1). Participants were recruited via email; collegiate coaches were contacted via email with the request that information about the study be forwarded along to their team members to generate interest in the research study (Appendix A: Phase I recruitment email distributed to collegiate coaches).

Table 1. Phase I: Frequency distribution of female athlete participants

Sport	number of participants	%
Basketball	8	22.2
Cross Country	9	25.0
Rowing (open-weight)	16	44.4
Volleyball	3	8.3

For this study, participants were categorized appropriately into lean (cross country) and non-lean (basketball, rowing, and volleyball) sports groups. Additionally, of the 16 rowing participants, 3 participants were rowing coxswains. In the sport of rowing, coxswains fulfill a very different role on a rowing team than their rowing teammates. The coxswain is the individual that steers the boat but does not physical move the boat like the rowers. Coxswains are typically small and light for the purpose of adding the least amount of unnecessary weight to the boat. Weighed before each race by the officials, the minimum weight a coxswain can be is 110 pounds. Therefore, competitive coxswains work to weigh as close to 110 pounds as possible. Because of the emphasis on leanness experienced by rowing coxswains, these three participants

are categorized as lean sport athletes. Table 2 indicates the distribution of participants between the lean and non-lean categories.

Table 2. Phase I: Frequency distribution of lean and non-lean participants

Category	Sports	Number of Participants	%
Lean sports	Cross country Rowing coxswains	12	33.3
Non-Lean sports	Basketball Rowing Volleyball	24	66.7

3.1.1. Interviews questions. Participants were asked 10 questions (Table 3) relevant to her sport, her body satisfaction, her apparel wear, and the fashion industry. The interview questions were developed in order to identify which factor most strongly influence the body image of female athletes in addition to determining how body concept and clothing interact for the female athlete, both in an athletic and non-athletic setting. Additional questions were asked to assess garment fit concerns and preferences. The interview session also assessed the impact of a specific body image media trend as well as assess level of satisfaction with current imagery projected by the fashion industry.

Table 3. Phase I: Interview Questions

Assesses:	Questions:
• Body image pressures inherent to sport • Body shape ideals within sport	1. For your sport, is it necessary to maintain a certain weight? Is there a particular advantage to being a certain body type/body shape? If so, do you feel this body type applies to your own body?
• Body image in athletic uniform • Body image in athletic uniform in comparison to teammates and competitors wearing athletic uniform	2. Explain how your athletic uniform contributes to how you feel about your body. Do you like how you look in your uniform? 3. Have you ever felt like you needed to do anything to change your body in order to look better in your uniform in front of other people? 4. Explain how the way your teammates and competitors look in their uniform impact how you feel about your body.

• Body image in nonathletic wear • Body image in comparison to non-athletic women	5. How do you think you look in the clothing you wear outside of sports related activity? Do you like how you look in the clothing you wear outside an athletic environment? 6. How do you feel about your body in non-athletic wear, particularly in comparison to women who do not play sports?
• Garment preferences • Garment fit concerns related or unrelated to sport.	7. Can you describe your favorite styles of garments? What type of silhouette do you enjoy wearing? 8. How easily can you find well-fitting garments (pants, shirts, jackets, dress, etc.?)
• Impact of a social media trend • Level of satisfaction with imagery projected by current fashion industry	9. Are you aware of the "thigh-gap trend"? If so, how do you feel about it? 10. What body types/body shapes would you like to see represented by the fashion industry?

*Questions 2-6 are derived from and inspired by interview questions published in the following research article: Steinfeldt J.A., Middendorf K.G., Zakrajsek R.A., Bodey K.J., Martin S.B. (2013). Role of uniforms in the body image of female college volleyball players. *Counseling Psychologist, 41*(5): 791-819.

3.1.2. Photography of garment fit. Participants were requested to bring in a garment/garments with which they consistently experienced fit issues while wearing the article of clothing. Female athlete participants were photographed wearing the garment/ garments. These photographs visually illustrate the garment fit issues experienced by each participant.

3.1.3. Stunkard Figure Rating Scale. Participants completed the Stunkard Figure Rating Scale (Fig. 1) to assess level of body satisfaction. Each participant indicated which figure best represents their current body shape (CBS) and then indicated which figure best represents their ideal body shape (IBS).

3.1.4. Multidimensional Body-Self Relations Questionnaire. The participants completed the 69-question Multidimensional Body-Self Relations Questionnaire (MBSRQ) (Table 4).

Table 4. MBSRQ scales

Scale	Questions:	Assesses:
Appearance Evaluation (AE)	Q5: My body is sexually appealing. Q11: I like my looks just the way they are. Q21: Most people would consider me good-looking. Q30: I like the way I look without my clothes on. Q39: I like the way my clothes fit me. Q42: I dislike my physique. Q48: I am physically unattractive.	Feelings of physical attractiveness or unattractiveness ; satisfaction or dissatisfaction with one's looks.
Appearance Orientation (AO)	Q1: Before going out in public, I always notice how I look. Q2: I am careful to buy clothes that will make me look my best. Q12: I check my appearance in a mirror whenever I can. Q13: Before going out, I usually spend a lot of time getting ready. Q22: It is important that I always look good. Q23: I use very few grooming products. Q31: I am self-conscious if my grooming isn't right. Q32: I usually wear whatever is handy without caring how it looks. Q40: I don't care what people think about my appearance. Q41: I take special care with my hair grooming. Q49: I never think about my appearance. Q50: I am always trying to improve my physical appearance.	Extent of investment in one's appearance.
Fitness Evaluation (FE)	Q3: I would pass most physical-fitness tests. Q14: My physical endurance is good. Q24: I easily learn physical skills. Q33: I do poorly in physical sports or games. Q51: I am very well coordinated.	Feelings of being physically fit or unfit.
Fitness Orientation (FO)	Q4: It is important that I have superior physical strength. Q6: I am not involved in a regular exercise program. Q15: Participating in sports is unimportant to me. Q16: I do not actively do things to keep physically fit. Q25: Being physically fit is not a strong priority in my life. Q26: I do things to increase my physical strength. Q34: I seldom think about my athletic skills. Q35: I work to improve my physical stamina. Q43: I don't care to improve my abilities in physical activities. Q44: I try to be physically active.	Extent of investment in being physically fit or athletically competent.

	Q52: I know a lot about physical fitness. Q53: I play a sport regularly throughout the year.	
Health Evaluation (HE)	Q7: I am in control of my health. Q17: My health is a matter of unexpected ups and downs. Q27: I am seldom physically ill. Q36: From day to day, I never know how my body will feel. Q45: I often feel vulnerable to sickness. Q54: I am a physically healthy person.	Feelings of physical health and/or the freedom from physical illness.
Health Orientation (HO)	Q8: I know a lot about things that affect my physical health. Q9: I have deliberately developed a healthy lifestyle. Q18: Good health is one of the most important things in my life. Q19: I don't do anything that I know might threaten my health. Q28: I take my health for granted. Q29: I often read books and magazines that pertain to health. Q37: If I am sick, I don't pay much attention to my symptoms. Q38: I make no special effort to eat a balanced and nutritious diet. Q46: I pay close attention to my body for any signs of illness. Q47: If I'm coming down with a cold or flu, I just ignore it and go on as usual. Q55: I am very aware of small changes in physical health.	Extent of investment in a physically healthy lifestyle.
Illness Orientation (IL)	Q37: If I am sick, I don't pay much attention to my symptoms. Q46: I pay close attention to my body for any sign of illness. Q47: If I'm coming down with a cold or flu, I just ignore it and go on as usual. Q55: I am very aware of small changes in my physical health. Q56: At the first sign of illness, I seek medical advice.	Extent of reactivity to being or becoming ill.
Body Area Satisfaction (BASS)*	Q61: Face (facial features, complexion) Q62: Hair (color, thickness, texture) Q63: Lower torso (buttocks, hips, thighs, legs) Q64: Mid torso (waist, stomach) Q65: Upper torso (chest or breasts, shoulders, arms)	Satisfaction with discrete aspects of one's appearance.

	Q66: Muscle tone Q67: Weight Q68: Height Q69: Overall Appearance	
Overweight Preoccupation (OWP)	Q10: I constantly worry about being or becoming fat. Q20: I am very conscious of even small changes in my weight. Q57: I am on weight-loss diet. Q58: I have tried to lose weight by fasting or going on crash diets.**	Construct reflecting fat anxiety, weight vigilance, dieting, and eating restraint.
Self-Classified Weight (SCW)***	Q59: I think I am: Q60: From looking at me, most other people would think I am:	How one perceives and labels one's weight, from very underweight to very overweight.

*Participants ranked items of appearance on a Likert type scale from 1 (very dissatisfied) to 5 (very satisfied).
** Participants responded with one of the following: "Never (1)," "Rarely(2)," "Sometimes(3)," "Often(4)," or "Very Often(5)."
***Participants responded with one of the following: "Very Underweight (1)," "Somewhat Underweight (2)," "Normal Weight (3)," "Somewhat Overweight (4)," "Very Overweight (5)"

The MBSRQ's multidimensional approach to the assessment of attitudes towards appearance, fitness, and health is particularly interesting in the context of the female athlete whose involvement in competitive sports potentially creates a greater preoccupation with appearance, physical fitness, and health in order to achieve optimal performance her sport compared to non-athletic women.

3.1.5. 3D body scanning. Each female athlete participated in a 3D body scan using the Human Solutions Scanner (Human Solutions, Kaiserslautern, Germany) for the purpose of obtaining accurate anthropometric body measurements. 3D body scanning technology produces a dimensionally accurate 360-degree view of the body resulting in a cloud of data points (Bye,

2006). This particular scanner used for this research study utilizes eight cameras and four eye-safe lasers to capture about 300,000 data points and generate over 200 body measurements for each scan. Illustration 1 depicts 3D body scan images of lean sport cross country Participant 29 and non-lean sport basketball Participant 33 for this study.

