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The relationship between the susceptibility of eating disorders, self-esteem, and body image in female collegiate student-athletes

Stephanie Elizabeth Dawkins
University of Tennessee

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To the Graduate Council:

I am submitting herewith a thesis written by Stephanie Elizabeth Dawkins entitled "The relationship between the susceptibility of eating disorders, self-esteem, and body image in female collegiate student-athletes." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Sports Management.

Robin Hardin, Major Professor

We have read this thesis and recommend its acceptance:

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

To the Graduate Council:

I am submitting herewith a thesis written by Stephanie Dawkins entitled, "The Relationship between the Susceptibility of Eating Disorders, Self-Esteem, and Body Image in Female Collegiate Student-Athletes." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Sport Management.

Dr. Robin Hardin, Major Professor

We have read this thesis
and recommend its acceptance:

Jim Bemiller, J.D.

Dr. Gi-Yong (Win) Koo

Accepted for the Council:

Carolyn R. Hodges
Vice Provost and Dean of the Graduate School

THE RELATIONSHIP BETWEEN THE SUSCEPTIBILITY OF EATING
DISORDERS, SELF-ESTEEM, AND BODY IMAGE IN FEMALE COLLEGIATE
STUDENT-ATHLETES

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Stephanie Elizabeth Dawkins
May 2009

DEDICATION

This thesis is dedicated to my parents, Chris Dawkins and Michelle Dawkins, my brother Joe Dawkins, my sister and best friend, Chelsey Stoltz, and the rest of my family, for always supporting me, encouraging me, and inspiring me to live life to the fullest.

I love you!

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Lastly, I would also like to thank my family and friends for their support and encouragement throughout my education. They have inspired me in countless ways.

ABSTRACT

Research indicates athletes participating in competitive sports may be at a higher risk for developing an eating disorder than non-athletes (Costin, 2007). A variety of factors may lead to an eating disorder. This study looked at the relationship between the susceptibility to eating disorders, self-esteem, and body image and Division I, Division II, and Division III female collegiate student-athletes, and it considers whether competition level was a factor for developing an eating disorder.

In this study, Division I, Division II, and Division III female athletes were asked to complete a questionnaire that included three subscales of the EDI-2, the Rosenberg Self-Esteem Scale, and the Body Cathexis, in order to determine the eating and exercising attitudes of female student-athletes.

The study's findings showed that there was not a relationship between a student-athletes' competition level and their susceptibility to eating disorders; however, there was a relationship between student-athletes' self-esteem level and body image satisfaction level and their susceptibility to eating disorders. It is recommended athletic departments test their student-athletes' levels of self-esteem and body image in order to set up appropriate interventions programs for athletes who may be susceptible to eating disorders due to their self-esteem levels and/or body image satisfaction levels.

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ABBREVIATIONS

| | |
|--------|--|
| EDI-2 | Eating Disorder Inventory-2 |
| EDNOS | Eating Disorders Not Otherwise Specified |
| DSM-IV | <i>Diagnostic and Statistical Manual of Mental Disorders</i> , 4th edition |

CHAPTER I - INTRODUCTION

Researchers have been increasingly studying the nature and scope of eating-related problems among athletes during the past 20 years. At least one in five women in America today has an eating disorder (Kilbourne, 2001). Between five and 10 million women are struggling with serious eating disorders (Kilbourne, 2001). Eating disorders can lead to serious illnesses and death among athletes, making those disorders important to study and understand (Ryan, 1995). Research has aimed to determine the prevalence of eating disorders among different groups and the general population, the etiology of eating disorders, high-risk groups for eating disorders, health concerns related to eating disorders, and the management of eating disorders. The current study helped build on knowledge about who was at risk for developing an eating disorder, depending on one's status as a female college student-athlete and athletic competition level.

The purpose of this study was to compare the susceptibility of eating disorders, self-esteem, and body image in collegiate female student-athletes. Comparisons between Division I, Division II, and Division III female college student-athletes in order to determine if competition level is a factor in eating and exercising attitudes were also conducted. The current study proposed two research questions: 1) What is the relationship between susceptibility to eating disorders, self-esteem and body image? And 2) Are there differences among the competition levels?

Significance of the Problem

Researchers have studied eating disorders and athletes considerably in the past two decades, but they still have much to learn. The prevalence of eating disorders among

various groups remains unclear. Research has shown that there are certain groups that have a higher risk for developing an eating disorder than other groups. Some of these high-risk groups include college-aged people, females, and athletes. Eating disorders lead to serious illnesses and deaths among many athletes, which makes understanding the relationship between athletes and eating disorders of great significance (Ryan, 1995). It is important to determine which athletes are more susceptible to eating disorders in order to develop educational and counseling programs for those student-athletes. It is also important to find out student-athletes' awareness of education and counseling programs and resources and the actual educational and counseling programs offered by schools in each division level. This knowledge will help build awareness of the needs of student-athletes with eating disorders, which will help protect the physical and emotional health of student-athletes.

The prevalence of eating disorders is increasing among many groups of people, particularly female college athletes. Many studies have been conducted regarding athletes and eating disorders. These studies have surveyed athletes, coaches, trainers, and other administrators. They have examined the prevalence of eating disorders, risk factors for eating disorders, protective factors for eating disorders, and management of eating disorders. Researchers have surveyed athletes to examine the prevalence of eating disorders as well as the etiology of eating disorders. However, few studies have examined the collegiate competition level as a factor for developing an eating disorder. In addition, few studies have examined specifically the relationship between body image and self-esteem in college female student-athletes. Research has found that athletes have several

personality and psychological characteristics that make them more susceptible to eating disorders and that may affect their self-concept and satisfaction with their body and appearance. There is clearly a relationship between an individual's self-esteem and body image and personality characteristics. Female college student-athletes have similar personality characteristics and experiences in the sport setting; however, there is a difference between the levels of competition, possibly the level of pressure, athletes feel as they participate and compete in their sports. Examining the relationship between self-esteem and body image, as well as comparing the differences between the athletic competition levels, is an important to build on the existing body of knowledge associated with high-risk populations for eating disorders and the etiology of eating disorders.

CHAPTER II – REVIEW OF LITERATURE

Researchers have been increasingly studying the nature and scope of eating-related problems among athletes during the past 20 years. Eating disorders can lead to serious illnesses and death among athletes, making those disorders important to study and understand (Ryan, 1995). Research has aimed to determine the prevalence of eating disorders among different groups and the general population, the etiology of eating disorders, high-risk groups for eating disorders, health concerns related to eating disorders, and the management of eating disorders. The purpose of this study was to examine the susceptibility of eating disorders, self-esteem, and body image in female student-athletes and compare Division I, Division II, and Division III female college student-athletes in order to determine if competition level is a factor in eating and exercising attitudes. Based on this study's findings, athletic departments will have more knowledge to be able to serve and protect their student-athletes from the serious ramifications of eating disorders.

The following literature review aims to discuss previous research regarding athletes and eating disorders. More specifically, this literature review examines studies that looked at the susceptibility of eating disorders, self-esteem, and body image attitudes among athletes, subgroups of athletes, and the general population. This literature review looks at studies performed to identify risk factors, protective factors, and groups that are at a high-risk for developing an eating disorder. This review of literature also examines studies performed to assess and make recommendations for management practices of eating disorders. Based on this literature review of research, this study was performed to

expand the knowledge and understanding of the relationship between athletes and eating disorders.

Definition of Eating Disorders

Eating disorders refer to “illnesses that are shown through a variety of unhealthy eating and weight control habits that become obsessive, compulsive, and/or impulsive in nature” (Costin, 2007, p. 2). Eating disorders are not only about food and weight. They are often linked to many psychological issues such as depression and anxiety. First, it is important to distinguish between disordered eating and an eating disorder. Beals (2004) said that the terms eating disorder and disordered eating are often used interchangeably in literature and in general practice. However, the two terms are not synonymous. Eating disorders refer to the American Psychiatric Association’s (APA) three clinically diagnosable conditions, including anorexia nervosa, bulimia nervosa, and eating disorders not otherwise specified (EDNOS) (APA, 1994). A person must meet specific criteria in order to be identified as having an eating disorder. Disordered eating is a general term that describes the continuum of abnormal and harmful eating behaviors people use in order to lose weight or maintain an abnormally low or unhealthy body weight (Otis, Drinkwater, Johnson, Loucks, & Wilmore, 1997). Disordered eating among women who exercise may contribute to behavioral changes leading to conscious food intake restrictions and/or excessive exercise, which may potentially lead to the female athlete triad.