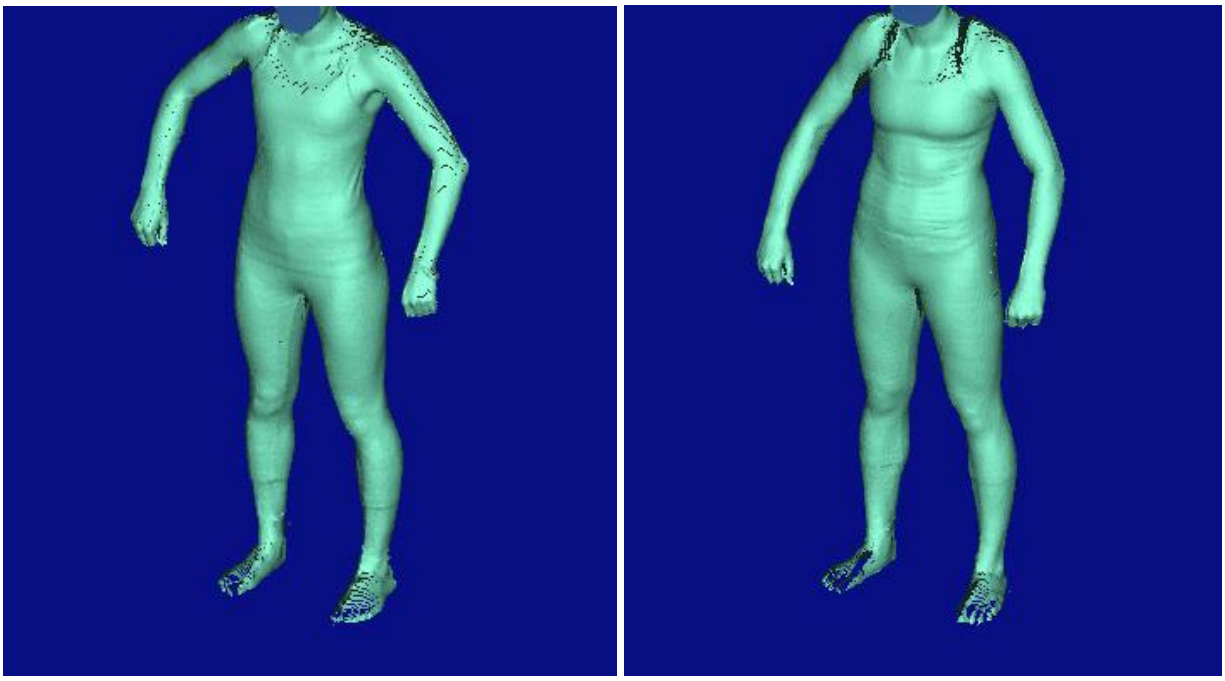

Illustration 1. Example of 3D body scanned images of lean (left) and non-lean (right) female athletes.

In this study, the participants were scanned to understand their body shape and muscular development pattern which impacts their clothing fit and body image. Apparel researchers have used this technology to better understand the special relationship between the wearer's body and their garments. 3D body scanning technology can be used to update specific demographics to better fit that particular demographic (e.g. female athletes). This technology allows for rapid, non-contact collection of accurate anthropometric data by eliminating the possibility of human error.

3.2. Phase II: 3D Body Scan Analysis

For Phase II, the anthropometric data of female athletes collected in Phase I is quantitatively analyzed by comparing lean and non-lean sports categories. Data analysis will be utilized to better understand how and where lean and non-lean sports categories are similar and different, whether anthropometric data supports interview discussions, and what implications this can provide to the apparel industry.

3.3. Phase III: Online Survey (MBSRQ)

Phase III distributes the MBSRQ via the online survey platform Qualtrics® for the purpose of obtaining a greater participant pool of collegiate female athletes as well as including a population of collegiate female non-athletes. For this study, non-athlete participants are defined as any student not a member of a Division I sports team. In addition to completing the MBSRQ, participants were asked to provide basic demographic information such as age, gender, height, and weight. Participation qualifications included consent to the study, identity as female, and of the age of 18 or older. Female athletes were asked specifically their sport of participation in order to properly categorize competitive athletes as lean or non-lean participants (Appendix B: MBSRQ online survey utilized for this study).

Both female athlete and female non-athlete participants were recruited through a variety of methods. First, at the same university that Phase I was conducted, collegiate sport coaches were emailed directly, requesting that the Qualtrics® survey link be forwarded along to their team members (see Appendix C:Phase III recruitment email distributed to collegiate coaches.) At this same university, additional female athletes were recruited through SONA Systems®, an online participant recruiting system, where eligible students received class credit for participating

courses in Psychology and Human Development if they completed the Qualtrics ® link. Collegiate female non-athletes were also recruited via SONA Systems® at the same university.

In order to increase the overall participant pool of female athletes, the 36 participants from Phase I of this study who completed the MBSRQ were combined with the online sample. In order to avoid of the possibility of repeat participants, any responses from sports that were represented in Phase I (basketball, cross country, rowing, and volleyball) were eliminated from the online sample.

Finally, additional participants, both female athletes and non-athletes, were recruited utilizing Qualtrics Online Sample®, a service that enables researchers to target specific demographics for a fee. Qualtrics Online Sample® distributed the online sample to 100 female college students nationally. The recruiting service screened out all responses from the university involved in all previous data collection for this study for the purpose of eliminating the possibility of repeat participants.

CHAPTER IV

Results

4.1. Phase I: Interview Sessions

4.1.1. Weight pressures and body image ideals. Both lean and non-lean athletes expressed a stronger desire to possess the body ideal for their sport rather than the cultural body ideal. Supporting their non-lean sports categorization, basketball and volleyball players do not experience pressure to maintain a specific body weight. However, rowers experience weight pressures as indicated by the frequently discussed concept of 'weight efficiency'. Rowers strive to achieve a balance between great physical strength and leanness. Both lean sports (cross country and rowing coxswains) experience pressure to be lean and light however strength and athleticism is much more important for cross country runners than for rowing coxswains. Cross county participants also discussed experiences with the conditions of the Female Athlete Triad most frequently out of all of the participating sports. Results for each sports category is discussed in depth below.

4.1.1a. Non-lean athletes. For their sport, basketball players do not feel pressure to maintain a certain weight, but rather experience pressure to maintain a high level of physical fitness, stamina, strength, and speed. For most positions in basketball, height is greatly beneficial. However, point guards are often smaller than their teammates because they need greater quickness and agility in their position. All of the basketball participants stressed the important of being physically strong. Classified as a contact sport, basketball players need to be able to physically 'hold their ground' on the court against competitors. One of the ways they achieve this power is through weight training. 5 out of the 8 basketball participants discussed how their coaches encourage weight gain and greater muscle building for more power and

strength on the basketball court; 3 of those 5 participants expressed reluctance to gain any more weight not wanting to look more muscular than they are currently.

The volleyball participants do not experience a pressure to be a certain weight, however height is considered a great advantage. A tall volleyball player is able to play all positions whereas a shorter player is restricted to the back row because she is unable to block effectively in the front. Strong legs enable a volleyball player to jump high. Volleyball participants did not discuss a desire to gain or lose weight as a competitive advantage, but rather discussed a desire to lose weight and muscle in order to look better in their uniform.

In the sport of rowing, height, strength and power are essential. Rowers need to be tall; long limbs enable the greatest possible reach and subsequently pushing the maximum amount of water and moving the boat faster. Rowers also need to be strong with great physical endurance. Rowing participant 5 explains that "… there is a huge advantage to being tall and being thick, but not necessarily overweight. Big boned, high muscle content, and low fat content." Rowers are encouraged to be 'weight efficient'; they need to be as lean as possible without sacrificing their strength and power. This balance between weight and physical strength exist because rowers physical sit in the boat they are pulling. Rowing Participant 12 explains, "You don't want to be any heavier than you have to be because it slows the boat down." All rowing participants discussed a particular weight range their coach suggest that they maintain for the purpose of being the most weight efficient for their body and their sport.

4.1.1b. Lean athletes. Rowing coxswains are typically small and light for the purpose of adding the least amount of unnecessary weight to the boat. The minimum weight for a collegiate coxswain on a women's rowing team is 110 pounds therefore competitive coxswains strive to weigh as closely to 110 as possible. Coxswain participant 4 states that 110 pounds "… is

definitely not something that is easy to maintain…" but that she does in order to fulfill her competitive role on the team. Two out of the three coxswains indicated difficulty in maintaining a weight of 110 pounds whereas the remaining coxswain participant expressed little difficulty in maintaining her weight.

The cross country participants discussed the competitive advantage of possessing a small, strong and lean body. The common belief for long distance running is that small and lean runners are faster because they have physically less weight to carry around. However, this small and lean body ideal does not always translate into the fastest runner on the course. Cross country participant 2 explains "There are a lot of bigger people that happen to be fast but then you still look at them differently in a race because you think 'How can they run, if they're carrying all of that extra weight?'" Cross country participant 8, acknowledging that she is "probably thinner than a lot of people in the general population," discussed how it can be frustrating to feel physically larger than all of her teammates. At 5' 5" and 140 pounds, cross country participant 10 stated "I definitely don't fit the ideal body for cross country. I think it's really odd that I am as good as I am at running because I am bigger than the typical cross country runner" but because she is still a fast runner, the difference in body shape and size does not negatively affect her.

The cross county participants discussed experiences with the conditions of the Female Athlete Triad most frequently out of all of the participating sports. Cross country participant 2 spoke candidly about disordered eating on the team:

> I would say half the team has orthorexia . . . orthorexia when you're overly concerned about health and reading every label and everything. Orthorexia often leads to other eating disorders. I would say about half the team has that and there

> is definitely 5 girls on the team that are currently dealing with eating disorders of some sort.