The three clinically diagnosable types of eating disorders are anorexia nervosa, bulimia nervosa, and EDNOS. Anorexia nervosa and bulimia nervosa are listed in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (text revision) (DSM-

IV-TR). EDNOS is also included in the DSM-IV-TR, and it includes various disorders. Binge eating disorder (BED) is the most common disorder in this category and is identified in DSM-IV-TR (Costin, 2007). It is important to learn and understand the different terms of eating disorders because each eating disorder has unique risk factors and health consequences. DSM-IV-TR Diagnostic Criteria for anorexia nervosa includes:

1. Refusal to maintain body weight at or above a minimally normal weight for age and height
2. Intense fear of gaining weight or becoming fat, even though underweight
3. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight
4. In postmenarcheal females, amenorrhea, which is the absence of at least three consecutive menstrual cycles (Costin, 2007, 3).

DSM-IV-TR Diagnostic Criteria for bulimia nervosa includes:

1. Recurrent episodes of binge eating. An episode of binge eating is characterized by eating in a discreet amount of time an amount of food that is definitely larger than most people would eat during the a similar period of time and under similar circumstances and a sense of lack of control over eating during the episode
2. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting, misuse of laxatives, diuretics, enemas, or other medications, fasting, or excessive exercising

3. The binge eating and other inappropriate compensatory behaviors both occur, on average, at least twice a week for three months
4. Self-evaluation is unduly influenced by body shape and weight
5. The disturbance does not occur exclusively during episodes of anorexia nervosa (Costin, 2007, 7).

EDNOS is for eating disorders that do not meet the criteria for any specific eating disorder (Costin, 2007). EDNOS includes a variety of disordered eating habits that do not meet all the criteria for anorexia nervosa or bulimia nervosa. However, EDNOS has serious health effects and can lead to full-blown anorexia nervosa or bulimia nervosa (Costin, 2007). The most common type of eating disorder found in EDNOS is BED.

DSM-IV-TR Diagnostic Criteria for BED includes:

1. Recurrent episodes of binge eating
2. The binge eating episodes are associated with three (or more) of the following: Eating much more rapidly than normal, eating until feel uncomfortably full, eating large amounts of food when not feeling physically hungry, eating alone because of being embarrassed by how much one is eating, and feeling disgusted with oneself, depressed, or very guilty after overeating
3. Marked distress regarding binge eating is present
4. The binge eating occurs, on average, at least two days a week for six months.

The binge eating is not associated with the regular use of inappropriate

Another term researchers created is subclinical eating disorders. Researchers have found that some groups of people, particularly athletes, have symptoms similar to clinical eating disorders but with less severity or frequency (Beals, 2004). These subclinical eating disorders often times lead into a full-blown eating disorder. But, even when a person may be identified as having a subclinical eating disorder, there may be serious health consequence. Beals (2004) reports recent research shows subclinical eating disorders among active women are increasing.

Many studies have been performed regarding eating disorders, but those studies may be difficult to compare or apply to other studies because they might not have researched the same issue regarding these disorders. For example, a study could report findings about female college students *disordered eating* behaviors, but these findings are not looking specifically at clinical *eating disorders*. Clearly defining the study's research terms is important in order to understand and make recommendations based on the findings.

Prevalence of Eating Disorders

Although many studies show that prevalence of eating disorders is increasing, there is a wide range of estimates that is unreliable because many people with eating disorders do not seek treatment (Quatromoni, 2008). The various geographic locations, sample sizes, and competition levels, among many other factors, may be the cause of there being no conclusive evidence about the prevalence of eating disorders.

Bissell (2004) reported the prevalence of women with eating disorders is increasing, and they cite that between 4% and 22% of college-age females engage in disordered eating. Furthermore, the prevalence of female athletes with eating disorders is not much lower (Beals & Manore, 2002). Johnson, Power, and Dick (1999) reported that overall, prevalence of eating disorders among NCAA Division I college athletes was high. The researchers found that no athletes met the DSM-IV-TR criteria for anorexia nervosa and 1.1% of females and no males met the criteria for bulimia nervosa. However, their findings of the prevalence of symptomatic eating behaviors and attitudes are lower than other studies. Johnson et al. (1999) broke down each eating disorder into four diagnostic categories, including DSM-IV, subclinical, self-identified, and at risk, which were clearly defined in the study's methodology. The researchers looked at the prevalence of eating disorders according to those clearly defined categories, which was useful. This study's estimate may be more accurate than other studies because its sample size was larger than most other studies. It also had resources necessary to manage an effective research study. Another interesting explanation for the difference of findings between this study and previous studies is that participants were athletes from the most prominent and competitive schools in the country (Johnson et al., 1999). The researchers said that using Division I athletes, as opposed to Division II or less competitive programs' athletes that previous studies primarily used, may explain why the study found a lower prevalence than earlier studies (Johnson et al., 1999). It seems that Johnson et al. (1999) assumes that competition levels influence an athlete's vulnerability to developing an eating disorder.

The prevalence of eating disorders is not clear; however, research shows that it is increasing. Reports with wide percentage ranges for each eating disorder are considered most accurate. Experts in the area explain that the complexity of the issue makes it hard to determine the actual prevalence of eating disorders among the general population as well as specific groups. One reason for this difficulty is that people suffering from eating disorders often do not admit their eating problems, and therefore, if these people participate in studies, they may not be completely honest, which would affect research results. This study will use different measurement methods and a large sample size in order to gain the most accurate estimate possible.

Etiology of Eating Disorders

Eating disorders are currently understood as having multiple causes, including genetic, biological, psychological, and cultural. Williamson, Netemeyer, Jackman, Anderson, Funsch, and Rabalais (1995) studied female athletes from a major state university and found that a primary and strong mediator of other risk factors for developing eating disorder symptoms was female athletes' over concern with body size. The researchers found that over concern with body size mediated risk factors including social influence for thinness, anxiety about athletic performance, and negative appraisal of athletic achievement (Williamson et al., 1995). This study confirmed other research findings that body image disturbance and body dissatisfaction are key factors causing eating disorders (Rosen, 1992; Slade, 1988; Thompson, 1992; Williamson, 1990). The researchers concluded that multiple factors contribute to college athletes developing eating disorders. Research found that there are other causal factors of eating disorders

besides the emphasis on thinness in some women's sports or the personality characteristics of some young women (Williamson et al., 1995).

Bissell (2004) studied the relationship between entertainment and sports media and athletes' body image and potential for developing eating disorders. The study found that exposure to thin ideal media may be a contributing factor to developing an eating disorder, but more research is needed in this area in order to learn more about the effects of media. The Media Education Foundation uses a passage from *Reviving Ophelia*, Mary Pipher to describe society's emphasis and obsession with thinness:

...the omnipresent media consistently portrays desirable women as thin...even as real women grow heavier, models and beautiful women are portrayed as thinner. In the last two decades we have developed a national cult of thinness. What is considered beautiful has become slimmer and slimmer. For example, in 1950 the *White Rock* mineral water girl was 5 feet 4 inches tall and weighed 140 pounds. Today she is 5 feet 10 inches and weighs 110 pounds. Girls compare their own bodies to our cultural ideals and find them wanting. Dieting and dissatisfaction with bodies have become normal reactions to puberty. Girls developed eating disorders when our culture developed a standard for beauty that they couldn't obtain by being healthy. When unnatural thinness became attractive, girls did unnatural things to be thin. (Media Education Foundation, p. 19)

According to Jean Kilbourne in *Killing Us Softly 3* (2001), as girls reach adolescence, they get the message that they should not be too powerful, should not take up too much space. They are told constantly that they should be less than what they are. Culture creates many unachievable standards for women to meet, and in order to change these standards, people must become more aware and educated on how they think of themselves (Kilbourne, 2001).

Berry and Howe (2000) studied female college student-athletes and found that a strong predictor of eating disorder symptoms was concern with body size. Previous

research has shown that concern with body size is a symptom leading to eating disorders among athletes and non-athletes. The researchers also found that athletes strive for bodies that are “ideal” for the sport in which they participate (Berry & Howe, 2000). They also found a relationship between self-esteem and eating disorders, supporting previous research (Berry & Howe, 2000). Research has shown that low self-esteem can lead to eating disorders. This finding leads to confusion because in general, research has found that most athletes do not struggle with low self-esteem, which would mean this factor would not lead athletes to an eating disorder. However, several studies have shown that athletes are more likely to develop an eating disorder than non-athletes who may have lower self-esteem. It is possible that athletes may not have low self-esteem that leads to an eating disorder, but there are other factors that lead an athlete to an eating disorder. Among the risk factors that Berry and Howe (2000) listed were self-esteem, competition anxiety, social pressure, and body image. This study showed that each of these factors led to unhealthy eating and exercising practices (Berry & Howe, 2000).