Cross country participant 16 discussed her own experience with disordered eating the previous year.

> I didn't think I was eating improperly; I thought I was doing the right thing. It just wasn't enough and everyone told me it wasn't enough. But I thought 'I know what's best for me, I know this is ok' and it just wasn't.

Due to her low bone density, she fractured her pelvis and was forced to take a significant time off running. She described disordered eating on Division I cross country teams as 'epidemics." She discussed how eating together in college dining halls can influence disordered eating behaviors, stating "If someone is running really well at the time and she's not eating very little, you think: 'she must be doing something right." While some of the cross country participants discussed their coaches' lack of knowledge of the health concerns present on the team, other participants discussed positive responses and help from coaches and athletic staff. Participant 7 from cross country discussed how when she started collegiate running, she experienced amenorrhea. She was instructed to meet with a nutritionist who helped her gain weight as well as had her bone density monitored to help prevent injuries.

4.1.2. Body image and athletic uniforms. Athletic uniforms worn by participants are described in Table 5. Utilizing McCullough's (2007) system for uniform fit categorization, uniforms are described as 'tight fit', 'form fit', and 'loose fit'.

Table 5. Athletic uniforms worn by participants

Sport	Uniform	Categorization
Basketball	• Semi-fitted sleeveless tank • very loose athletic shorts that extend to the knee	Loose fit
Volleyball	• Tight, long sleeve spandex shirt • short spandex shorts	Tight fit
Rowing (including coxswains)	• tight spandex unisuits ➔ bodice is sleeveless; the shorts of the unisuit stop at the mid-thigh	Tight fit
Cross Country	• tight sleeveless tank • choice between very short spandex OR "butt huggers" or 'buns'(similar to briefs)	Tight fit

Positive body image in athletic uniforms is more closely related to characteristics of uniform fit than the classification of non-lean vs. lean sports. Basketball participants feel confident in their loose fitting athletic uniforms. The majority of rowers, coxswains, volleyball players, and cross country runners expressed discontentment with their athletic uniforms because of the body revealing qualities of the uniform. Despite the athletes' discomfort wearing the uniforms, the majority of the participants discussed an ability to ignore these insecurities while performing in their sport. The female athlete participants believed that performing athletically well is of greater importance than their physical appearance. Additionally, basketball and cross country participants discussed the concept of viewing how a body fits in their sport's uniform as an indicator of athletic ability. Results for each sports category is discussed in depth below.

4.1.2a. Non-lean athletes: 7 out of 8 of the basketball participants enjoys wearing the uniform stating that putting the uniform is comfortable and makes them feel confident before a game, two participants referring to the uniform as their 'battle armor'. Every basketball

participant stated that their collegiate uniform never influenced a desire to change something about their body. Because the uniform is not body revealing, 7 of the 8 participants do not feel self-conscious about their body when wearing it. However basketball participant 35 greatly dislikes the uniform because at the height of 5' 3", the shorts are too big and she needs to continually adjust them as she plays. She has never been able to find basketball uniform shorts that properly fit her. Additionally, the oversized uniform makes her feel small and weak next to her opponents, negatively affecting her confidence.

While the basketball uniform is not formfitting, basketball participant 27 believes the way the 1uniform fits the athlete reveals the strength and power of the athlete:

> If I can see their defined muscles in their arms and legs and they don't have a belly, I know that they're going to be fast. If I can tell if their shorts are kind of tight fitting, then I know that they probably have stronger legs me. You can judge how muscular arms and legs are based on the way the uniform fits them. You can kind of judge what you're going up against.

All basketball participants discussed feeling intimidated by competitors who look physically strong on the basketball court. This is especially indicated by the arm muscle which are visible in the basketball uniform.

All three volleyball participants expressed great discomfort and self-consciousness when wearing their volleyball uniform. The uniform consists of short spandex shorts and a tight long sleeve top. Volleyball participant 38 described the uniform as "very short, very tight, and very revealing." Participant 28 discussed intentionally pulling and stretching on her uniform top so that it clings less tightly to her midsection. Throughout the game, all participants stated that they

find themselves continually readjusting their uniform between each play. They complained that the spandex shorts are too short and constantly ride up their legs. While participant 28 does not believe spandex shorts are necessary, the other two volleyball participants believe they are the best option for their sport. The frequent diving on the ground in the sport of volleyball makes spandex shorts a necessary garment choice. However, none of the participants understand why the shorts are as short as they are.

11 out of the 13 rowers dislike the appearance of the competitive rowing uniforms, unis, indicating that a spandex unisuit is greatly unflattering. Rowing participant 4 explains, ""It is so tight to the body and doesn't leave much to the imagination in terms of what your body form looks like." However, the general attitude among the rowing participants is that feeling overly self-conscious while wearing the uniform is futile, because the uni would not look good on anyone, including "a model" (participant 5). All participants understand the uni as garment that makes the most sense for their sport. Loose fitting clothing are potentially dangerous in the boat and the uni allows the greatest range of motion in the boat.

4.1.2b. Lean athletes. The rowing coxswains have a similar opinion about the uni to that of the rowers- that it is unflattering but sensible for the sport. Because the uni is body revealing, Coxswain participant 22 indicated insecurity when she sees coxswains from opposing teams who are smaller than her. "If I see that the coxswain on the other team is really small right before we race, it makes me really nervous. They look faster because of it."

Many of the cross country participants discussed the moment at the start of the race, when all the competitors line up along the starting line, and what visual characteristics make their competitors appear more intimidating- small, lean, and strong. The revealing cross country uniform highlights these attributes. All cross country participants discussed some level of

discomfort wearing the uniform. All the cross country participants wear the brief style bottoms because that is what most competitive athletes wear although cross country participant 9 is unsure how necessary they are stating: “It’s just the uniform, that’s just what we have to wear. I would prefer looser fitting ones because I don’t really think the ‘buns’ make you faster, it’s just what everyone wears.” Additionally, 3 of the 8 cross country participants discussed having envy of a “loose uniform”. The spandex uniform is supposed to be tight. But if the uniform is slightly loose on an opponent, she visually looks fast. However, two other participants discussed how when the uniform is too loose, they are concerned that the athlete is at greater risk for injury.

4.1.3. Body image and non-athletic apparel. The most common non-athletic clothing fit problem discussed by female athlete participants (basketball, cross country, rowing, and volleyball) was the pant fit concern of pants properly fitting in the thighs and hips and fitting too loosely in the waist. Additional clothing fit concerns included of their muscular arms in non-athletic wear (basketball), experiencing tightness in the arms shoulders and back of woven shirts *basketball and rowing)Additionally, participants from sports that value height (basketball, rowing, and volleyball) discuss the difficulty in finding long enough garments, particularly pants. The majority of lean sport participants (cross country) discussed some level of discontentment with their bodies’ ‘lack of curves’ but ultimately understanding it as an essential tradeoff for optimal performance in their sport. Results for each sports category will be discussed in depth below.

4.1.3a. Non-lean athletes. Overall, the basketball participants feel confident in the clothing the wear outside of athletics. Their biggest body concern involves the muscular development of their arms. While visible strength and power this is the desired aesthetic on the court, every basketball participant expressed a level of self-consciousness regarding their arm

muscles. Basketball participant 1 stated that their arm size "… something we're all kind of worried about, we don't want to get too big of arms." Because of this insecurity, the participants discussed not wearing shirts that emphasize these muscles including tank tops and button down shirts (Illustration 2). Figure 2 depicts basketball participant 30 demonstrating garment tightness experience in the arms, shoulders, and across the back. Additionally, 5 of the 8 participants indicated that in order to find pants that accommodate the muscular development of the leg and gluteal muscles caused by their sport, the resulting pant is too loose in the waist (Illustration 3). Volleyball participant 38 demonstrates the pant fit issue of having to purchase jeans with too large of a waist in order to accommodate the hips and thighs.

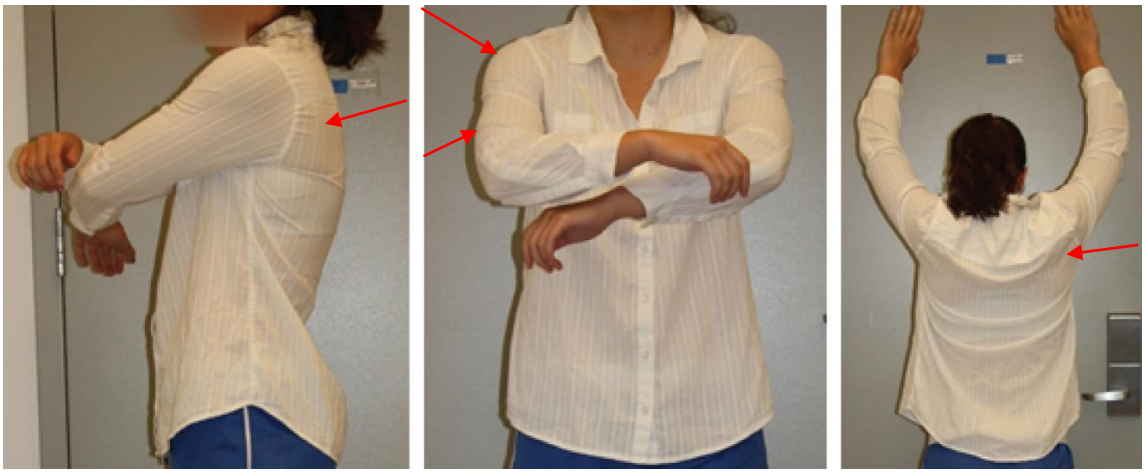

Illustration 2. Shirt exhibiting tightness in the arms, shoulders, and upper back

Illustration 3. Waist of pants too large in order to accommodate hips and thighs

Two out of the three volleyball players indicated that they liked the way they looking in non-athletic wear. All volleyball participants experienced the most difficulty finding jeans that fit well. Participant 28 and 38 indicated that in order to find jeans that fit their muscular thigh with the waist being too large. Participant 28 and Participant 40, with heights 5’ 11” and 6’ 3” respectively, discussed the difficulty in finding jeans that are long enough without the waist correspondingly increasing in size. Participant 40 typically needs size 8 jeans but finds that the length that she needs is typically only available starting at size 14. Basketball participant 40, also 6’ 3”, requires a 38 inch inseam which is a struggle to find. Participant 40 also discussed how clothing for tall women is often only targets tall and big women, indicating that she always needs the additional length but not the additional width.