Thompson and Sherman (1999) compared personality characteristics of athletes and people with anorexia nervosa. They concluded that many characteristics found in anorexics are not only found in athletes, but those characteristics are encouraged in athletes (Thompson & Sherman, 1999). The researchers explain that many coaches and athletic administrators see traits or symptoms of eating disorders as positive attitudes and behaviors, and therefore, these people often fail to identify athletes who may be suffering from an eating disorder (Thompson & Sherman, 1999). Thompson and Sherman (1999)

conclude that athletic administrators must learn and educate other about eating disorders in order to prevent, identify, and treat athletes who are vulnerable to eating disorders.

Eating disorders can occur due to a variety of factors, including environmental factors, biological, psychological factors, and socio-cultural factors. Many studies have already aimed at looking at many of these factors. The purpose of this study was to look at specific elements of the athletic environment and try to determine factors within the athletic environment that could cause athletes to be at a greater risk than other athletes.

High Risk Populations for Eating Disorders

College-Aged People

Quatromoni (2008) reports disordered eating is a common concern for all college-aged women, particularly female college athletes. She also says that this concern is increasing for males. The high demands of collegiate athletics, in addition to college lifestyles, make college athletes at high risk for developing an eating disorder.

Quatromoni (2008) says that strong competitive pressures, lack of financial resources, and underdeveloped life skills may lead to eating disorders among college athletes. Hoek (1995) found that female college students are a particularly high-risk group for eating disorders.

Females

Johnson et al. (1999) found that eating disorders appeared to be more of a problem for female athletes than male athletes. Wilkens, Boland, and Albinson (1991) also found that females scored significantly higher than males on an aggregate measure of eating disorders. The researchers conclude that this finding aligns with other research

that shows females are pressured by various socio-cultural factors, and societal pressures and values also affect these female athletes (Wilkens et al., 1991).

Athletes

Researchers have identified athletes as a population at risk for the development of eating disorders (Picard, 1999). Smolak, Mumen, and Rubie (2000) performed a meta-analysis of several different studies regarding the prevalence of eating disorders between athletes and non-athletes. The meta-analysis found that athletes showed slightly more eating problems than non-athletes, but this small, but significant, difference was debatable (Smolak et al., 2000). Smolak et al. (2000) found that subgroups of athletes were more prone to eating disorders than other subgroups. Those groups more prone to eating problems included college women, dancers, lean sport athletes, and elite athletes (Smolak et al., 2000). Smolak et al. (2000) also reported that some athletes were less likely to have eating problems compared to non-athletes. For example, athletes participating in non-lean sports reported healthier eating and exercising habits than non-athletes (Smolak et al., 2000). Smolak et al. (2000) concluded that it was still not clear whether sports participation was a risk factor or a protective factor. But, as other studies have reported, personality characteristics, external pressures, or sport demands may cause an athlete to develop an eating disorder (Smolak et al., 2000). Smolak et al. (2000) states the need for additional research to study the specific elements of sports participation that increase the risk of a person developing an eating disorder.

Taub and Blind (1992) studied high school female athletes and found that athletes were more like to have certain behaviors and psychological characteristics that may lead

to eating disorders. They also found that bulimic behavior was more likely to occur by athletes than non-athletes, which is similar to previous research (Taub & Blinde, 1992). The researchers also found that despite athletes being more vulnerable to developing an eating disorder than non-athletes, athletes expressed higher self-esteem than non-athletes. Because of this finding, the researchers concluded that the difference in risk between athletes and non-athletes is not a significant as previous research suggests (Taub & Blinde, 1992).

Skowron and Friedlander (1994) studied elite athletes and found that weight preoccupation is not more highly prevalent among elite athletes than among non-athletes. Furthermore, Skowron and Friedlander (1994) found that athletes who are preoccupied with weight are not likely to be suffering from eating disorders but are concerned with their weight due to other factors. The researchers also found athletes who are at risk for developing an eating disorder are similar to non-athletes in that they are having trouble separating an adequate sense of self, are dependent on their parents, and engage in destructive forms of self-restraint (Skowron & Friedlander, 1994). They concluded that it is inaccurate to believe that athletes are at higher risk than non-athletes.

Wilkens et al. (1991) studied male and female college students and found that athletes were not more likely to develop an eating disorder than non-athletes. The researchers found that the prevalence of eating disorder signs and symptoms among athletes was lower than non-athletes (Wilkens et al., 1991). Schwarz, Gairrett, Aruguete, and Gold (2005) also found that athletes as a group did not show more symptoms of eating disorders than non-athletes. Similar to other studies, Schwarz et al. (2005) found

that the only significant difference between athletes and non-athletes was the non-athletes reported a higher amount of body dissatisfaction. They also found that athletes scored higher in perfectionism than non-athletes (Schwarz, 2005). Thompson and Gabriel (2004) found that female college athletes and non-athletes show similar behaviors that suggest disordered eating, menstrual dysfunction, and high levels of exercise, which aligns with many studies finding that eating disorders and the female athlete triad can occur in elite athletes and people who are simply physically active. Kirk, Singh, and Getz (2001) findings agree that there is not a disordered eating is not more prevalent among athletes compared to non-athletes in college. The researchers point out that their study may have differed from previous findings because of timeliness, geographic location, and a college's specific athletic program (Kirk et al., 2001). For example, the amount of pressure a college places on its athletes could be different among different colleges, and therefore different study samples, which may influence the prevalence of disordered eating. This reason also goes along with the competition level that a college participates in. In addition, the resources a college have to prevent and treat eating disorders could also influence the prevalence of eating disorders, which makes it necessary to consider this factor when studying the prevalence of eating disorders.

Krane, Stiles-ShIPLEY, Waldron, and Michalenok (2001) studied the attitudes and behaviors of female athletes and female exercisers and found that people in different types of uniforms or clothing did not differ in body dissatisfaction, drive for thinness, bulimia, and SPA (Social Physique Anxiety). This finding does align with other findings that athletes in certain sports feel pressure because they are judged on appearance or

restricted by weight, leading some of these athletes to eating disorders. Krane et al. (2001) reported that perfectionism was found more in athletes than non-athletes, which is a personality trait that could lead to an eating disorder. However, they report that their findings in general show athletes and exercisers to be more similar than dissimilar (Krane et al., 2001). The researchers suggest that sports participation or physical activity may help people to have higher body satisfaction those people who do not participate in activity (Krane et al., 2001).

Sport-Specific

Researchers have claimed that eating disorders may be more pervasive than expected in specific sports. Remuda Programs for Eating Disorders, an eating disorder treatment center, says, “Female athletes are more prone to eating disorders when they are involved in sports where there is pressure to have a certain body type, weigh a certain amount, or when success depends on their appearance as much as their performance” (“Eating disorders,” 2007). Remuda research finds that 13 percent of female athletes participating in judged sports have an eating disorder while only 3 percent of the general population has an eating disorder (“Eating disorders,” 2007). Several studies suggest that athletes who participate in aesthetic sports, weight class sports, or endurance sports are at the greatest risk for developing an eating disorder or the female athlete triad. Schwarz et al. (2005) found that the risk of eating disorders changes depending on type of sport. The researchers found that athletes participating in judged sports were more likely to diet than athletes participating in refereed sports.

Zucker, Womble, Williamson, and Perrin (1999) studied female college athletes and found that athletes competing in judged sports were more likely to be diagnosed with an eating disorder than athletes competing in refereed sports and non-athletes. Athletes competing in judged sports reported a higher drive for thinness (Zucker et al., 1999). Zucker et al. (1999) reported that all judged sport athletes, refereed sport athletes, and non-athletes did not differ on measures of emotional disturbance, which means that the difference between judged sport athletes and the other two groups is caused by those athletes' concern with body size. The study found no difference in prevalence of eating disorders between athletes competing in refereed sports and non-athletes (Zucker et al., 1999). Zucker et al. (1999) concluded that more research is needed to determine the protective and risk factors for athletes regarding eating disorders in order to develop appropriate prevention and treatment programs. The purpose of my study will be to look at a specific aspect of the athletic environment, rather than the athletic environment as a whole, in order to determine its function as a potential risk factor that may interact with individual vulnerabilities that could lead to the development of an eating disorder.