All rowing participants indicated that they are comfortable about their body in clothing they wear outside of sports related activity. The participants that indicated that they were not entirely confident in their body, take care to dress in a way they know flatters their body shape.

Rowing causes significant muscular development in the arms, back, shoulder, gluteal and leg muscles. The leg muscles are the predominant muscles used to propel the boat forward, therefore, rowers typically have very muscular legs. Locating jeans that accommodate muscular thighs and calves was frequently discussed in the interview sessions with the rowing participants. Two rowing participants refuse to wear skinny jeans because they are self-conscious about the musculature of their legs. Additionally, discussions of the difficulty in finding "button-down shirts" and jackets that proportionally fit the shoulders, arms, and waist were frequent. Because rowers are typically tall, finding pants that are long enough was also a popular discussion.

All non-lean athletes discussed how their clothing tends to fit more comfortably when they are not heavily training and weight-lifting. The decrease in musculature provides more comfort in non-athletic wear.

4.1.3b. Lean athletes. The main athletic pressure experienced by coxswains is to be light. Therefore musculature development is not a concern. The coxswains do not experience the same apparel fit concerns as many of the other athletes. All under the height of 5' 4", the main fit concerns lie in garments of the proper length.

All cross country participants indicated satisfaction in the clothing they wear outside of athletics. However, 5 out of the 8 cross country participants expressed some discontent with a lack of "curves" when they compare their bodies to women who do not play sports. But understand it as a necessary tradeoff for speed in their lean sport. Cross Country Participant 7 explains:

> I definitely do not have as many curves as most girls my age. It would be nice to have some more. But then it's like a trade-off. Being curvier would most-likely mean not being as good as an athlete. So it's a tradeoff that I'm willing to make.

This same participant discussed how she enjoys wearing garments that make her hips look bigger "… flowy stuff that goes out because it accentuates a smaller waist and makes you look like you have larger hips, even though you don't". Cross country participant 29 explains that most long distance runners typically have small upper bodies therefore do not experience the same upper body garment fit problems as experienced by the previously discussed non-lean athletes. However, because their sport requires strong legs, 8 of the 9 cross country participants expressed difficulty finding pants that fit their muscular legs while being small enough in the waist.

4.1.4. 'Thigh gap' trend and fashion imagery. The 'thigh gap' trend is a dangerous body-image obsession particularly present across social media where the desire is to become so slender that when a woman stands with her feet together, her thighs do not touch, creating the "thigh gap' between her legs. For this study, the majority of participants, 32 out of 36, regard the 'thigh gap trend as insignificant to their body image referring to trend referring to the social media trend as 'silly', 'unattainable' and 'ridiculous,' and 'unhealthy' for them, especially since they are athletes. All basketball, rowing, and rowing coxswain participants expressed no desire to attain the thigh gap stating that they value strength and fitness over an aesthetic. However, one volleyball participant stated that she liked the appearance of the thigh gap, and if the option of having muscle definition or the thigh gap, she would choose the thigh gap.

Three cross country participants referred to the thigh gap as advantageous for their sport, stating that is it easier to run when their thighs do not touch. One cross country participant explained that she uses the thigh gap as a gage as to whether she has gained weight or not.

Another participant stated that while obtaining a thigh gap is not a priority, she definitely would like one because "…a lot of the really fast runners who are thin have one."

Coxswain participant 22 questioned how much of 'thigh gap trend' is actually a trend stating that for as long as she can remember, her mother has worried about her thighs touching indicating that it this body image concern has exist long before the social media trend.

39 out of 40 participants indicated a desire for more athletic bodies present in the fashion world. These participants liked the athletic models present in athletic company advertisements, and desired to see more of these bodies advertising 'normal, everyday clothing'. Rowing participant 6 summarizes the desires of 39 of the participants well:

> I think that in general that fashion industry portrays very thin women and they are very pretty but, it doesn't look as though they're bodies are very capable of doing athletic things or really just functioning well in a normal life. Which I think includes walking distances and carrying things- just basic attributes of normal living. I would like to see the fashion industry portray women with more muscle. And that being said, with more fat too because I think that its fairly normal for someone who is stronger to have a little bit of extra fat on their bodies as well.

Only coxswain participant 20 is satisfied with the current fashion industry, stating that the industry is supposed to be a 'fantasy world' therefore models should not look like "us or the average person."

4.1.5. Stunkard Figure Rating Scale. Stunkard Figure Rating Scale results are analyzed through comparison of lean and non-lean sports categories. Figure 2 indicates frequencies for CBS and IBS for the two sports categories.

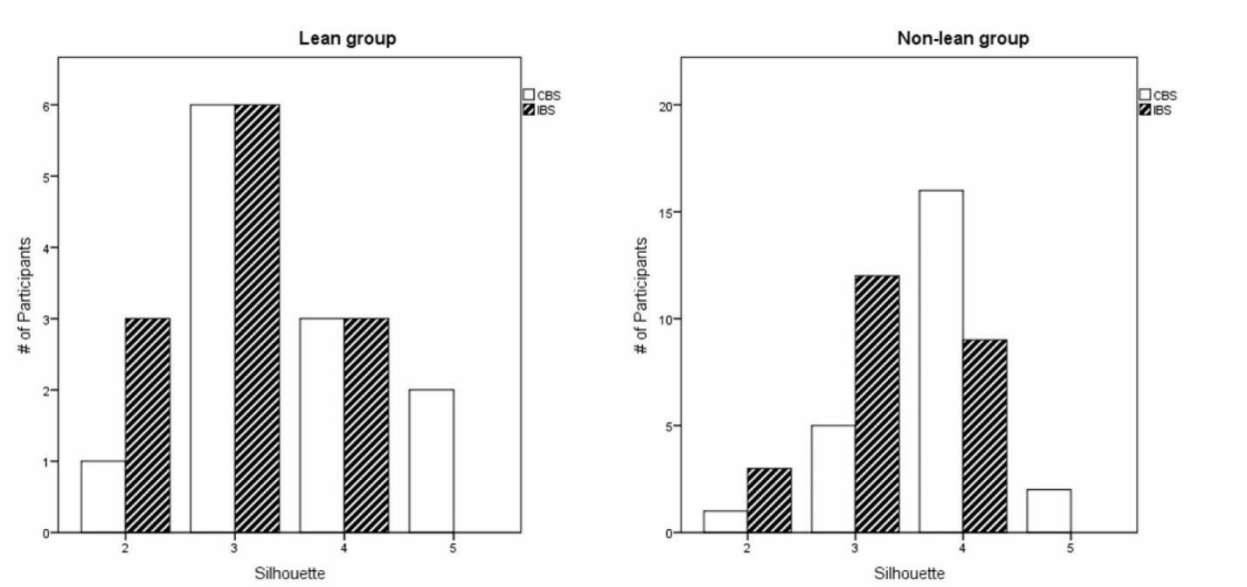

Figure 2. Bar chart of frequencies for CBS and IBS for lean and non-lean sports groups.

For CBS, results indicate Silhouette 3 as the most popular selection for lean sports group at 50% and Silhouette 4 as the most popular selection for non-lean sports group at 66.7%. For IBS, Silhouette 3 remains the most popular selection and becomes the most popular selection for non-lean athletes at 50% for both. No participants regard Silhouette 5 as their ideal body shape.

The difference between CBS and IBS (IBS – CBS) assesses the level of body satisfaction for the participant. For example, if a participant chooses an ideal figure one figure over from her perceived current body shape (+ or - 1), she is somewhat dissatisfied with her body shape. If a participant chooses a body shape two figures over from her current body shape (+ or - 2), she has greater body dissatisfaction. A minus (-) sign indicates the participant desires an IBS smaller than her CBS. A positive (+) sign indicates the participant desires an IBS larger than her CBS. If a participant chooses the same figure for body her current body shape and her ideal body shape (0), then she is satisfied with her body. Table 6 indicates ANOVA analysis of level of body satisfaction (IBS –CBS) as it relates to Lean and Non-lean sports categories.

Table 6. Phase I: ANOVA of IBS-CBS

Sports Category	IBS – CBS		*F*	*p*-value
	Est. Mean	SE		
Lean	-.500	.247	.019	.891
Non-lean	-.542	.175		

Results indicate no significant difference between the two groups. The estimated mean of Lean group (-.500) and Non-lean group (-.542) indicates that both groups demonstrate a similar level of body dissatisfaction. Table 7 indicates the frequency distribution and percentages for level of body satisfaction for lean and non-lean sports categories, as well as for the two categories combined.

Table 7. Phase I: Frequency distribution of IBS-CBS

IBS-CBS	Lean		Non-lean		All	
	n	%	n	%	n	%
-2	1	8.3	2	8.3	3	8.3
-1	**6**	50.0	**12**	50.0	**18**	50.0
0	3	25.0	7	29.2	10	27.8
+1	2	16.7	3	12.5	5	13.9

Note. Numbers in bold indicate the largest responses in each group.

Results indicate that for both sports categories, 50% of participants are somewhat dissatisfied with their body shape (-1). 58.3% of participants from both sports categories desire a body smaller than their CBS. Of the participants who are satisfied with their body shape (0), non-lean participants possess a higher percentage (29.2%) than lean sport participants (25.0 %). A high percentage of lean sport athletes desire a boy larger than their current body shape (+1) compared to non-lean sport athletes 16.7% and 12.5 % respectively.

4.2. Phase II: Anthropometric Data Analysis

The anthropometric data of female athletes collected in Phase I is analyzed by for lean (n=12) and non-lean (n=24) participant groups. ANOVA analysis of the two sport categories for height (cm), weight (kg), and Body Mass Index (BMI) are displayed in Table 8. Calculated by

dividing weight (kg) by squared height (m), BMI is a widely used tool for sorting individuals into underweight (below 18.5), healthy weight (18.5-24.9), overweight (25.0- 29.9), and obese (30.0 and above) categories (Center for Disease Control and Prevention, 2014).

Table 8. Phase II: ANOVA of height, weight, and BMI

Measurement	Lean		Non-Lean		*F*	*p*-value
	Est. Mean	SE	Est. Mean	SE		
Height(cm)	166.296	1.483	176.345	2.097	15.313	**<.001**
Weight(kg)	56.712	2.297	71.628	1.624	28.121	**< .001**
BMI	20.467	.528	22.992	.374	15.222	**< .001**

Note. Bold indicates a statistical significance for the effect.

Results indicate that non-lean sports group has statistically significant higher estimated mean for height, weight, and BMI.

While the BMI means for both sports groups categorize as healthy BMIs, the minimum and maximum BMIs reported for lean and non-lean sports groups indicate participants who possess BMIs over the healthy range (Table 9). Waist circumference and waist/hip ratio are also used as indicators of obesity and cardiovascular risk. A waist measurement of below 88.9 cm and a waist/hip ratio below .85 are also considered indicators of a healthy body composition for women (Center for Disease Control, 2014; World Health Organization, 2011).

Table 9. Phase II: Min/Max for height, weight, BMI, waist circ., and waist/hip

Measurement	Lean		Non-lean	
	Min.	Max.	Min.	Max.
Height (cm)	160.02	179.07	160.02	190.50
Weight (kg)	49.94	67.19	55.39	88.53
BMI	18.90	23.30	19.70	27.40
Waist (cm)	66.34	79.96	72.59	91.01
Waist/ Hip ratio	.72	.79	.69	.83

Results indicate that the maximum BMI for non-lean sports (27.40) group is over the prescribed

healthy range. However, a BMI calculation is unable to differentiate between body fat and muscle and does not account for differences in body composition. Therefore, highly muscular people (e.g. competitive athletes) may fall into the overweight or obese category because of their high levels of muscularity which causes them to weigh densely despite having low body fat content. (Bee, 2006, Center for Disease Control and Prevention, 2014). Also, the maximum waist circumference for non-lean sports group (91.01 cm) lies above the prescribed healthy range. However, all female athlete participants' waist-to-hip ratio lies within the healthy range (<.85), supporting the idea that a variety of tools should be used in the assessment of overall health.

Key body measurements, bust, waist, and hip girth, and shoulder width and inseam length, were selected to provide an understanding of body shape of the female athlete participants. These measurements are also considered essential measurements for design and construction of various garments (Joseph-Armstrong, 2010). Additionally, thigh, calf, upper arm girth and across back width measurements were selected to address specific garment fit concerns discussed by the female athletes during the interview sessions in Phase I. ANOVA analysis of lean and non-lean participants' key body measurements are reported in Table 10. For consistency, measurements for the thigh, calf, and upper arm girth and shoulder width and inseam extracted from the right side of the body were analyzed.

Table 10. Phase II: ANOVA of key body measurements

Body Measurement	Lean		Non-lean		*F*	*p*-value
	Est. Mean	SE	Est. Mean	SE		
Bust girth	85.302	1.382	93.446	.977	23.146	**<.001**
Waist girth	72.805	1.294	79.997	.915	20.603	**<.001**
Hip girth	96.647	1.602	105.815	1.133	21.844	**<.001**
Thigh girth	54.836	1.196	60.129	.845	13.065	**.001**
Calf girth	35.471	.603	37.793	.427	9.870	**.003**
Upper arm girth	25.762	.535	28.971	.378	23.981	**<.001**

Across back width	37.279	.664	39.576	.470	7.981	**.008**
Shoulder width	14.669	.606	14.311	.429	.232	.633
Inseam	75.252	1.483	79.454	1.049	5.521	**.024**

Note. Bold indicates a statistical significance for the effect.

Results indicate non-lean sports participants have a statistically significant higher means for bust, waist, hip, thigh, calf, upper arm girth, across back width and inseam length than lean sport athletes. In combination with height, weight, and BMI results discussed previously, these results indicate that non-lean sport athletes are overall larger individuals than lean sport athletes.

However, because of the great variance in female athlete participants' height and body size, ratios of body measurements provide a better indication of overall body shape than linear measurements. Bust, hip, thigh, calf, and across back width are divided by the participant's waist measurement to create these ratios. Table 11 displays ANOVA analysis of lean and non-lean sports participants' body measurement ratios.

Table 11. Phase II: ANOVA of key body ratio measurements

Body Measurement	Lean		Non-Lean		*F*	*p*-value
	Est. Mean	SE	Est. Mean	SE		
Bust/Waist	1.172	.014	1.170	.010	.026	.873
Hip/Waist	1.328	.014	1.324	.010	.069	.795
Thigh/Waist	.753	.010	.752	.007	.018	.895
Calf/Waist	.487	.007	.473	.005	2.870	.099
Across back width/waist	.512	.008	.496	.006	2.502	.123

Results of the body measurements ratio comparison do not indicate any statistical difference between the two groups. This indicates that while the non-lean participants possess greater mean averages for all key body measurement except cross shoulder and shoulder width measurements discussed previously, the overall body shape of lean and non-lean sport participants display very

similar ratios in body girth and proportion. Therefore, in terms of body proportion, they are not significantly different. Female athlete's dissatisfaction in current sizing system may lie in the difference between an athlete's body proportions and a non-athlete's body proportions.

4.3. Phase III: Online Survey

A total of 42 female athletes (lean= 24, non-lean=18) completed the Multidimensional Body-Self Relations Questionnaire using the Qualtrics® survey platform. Participants were recruited through email contact with collegiate coaches, SONA Systems®, or Qualtrics Online Sample®. For analysis of the MBSRQ, these participants were combined with the 36 female athletes recruited in Phase I of this study for a total of 78 female athlete participants. Table 12 indicates the categorization and distribution of female athletes into lean and non-lean sports groups.

Table 12. Phase III: Categorization and distribution of female athlete participants

Lean (n=36)			Non-lean (n=42)		
Sport	n	%	Sport	n	%
Cross Country	10	27.8	Basketball	8	19.0
Equestrian	10	27.8	Fencing	1	2.4
Gymnastics	4	11.1	Field Hockey	3	7.1
Rowing (coxswains)	3	8.3	Lacrosse	3	7.1
Swimming and Diving	7	19.4	Rowing	13	31.0
Track and Field (running events)	2	5.6	Soccer	4	9.5
			Softball	2	4.8
			Tennis	4	9.5
			Volleyball	4	9.5

The lean sports group includes three sports (diving, equestrian, and gymnastics) that possess an aesthetic pressure for leanness. All other lean sport participants experience a competitive

pressure for leanness. All non-lean sports participants, by definition, do not experience an aesthetic or competitive advantage for leanness. Lean (n= 36) and non-lean athletes (n=42) were then compared with female collegiate non-athletes (n=101). For this study, non-athletes are defined as anyone who does not participate in a Division I sports team. All participants are between the ages of 18 and 25. Table 13 indicates ANOVA for height, weight, and BMI for all participants.

Table 13. Phase III: ANOVA of height, weight, and BMI of all participants

Measurement	Lean		Non-lean		Non-athletes		*F*	*p*-value
	Est. Mean	SE	Est. Mean	SE	Est. Mean	SE		
Height	165.146[a]	1.323	173.038	1.225	163.767[a]	.790	20.644	<.**001**
Weight	59.167[a]	1.877	66.795	1.738	61.155[a]	1.121	5.223	**.006**
BMI	21.738	.653	22.248	.605	22.827	.390	1.114	.331

Note. Bold indicates a statistical significance for the effect.
Estimated means with the common letter *a* in the same row are not significantly different from each other (Bonferroni, $\alpha = 0.05$).

Results indicate that the estimated mean for non-lean sport athletes for height and weight is significantly higher than both lean sport athletes and non-athletes. However, there is no statistically significant difference among BMI for all three categories. The similarity in the estimated means of BMI indicates a consistent increase and height and weight for non-lean sport participants. This may indicate similarities in body proportion despite overall increase in height and weight.

Before analyzing the MBSRQ data, the reliabilities for each of the 10 subscales (Table 14) were calculated using Cronbach alpha coefficient as the measure of reliability. Cronbach alpha is a measure of internal consistency, indicating how closely related a set of items are as a group. It is considered to be a measure of scale reliability producing a coefficient of reliability

(or consistency). For the social sciences, a coefficient of .70 or higher is considered "acceptable" in most social science research (Tavakol and Dennick, 2011).

Table 14. Phase III: MBSRQ: scales, reliabilities, number of items

Scale	Reliability	N of Items
AE	.882	7
AO	.818	12
FE	.813	5
FO	.926	12
HE	.758	6
HO	.791	12
IL	.704	5
BASS	.810	9
OWP	.776	4
SCW	.785	2

For this study, all reliabilities calculated for each scale fall in the acceptable range. These reliabilities are consistent with Cash et al. (1985, 1986), a large scale survey of 987 males and 1066 females, ages ranging from 15 to 87 years of age. For that study, all reliabilities calculated for each scale fell well within the acceptable range- all above .70 (Cash, 2000).