However, Taub and Blinde (1992) found that the prevalence of eating disorders did not vary significantly between different athletic teams. Berry and Howe (2000) also found that there was not a clear relationship between sport team membership and eating disorders. The researchers found that developing an eating disorder is possible for all athletes (Berry & Howe, 2000).

Warren, Stanton, and Blessing (1990) studied Division I female athletes and found that sports where low body weight is important (gymnastics, cross-country

running) does not mean that those athletes are more at risk for developing eating disorders. The researchers found that cross-country runners reported less eating disorder symptoms than non-athletes (Warren et al., 1990). On the other hand, the researchers found that gymnasts may be more prone to developing an eating disorder compared to a cross-country runner because gymnasts reported higher drives for thinness and body dissatisfaction (Warren et al., 1990). Even though the researchers did not find significant differences in most eating disorder symptoms between athletes and non-athletes, they found that gymnasts were more preoccupied with weight than other groups.

It is not clear whether athletes are more at risk for developing an eating disorder than non-athletes. It is also not clear which specific sports' athletes are more prone to developing eating disorders (although most studies point toward sports that emphasize leanness, aesthetics, and endurance). Most studies group sports into categories and do not look at each sport individually, which leads to mixed results. It is difficult to compare studies when some use terms such as lean/non-lean or judged/refereed as well as place sports in different categories than other studies. On the other hand, research has shown that females are more prone to eating disorders than males. And, it appears that college-age people are more vulnerable to developing an eating disorder than other groups of people. This study will look specifically at female college student-athletes.

Management of Eating Disorders among Athletes

Identification

Competing in athletics can make it difficult to identify whether an athlete has an eating disorder. Even highly trained psychologists can have a difficult time distinguishing

acts and statements that can accompany an eating disorder (Scott, 2006). Athletes may not admit to an eating disorder for fear of losing playing time or displeasing others. And, often times, restricting calories and excessive exercise are perceived as normal habits in athletics. But, if an athlete continues these habits, the long-term consequences could be negative.

Scott (2006) reports a study that found that only 43% of college women's athletic coaches could identify the three parts of the female athlete triad even though coaches are expected to be able to detect eating disorders.

Prevention and Treatment

Quatromoni (2008) said that most organizations lack resources to promote the health and well being of their athletes. She stated that college athletes need health and nutrition programs and resources based on evidence she found on the significant health consequences for athletes across a variety of teams (Quatromoni, 2008).

Johnson et al. (1999) said that coaches, athletic administrators, athletes, and their parents need to be more aware that pursuing a low percentage of body weight can have negative physiological and psychological effects. Thompson and Gabriel (2005) also suggest that physical educators and coaches need to inform students and athletes about the serious short-term and long-term consequences of disordered eating. Problems with disordered eating and eventually eating disorders are perpetuated when physical educators, coaches, teachers, and parents do not provide information or intervene when a signs occur (Thompson & Gabriel, 2005). Brownell and Fariburn(1995) reports about the

lack of knowledge regarding identification, prevention, and treatment of eating disorders and concludes that more research is needed in this area.

Heffner, Ogles, Gold, Marsden, and Johnson (2003) surveyed coaches of college women athletics teams representing all NCAA division levels and reported that a large proportion of coaches engage in some form of monitoring or weight management behaviors of their athletes. Coaches reported that many on-campus resources are available for athletes struggling with eating and exercising problems, and they also said they were aware of eating disorder symptoms and could identify athletes at risk (Heffner et al., 2003). Heffner et al. (2003) examined coaches from all NCAA division levels and found that Division I coaches engaged in more monitoring than coaches of other levels. Division I coaches also reported more athletes with eating disorder symptoms and more prevention and intervention resources available for athletes (Heffner et al., 2003). Confirming and expanding on this finding is important in order to prevent and treat athletes who may be suffering with an eating disorder.

Berry and Howe (2000) studied college female athletes and found that coaches and peers play an important and influential role regarding athletes and eating disorders. The researchers suggested that coaches and athletic administrators should gain more knowledge and education regarding eating disorders in order to serve and protect their athletes (Berry & Howe, 2000). Berry and Howe (2000) also stated the need for more research in regard to prevention and treatment of eating disorders.

There have been a few studies regarding identification, prevention, and treatment programs for eating disorders among athletes. However, most studies looked at

prevalence and identification of eating disorders by coaches and athletic administrators and made recommendations based on their findings.