Table 15 indicates the results for the ten subscales for lean, non-lean, and non-athlete participants.

Table 15. Phase III: ANOVA of MBSRQ scales for all participants

Scale	Lean		Non-lean		Non-athletes		*F*	*p*-value
	Est. Mean	SE	Est. Mean	SE	Est. Mean	SE		
AE	3.575^{ab}	.128	3.687^{a}	.118	3.233^{b}	.076	6.275	**.002**
AO	3.634^{ab}	.094	3.450^{a}	.087	3.783^{b}	.056	5.259	**.006**
FE	4.156^{a}	.110	4.210^{a}	.102	3.327	.065	37.460	**<.001**
FO	4.576^{a}	.106	4.446^{a}	.099	3.257	.064	84.753	**<.001**
HE	3.963^{a}	.109	4.024^{a}	.101	3.452	.065	15.275	**<.001**
HO	3.664	.095	3.603	.088	3.470	.057	1.872	.157
IL	3.344	.123	3.390	.114	3.398	.073	.071	.931
BASS	3.586^{a}	.107	3.646^{a}	.099	3.215	.064	8.804	**<.001**
OWP	**2.847^{ab}**	.150	**2.381^{a}**	.139	**2.896^{b}**	.089	5.052	**.007**
SCW	3.000	.095	3.048	.088	3.178	.057	1.644	.196

Note. Bold indicates a statistical significance for the effect.
Estimated means with the common letter in the same row are not significantly different from each other (Bonferroni, $\alpha = 0.05$).

Subscales AE (Appearance Evaluation), AO (Appearance Orientation), FE (Fitness Evaluation), FO (Fitness Orientation), HE (Health Evaluation), BASS (Body Areas Satisfaction Scale), and OWP (Overweight Preoccupation) all produced statistically significant results.

Measuring the satisfaction or dissatisfaction with one's looks or appearance, the AE scale indicates that non-lean athletes have a statistically higher satisfaction with appearance in comparison to non-athletes. However, as indicated by the AO scale which measures the extent of investment in one's appearance, non-lean athletes possess a statistically lower investment in one's appearance. While non-lean athletes are more apathetic about their appearance compared to non-athletes, they have the greatest satisfaction in their appearance among all groups.

Both lean and non-lean sports groups possess a statistically higher score for FE and FO in comparison to non-athletes. The FE scale indicates the both sports groups feel more physically fit and athletically competent than the non-athlete group. The FO scale indicates that both lean and non-lean sports groups value fitness and are actively involved in activities to maintain their fitness more so than non-athletes.

The HE scale indicates that both lean and non-lean sports groups possess a statistically significant increase in feelings of physical health and freedom from physical illness than non-athletes. However, the HO scale indicates no statistically significant difference in investment in a healthy lifestyle- neither group is significantly more 'health conscious' than the other. This indicates that the greater feelings of physical health felt by lean and non-lean sports groups could be influenced by their physically active lifestyle.

BASS scale results indicate that both lean and non-lean sports groups are more satisfied with areas of the body compared to non-athletes. The BASS scale measures satisfaction with nine aspects of one's appearance which includes face, hair, lower torso, mid torso, upper torso, muscle tone, weight, height, and overall appearance. Table 16 indicates ANOVA of the specific body areas/aspects of appearance particularly relevant to the research study. Participants were asked to rate level of satisfaction on a Likert-type scale 1-5 (1 being very dissatisfied, 5 being very satisfied).

Table 16. Phase III: ANOVA of specific BASS scale questions

Body Areas/Aspects of Appearance	Lean		Non-lean		Non-athlete		*F*	*p*-value
	Est. Mean	SE	Est. Mean	SE	Est. Mean	SE		
Q63. Lower torso (buttocks, hips, thighs, legs)	3.583[a]	.196	3.333[ab]	.182	3.020[b]	.117	3.356	**.037**
Q64. Mid torso (waist, stomach)	3.139[ab]	.184	3.310[a]	.170	2.653[b]	.110	6.259	**.002**
Q65. Upper torso (chest or breasts, shoulders, arms)	3.417	.183	3.738	.169	3.347	.109	1.914	.151
Q66. Muscle tone	3.556[a]	.166	3.738[a]	.154	2.733	.099	19.127	**.000**
Q67. Weight	3.000[ab]	.188	3.524[a]	.174	2.871[b]	.112	5.011	**.008**
Q68. Height	4.000	.174	3.833	.161	3.782	.104	.581	.561

Note. Bold indicates a statistical significance for the effect.
Estimated means with the common letter in the same row are not significantly different from each other (Bonferroni, $\alpha = 0.05$).

Results indicate that there are no statistically significant differences in estimated means for lower torso, mid torso, upper torso, muscle tone, weight and height for lean and non-lean sports groups. However, both lean and non-lean athletes are significantly more satisfied with their muscle tone

compared to non-athletes. Non-lean athletes are significantly more satisfied with their waist and stomach region as well as satisfied with their weight compared to non-athletes. Lean sport athletes possess a statistically significant greater satisfaction the lower torso (buttocks, hips, thighs, and legs) compared to non-athletes.

The OWP scale assesses a construct reflecting fat anxiety, weight vigilance, dieting, and eating restraint. Results indicate that non-athletes possess a statistically higher occurrence of overweight preoccupation compared to lean sport athletes. The estimated mean of non-lean sport athletes (2.847), is similar to non-athletes' estimated mean (2.896) and higher than lean sport athletes' (2.381). This indicates a trend of greater overweight preoccupation than lean sport athletes.

Overall, as indicated by scales AE, FE, HE, and BASS, both lean and non-lean sport athletes possess greater satisfaction in appearance, fitness, health, and overall body area satisfaction in comparison to non-athletes.

CHAPTER V

Discussion

This study found a few remarkable conclusions concerning female athletes' body image in relation to their clothing behaviors.

5.1. Body Image Pressures and Body Shape Ideals

Many Phase I female athletes stated concern about not possessing the ideal body type for their sport. In this study, sport specific body ideals rather than the cultural body ideal were most influential for female athletes. This concept did not differ among lean and non-lean sport categories. Female athlete participants discussed body ideals or stereotypes within their sport (e.g. an ideal rower is tall, strong, and lean; an ideal cross country runner is strong, light, and lean; an ideal basketball player is tall, strong, and powerful) and the degree to which they personally adhered to the body norm of their sport. They were more likely to compare their bodies with fellow athletes rather than non-athletes. Potentially, female athletes are more influenced by sport specific body ideals than cultural body ideals because of the value they place in their athleticism. MBSRQ subscales FE (Fitness Evaluation) and FO (Fitness Orientation) reveal a significantly higher importance and level of investment both lean and non-lean female athletes place on physical fitness in comparison with non-athletes.

The greater influence of sport-specific body ideals is supported by Phase I interview discussions of the 'thigh gap' social media trend and discussions of imagery in the fashion industry. The majority of female athletes in Phase I study were unaffected by the trend because it contradicted their athletic need for muscular legs. Additionally, of the few athletes that desired

the thigh gap, the majority were cross country participants. Given the physical demands of long distance running, thin thighs that do not touch while running eliminates the possibility of uncomfortable chafing of skin. Therefore, this desire for the social media trend is more rooted in desire for athletic excellence and less so rooted in adhering to cultural appearance standards. Additionally the vast majority of female athletes discussed a desire for more athletic looking models represented by the fashion industry further supporting the influential impact of the athletic body shape ideal.

Self-Discrepancy Theory (Higgins, 1987) proposes consequences occur when individuals compare one self-state to another self-state and finds that a discrepancy exists between the two. The most common self-states discussed in literature are the 'actual' and the 'ideal.' The 'actual' self is defined as an individual's self perceptions of his or her own attributes or characteristics. The 'ideal' self refers to the characteristics that the individual would like to possess. Observing a discrepancy between the 'actual' and the 'ideal' self causes dejection-related emotions such as body dissatisfaction. Dissatisfaction in one's body can encourage an individual to participate in behaviors, such as disordered eating, that will reduce the discrepancy. In this study, the 'ideal' was the sport specific body ideal rather than the cultural body ideal. Adherence to these body stereotypes affect a female athlete's body (dis)satisfaction. This means that the root of a women's level of body satisfaction will differ between sports (Furnham et al., 1994). A small, lean body may be greatly valued on the cross country course but much less so on the basketball court.

A female athletes understand that she achieves athletic success due to her physical fitness and athletic ability, not how well her body conforms to her sports' body shape ideal. Harmful psychological effects of idealized bodies within athletics can occur and raises a need for more

realistic body expectations among female athletes (Rudd and Carter, 2006; Robert-McComb et al., 2008). However, for this study, MBSRQ results indicate that lean and non-lean sport athletes possess greater satisfaction in appearance, fitness, health, and overall body area satisfaction in comparison to non-athletes indicating that female athlete body discrepancies are less severe than those experienced by non-athletes.

5.2. Body Image and Athletic Uniforms Concerns

Phase I revealed that the correlation of body image and athletic uniforms was more influenced by the fit of the uniform than by the categorization of the sport as lean or non-lean. Phase I Stunkard Figure Rating Scale results and Phase III MBSRQ support the found similarities among groups which indicated strong similarities in body satisfaction and body image for both lean and non-lean athletes. Revealing uniforms contributed to the greatest feelings of body self-consciousness among participants. Body image concerns should not be magnified by a revealing uniform fit especially when aesthetics do not contribute to overall athletic excellence (e.g. cross country).

Phase III data obtained lean sport participants with an aesthetic priority of leanness in addition to a competitive one (equestrian, diving, and gymnastics). AO subscale of the MBSRQ indicates that while both lean and non-lean sports groups have lower estimated mean for investment in appearance compared to non-athletes, the lean sports group does not possess a statistically significant difference in estimated mean from non-athletes, unlike non-lean athletes. The aesthetic advantage to performing in these sports may increase the level of investment in appearance experienced by these lean sport participants compared to non-lean sport athletes where aesthetics are less of a focus. Revealing uniforms in an aesthetic sport may further contribute to body image concerns and investment in appearance. However, while MBSRQ

results revealed that non-lean athletes possess the greatest satisfaction in appearance, physical fitness and health. This could be due to the lack of aesthetic pressures present in their sport. It is difficult to understand the impact of uniform fit on body image because both participating lean and non-lean sports include sports in which revealing uniforms were worn.

Participants discussed an ability to ignore body image concerns while participating in their sport. The female athlete participants understood that performing athletically well is of greater importance than their physical appearance. However, female athletes should not feel the necessity to ignore body image insecurities while participating in her sport. Phase I found that the 'loose-fit' basketball uniform contributed to the athletes' self-confidence. Because of the way in which the garment drapes off the body, concealing the shape of the body and hiding 'imperfections', participants did not feel body conscious in the uniform. Every basketball participant stated that their uniform never influenced a desire to change something about their body. The loose fitting uniform also helps make body image concerns much less predominant. This supports research that clothing contributes to more positive body image (Feather, Ford, & Herr, 1996) and expands the acceptability of a variety of body shapes because bodies become more uniform in appearance in loose clothing (McCullough, 2007).

This indicates an area in which the sportswear industry can effectively improve the body image of female athletes. While certain attributes of revealing uniforms are necessary (e.g. swim suits), some arguably are not (e.g. length of the spandex volleyball shorts). The sportswear industry needs to rethink the necessity of revealing athletic uniforms. The industry also needs to think of ways to make the uniform more comfortable for the wearer so that she can best focus on her athletic performance, not whether or not her uniform is properly in place. Additionally, international governing bodies for sports whom possess power and control over uniform

regulations should collaborate with the sportswear industry to discover ways in which to make the athletic uniform better for the wearer and her body image.

5.3. Body Image and Non-athletic Apparel

Phase I interview discussions of non-athletic clothing revealed that satisfaction with non-athletic clothing was mostly similar across lean and non-lean sports groups. The most predominant discussion involved difficulty in finding proper fitting pants. The majority of female athletes from both lean and non-lean sports categories discussed difficulty locating pants that fit their thighs, buttocks, and waist due to the muscularity and proportions of their lower bodies.

This similarity in response among lean and non-lean sport participants is supported by anthropometric data analysis conducted in Phase II of this study. While linear measurements of female athletes indicate that non-lean sport female athletes were significantly bigger individuals (taller, larger, and weight heavier) than lean-sport female athletes, the ratios of key body measurements displayed no significant difference in body proportion between the two groups.

This suggests that female athletes' apparel fit issues, particularly for non-athletic wear, exist as a result of the differences between athlete's body proportions and non-athlete's body proportions. Some apparel companies, such as Barbell Apparel, are directly addressing the pant fit concern experienced by female athletes by developing pants that allow sufficient room in the buttock and thighs area yet taper sufficiently in the waist (Dunne, 2014; Mosenberg, 2014; Payne, 2014). Anthropometrics data from this study suggests that Barbell Apparel is correct in generalizing the female athlete, rather than targeting specific types of female athletes, because they possess similar body proportions despite their categorization as a lean or non-lean sport.

5.3.1. Body height and garment length. In comparison to lean sport athletes, non-lean sport athletes from Phase I also discussed at greater occurrence self-consciousness while wearing non-athletic clothing. Participants from basketball, rowing, and volleyball (all sports in which height is greatly valued) discussed feeling confident about their height within the context of their sport, but self-conscious about their height in other social settings. While this discomfort in their height is most likely influenced by societal appearance standards for women, the apparel industry can help reduce this discomfort and body self-consciousness.

Many of these non-lean athletes discussed difficulty in finding garments with sufficient length (including pants, shirts, skirts, and dresses). Anthropometric analysis of Phase I and Phase III non-lean athletes supports these discussions. The estimated mean of height for non-lean athletes is significantly taller than the average woman. The ASTM standards for the Adult Female Misses Figure Type (size range 00-20) is based off of a 166.37 cm (5 ft. 5 in.) individual (65% of average USA population) (ASTM D5585-11e1, 2011). This height is significantly shorter than the non-lean sports group for both Phase I and Phase III (176.35 cm and 173.04 cm respectively). Most likely garment length concerns experienced by non-lean athletes arise due to their situation as outliers in the apparel industry demographics.

While some apparel companies directly address the garment length concern for taller women, two concerns regarding these types of apparel companies arose during Phase I interviews. Some non-lean athletes discussed garments that simultaneously increased in size and width resulting in garments that were too large when sufficient length was obtained. Additionally, price of garments with greater length was discussed contributing to restricted accessibility to proper fitting clothing for these athletes. This suggests that in order to positively affect the body image of female athletes, the apparel industry needs to understand that in addition to possessing

potentially different body proportions than non-athletes, female athletes that participate in sports that value height have difficulty in finding affordable garments that properly fit their body proportions.

CHAPTER VI

Conclusion

Vartanian (2012) suggests three ways in which to reduce the existence and impact of self-discrepancy between the actual and the ideal self. This discussion can be applied to this particular study of female athletes and their body image. First, understand that changing perceptions of the actual self may require correcting an individual's distorted perceptions of their own body. However, MBSRQ results in this study indicate that lean and non-lean sports categories possessed significantly higher evaluation of appearance, fitness, health, and overall body area satisfaction compared to non-athletes. These results indicate an overall positive body image perception experienced by female athletes compared to non-athletes in this particular study.

Second, reduce the impact of self-discrepancies by understanding that idealized bodies in media likely play a role in promoting the unrealistic body ideals. Phase I discussions of the 'thigh gap' trend in conjunction with positive body image MBSRQ results, may indicate that female athletes are less affected by appearance standards projected by mass media because they place greater value in their 'athletic body' and their athletic ability. However, the vast majority of female athletes from Phase I discussed a desire for more 'athletic looking' models represented in fashion imagery. These sentiments indicate that despite possessing an overall more positive body image compared to non-athletes, female athletes still desire ways in which to reduce the discrepancy between their body and body ideals. The fashion industry needs to continually take steps to reduce the discrepancy between consumers and the body ideals. One way they can do so is by incorporating a wider variety of fashion models including more athletic-looking women.

Lastly, Vartanian (2012) suggests that learning to reduce the importance of body image to one's self concept, and focus instead on other aspects of the self, can greatly improve an individual's self-perceptions. Female athletes inherently do this by placing great value in their athletic ability and physical fitness. In addition to results from Phase I interview discussions, this fitness priority is further emphasized by the MBSRQ subscales FE (Fitness Evaluation) and FO (Fitness Orientation) which were significantly higher than non-athletes' scales. In effect, these work to improve appearance and heath evaluation.

Future study would benefit from participation from greater female athlete participation particularly for aesthetic sport athletes for Phase I interview sessions. Also, in order to distinguish the influence of aesthetics, it would be beneficial to separate lean aesthetic sports from sports in which leanness is primarily a competitive advantage (e.g. separating gymnasts from cross country runners).

Understanding the variance emphasis of leanness amongst sports even amongst sports defined as non-lean sports requires further attention. Phase I rowers' discussion of weight efficiency indicates a stronger athletic pressure of leanness than their fellow non-lean sport athletes. Like cross country runners and figure skaters, rowers must balance leanness, endurance, and power. However, the pressure to maintain a specific weight range while maintaining strength is greater than the other non-lean sport participants. This indicates that while the sports categorizations chosen for this study are best, categorizing sports as lean or non-lean is not entirely transparent.

Future research studies should include a larger population of female athletes particularly for anthropometric data analysis. This larger population sample could then be compared with Size USA data, an anthropometric database of over 10,000 scanned individuals in the United

States ([TC]^2, 2014). This would provide more generalizable data of female athletes which may be used to improve sizing systems for female athletes for ready-to-wear clothing. This may be the most effective way the apparel industry researchers can positively affect the body image of female athletes.

APPENDIX A

Email to collegiate coaches requesting female athlete participation in Phase I of this research study.

Dear Coach "INSERT NAME",

I am a graduate student at Cornell University pursuing my MA in Apparel Design and I am looking for female athletes to participate in a study for my Master's thesis. I was wondering if any members of the "INSERT SPORT" team would be interested in participating.

I have explained the study below. I would greatly appreciate it if you could forward the information below along to your athletes to generate interest in the project.

Thank you,
Mary Claire Nemeth

Call for Female Athletes:

My name is Mary Claire Nemeth and I am a graduate student pursuing my MA in Apparel Design at Cornell University. My area of research for my Master's thesis involves the female athlete and her body image in connection with the clothing that she wears in her athletic environment as well as outside of her athletic environment.

I am looking for collegiate female athletes over the age of 18 to participate in a research study for my Master's thesis and I was wondering if any members of the "INSERT SPORT" team would be interested in participating. Dependent on level of participation, participants will receive between $20.00 and $30.00 cash benefit. The session will take between 40-60 minutes.

The participant will asked to complete the Multidimensional Body-Self Relations Questionnaire (MBSRQ) and the Stunkard Figure Rating Scale to assess body image and body satisfaction. Then the participant will be asked a series of questions relevant to her sport, apparel wear, and the fashion industry. I am also asking participants to bring a garment/garments that they have consistently experienced fit issues with (this can be both/either sportswear or non-athletic clothing). The participant will be photographed from the neck down (to protect anonymity) for the purpose of visual assessment of garment fit.

If the participant feels comfortable doing so, the participant will be asked to participate in 3D body scanning of her own body. The scan will take around 10 seconds. For the scan, participants will be asked to wear a close-fitting tank top and leggings or bra and underwear.

Upon completion of session, the participant will immediately receive $30.00 cash as benefit for participation. If the participant only participates in the interview and the survey collection, they will receive $20.00.

My research project has been approved by the Cornell IRB. Participation in this research is voluntary. There is no risk associated with this study. Any information about the individual participants will be kept confidential to protect the participant's privacy and identity. All the data will be securely stored and will be used only for the research purpose.

A female athletes and her body concept in relation to the clothing that she wears is a valuable avenue for the field of Apparel Design to investigate. The ultimate goal of this study is to provide implications to the apparel industry- How can the apparel industry better serve the female athlete?

If you are interested in participating in the pilot study, please contact me by email (mn468@cornell.edu) or phone (cell: 412-200-433). Thank you for your time.

Sincerely,

Mary Claire Nemeth

APPENDIX B

Online survey introduction utilized for the assessment of female college students' body image

My name is Mary Claire Nemeth and I am a graduate student pursuing my MA in Apparel Design at Cornell University. My area of research for my Master's thesis involves assessing female athletes' body image as it relates to their apparel wear. I am also comparing the body image of collegiate female athletes with collegiate non-athletes. For this research, "non-athletes" are all participants who DO NOT identify as current NCAA Division I athletes.

For this online survey, I am looking for female college students of the age of 18 or older to complete a body image questionnaire. This online survey uses the Cash Multidimensional Body-Self Relations Questionnaire, a well validated self-report inventory for the assessment of body image. The questionnaire should take around 10-15 minutes to complete.

Your participation is voluntary. There is no risk associated with this study. However, some people may find some of the questions about body image and body dissatisfaction sensitive. Your input will provide invaluable information to apparel and body image research fields. All data will be kept confidential and will be used for research purposes only (e.g. Master's thesis, journal publication, conference presentation). This present survey has been approved by the IRB of Cornell University (#1502005293). If you have any questions about this survey, feel free to contact me by email (mn468@cornell.edu) or phone (412 200 0433).

I understand the purpose of this survey and the instructions provided by the investigator and agree to participate in this survey voluntarily.

- ❍ Yes
- ❍ No

If 'Yes' is not selected, then skip to end of survey

Are you female?

- ❍ Yes
- ❍ No

If 'Yes' is not selected, then skip to end of survey

Are you 18 or older?

❍ Yes
❍ No

If 'Yes' is not selected, then skip to end of survey

Please indicate your age in the space below:

Are you a current NCAA Division I athlete?

❍ Yes
❍ No

If 'No' is selected, then skip to 'What is your height?'

Enter your collegiate sport in the space below:

If applicable, indicate the position you play on your athletic team.

What is your height?

Feet
Inches

What is your weight?

Pounds

The Multidimensional Body-Self Relations Questionnaire: Instructions

The following questionnaire consists of 69 multiple choice items. The questionnaire contains a series of statements about how people might think, feel, or behave. You are asked to indicate the extent to which each statement pertains to you personally. There are no right or wrong answers. Just give the answer that is most accurate for you. Remember, your responses are confidential, so please be completely honest and answer all items. (Duplication and use of the

MBSRQ only by permission of Thomas F. Cash, Ph.D., Department of Psychology, Old Dominion University, Norfolk, VA, 23529).

Q1. Before going out in public, I always notice how I look.

- 1- Definitely Disagree
- 2- Mostly Disagree
- 3- Neither Agree nor Disagree
- 4- Mostly Agree
- 5- Definitely Agree*****

***The same scale is used for Q1-Q57**

Q2. I am careful to buy clothes that will make me look my best.

Q3. I would pass most physical-fitness tests.

Q4. It is important that I have superior physical strength.

Q5. My body is sexually appealing.

Q6. I am not involved in a regular exercise program.

Q7. I am in control of my health.

Q8. I know a lot about things that affect my physical health.

Q9. I have deliberately developed a healthy lifestyle.

Q10. I constantly worry about being or becoming fat.

Q11. I like my looks just the way they are.

Q12. I check my appearance in a mirror whenever I can.

Q13. Before going out, I usually spend a lot of time getting ready.

Q14. My physical endurance is good.

Q15. Participating in sports is unimportant to me.

Q16. I do not actively do things to keep physically fit.

Q17. My health is a matter of unexpected ups and downs.

Q18. Good health is one of the most important things in my life.

Q19. I don’t do anything that I know might threaten my health.

Q20. I am very conscious of even small changes in my weight.

Q21. Most people would consider me good-looking.

Q22. It is important that I always look good.

Q23. I use very few grooming products.

Q 24. I easily learn physical skills.

Q25. Being physically fit is not a strong priority in my life.

Q26. I do things to increase my physical strength.

Q27. I am seldom physically ill.

Q28. I take my health for granted.

Q29. I often read books and magazines that pertain to health.

Q30. I like the way I look without my clothes on.

Q31. I am self-conscious if my grooming isn't right.

Q32. I usually wear whatever is handy without caring how it looks.

Q33. I do poorly in physical sports or games.

Q34. I seldom think about my athletic skills.

Q35. I work to improve my physical stamina.

Q36. From day to day, I never know how my body will feel.

Q37. If I am sick, I don’t pay much attention to my symptoms.

Q38. I make no special effort to eat a balanced and nutritious diet.

Q39. I like the way my clothes fit me.

Q40. I don't care what people think about my appearance.

Q41. I take special care with my hair grooming.

Q42. I dislike my physique.

Q43. I don't care to improve my abilities in physical activities.

Q44. I try to be physically active.

Q45. I often feel vulnerable to sickness.

Q46. I pay close attention to my body for any signs of illness.

Q47. If I am coming down with a cold or flu, I just ignore it and go on as usual.

Q48. I am physically unattractive.

Q49. I never think about my appearance.

Q50. I am always trying to improve my physical appearance.

Q51. I am very well coordinated.

Q52. I know a lot about physical fitness.

Q53. I play a sport regularly throughout the year.

Q54. I am a physically healthy person.

Q55. I am very aware of small changes in my physical health.

Q56. At the first sign of illness, I seek medical advice.

Q57. I am on a weight-loss diet.

Q58. I have tried to lose weight by fasting or going on crash diets.

- 1- Never
- 2- Rarely
- 3- Sometimes
- 4- Often
- 5- Very Often

Q59. I think I am:

- 1- Very Underweight
- 2- Somewhat Underweight
- 3- Normal Weight
- 4- Somewhat Overweight
- 5- Very Overweight

Q60. From looking at me, most people would think I am:

- 1- Very Underweight
- 2- Somewhat Underweight
- 3- Normal Weight
- 4- Somewhat Overweight
- 5- Very Overweight

For questions 61-69, indicate how dissatisfied or satisfied you are with each of the following areas or aspects of your body.

Q61. Face (facial features, complexion)

- ❍ 1- Very Dissatisfied
- ❍ 2- Mostly Dissatisfied
- ❍ 3- Neither Satisfied nor Dissatisfied
- ❍ 4- Mostly Satisfied
- ❍ 5- Very Satisfied*****

***Same scale is used for Q61-Q69**

Q62. Hair (color, thickness, texture)

Q63. Lower torso (buttocks, hips, thighs, legs)

Q64. Mid torso (waist, stomach)

Q65. Upper torso (chest or breasts, shoulders, arms)

Q66. Muscle tone

Q67. Weight

Q68. Height

Q69. Overall Appearance

APPENDIX C

Email to collegiate coaches requesting female athlete participation in Phase III (MBSRQ online survey) of this research study.

Dear Coach "INSERT NAME",

I am currently my Master's in Apparel Design at Cornell University. My Master's thesis research assesses the body image of female athletes as it relates to apparel wear.

I am distributing an online survey to assess the body image of collegiate female athletes between the ages of 18 and 25. The online questionnaire is approved by the Institutional Review Board at Cornell, the Cornell Athletic Department, as well as in compliance with NCAA guidelines.

If you could forward the following information along to members of the Women's "INSERT SPORT" team, I would greatly appreciate it.

Thanks for your help,
Mary Claire Nemeth

Online Survey Participation Request

For my Master's thesis research in Apparel Design, I am looking for collegiate female athletes over the age of 18 to complete an online questionnaire consisting of the Multidimensional Body-Self Relations Questionnaire (MBSRQ), a well validated self-report inventory for the assessment of body image. The questionnaire should take around 10-15 minutes to complete.

There is no risk associated with this study. Any information about the individual participants will be kept confidential to protect the participant's privacy and identity. All the data will be securely stored and will be used only for the research purpose.

Participation in this survey is voluntary and there will be no monetary compensation. However, I believe that the collected data from your input will provide invaluable information to the apparel industry and apparel and body image researchers.

Additionally, this survey is registered with Cornell SONA system. Students registered in the following courses are eligible for credit:

- HD1170
- HD3490
- HD3620
- PSYCH1500

TO PARTICIPATE:

Students enrolled in one of the courses listed above should follow the following directions in order to receive credit:

-Sign up for the study by making an account at the SONA homepage:
https://cornellpsych.sona-systems.com/
-After making an account, you will be able to browse the list of studies and sign up for the study entitled "Body Image Assessment of Female Athletes".

Students (NOT enrolled in one of the courses listed above) interested in participating in the online study should click on the link below:

http://cornell.qualtrics.com/SE/?ID=SV 5u541b412EchNo9

If you have any questions about this study, feel free to contact me by email (mn468@cornell.edu) or cell (412 200 0433).

Sincerely,
Mary Claire Nemeth
Graduate Student
Department of Fiber Science and Apparel Design
Cornell University

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