Summary

The prevalence of eating disorders is increasing among many groups of people, particularly female college athletes. Many studies have been conducted regarding athletes and eating disorders. These studies have surveyed athletes, coaches, trainers, and other administrators. They have examined the prevalence of eating disorders, risk factors for eating disorders, protective factors for eating disorders, and management of eating disorders. Researchers have surveyed athletes to examine the prevalence of eating disorders as well as the etiology of eating disorders. However, few studies have examined the collegiate competition level as a factor for developing an eating disorder. The purpose of this study was to compare the susceptibility of eating disorders, self-esteem, and body image attitudes in college female student-athletes and then between Division I, Division II, and Division III female college athletes.

CHAPTER III - METHODOLOGY

The current study applied the method Johnson *et al.* (1995) used to assess disordered eating in male and female Division I athletes in order to examine disordered eating in current female student-athletes in Division I, Division II, and Division III athletics. An e-mail was sent to the athletic training and/or sports medicine department of Division I, Division II, and Division III institutions from each of the four regions designated by the U.S. Census Bureau (see Appendix A). These regions are the West, Midwest, Northeast, and South. Research participation request e-mails were sent to identified institutions. The first e-mail requested participation in the study (see Appendix A).

After an institution committed to participating in the study, a link to the questionnaire was sent to the contact person who would be able to send the link through e-mail to the institution's female student-athletes (see Appendix A).

Instrumentation

This study used a questionnaire that assessed demographics, nature and extent of athletic involvement, eating-related behaviors, and attitudes toward body image and self-esteem issues (see Appendix A). The questionnaire included three subscales of the Eating Disorder Inventory-2 (EDI-2), including Body Dissatisfaction, Drive for Thinness, and Bulimia (Garner, 1991). It used the Rosenberg Self-Esteem Scale (Rosenberg, 1965) and the Body Cathexis Scale (Secord & Jourard, 1953).

Eating Disorder Inventory-2

The EDI-2 assessed many behavioral and psychological traits common in anorexia nervosa and bulimia nervosa. In this study, the EDI-2 was not used to screen for an eating disorder, but it was used as a part of typological research. Powers and Thompson (1996) say that screening tools such as the EDI-2 are not specific to athletes with eating disorders and are not adequately sensitive for athletes. These tools screen for eating disorders symptoms where athletes may not be willing or able to acknowledge the eating disorder (Powers & Johnson, 1996). Screening tools that are considered more accurate in detecting eating disorders of athletes require extensive training and administering by qualified personnel. The EDI-2 was used in this study to help look at the *susceptibility* of athletes to eating disorders; use of the test was not meant to determine the prevalence of eating disorders among athletes.

This study used an NCAA study (Johnson, et al., 1999) to formulate the female athlete survey. The survey consisted of three subscales of the EDI-2, including Drive for Thinness (DT), Body Dissatisfaction (BD), and Bulimia (B) in order to look at an athlete's susceptibility to an eating disorder. Athletes who scored at an elevation on either of the two subscales Drive for Thinness or Body Dissatisfaction were defined as at risk for an eating disorder. Athletes who scored at an elevation on the Bulimia Nervosa subscale were defined as at risk for an eating disorder.

The EDI-2 portion of the survey included 21 questions that could be answered by the following options: always, very often, often, sometimes, rarely, and never (Beals, 1999). The student-athletes' responses were graded in the following manner: Always=3;

Very often=2; Often=1; Sometimes, rarely and never=0. The most extreme eating disorder like response earned a score of 3, the immediately before response earned a 2, and the next response earned a 1. The other three responses received no score (Beals, 1999). In order to determine a student-athlete's score and level of each subscale, the sum of all items for that particular subscale (DT, BD, or B) was found (Machado, et. al., 2004; Nagel, 2002).

This study classified people who were susceptible to anorexia in the following way: Female collegiate student-athletes were at-risk for susceptibility to anorexia if they scored 10 points or more on the Drive for Thinness scale and 12 points or more on the Body Dissatisfaction scale (Johnson, et. al., 1999).

This study classified people who susceptible to bulimia in the following way: Female collegiate student-athletes were at-risk for susceptibility to bulimia if they scored 10 points or more on the Drive for Thinness scale and 12 or more points on the Bulimia scale (Johnson, et. al., 1999).

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale measured athletes' self-esteem. Dr. Rosenberg, a professor of sociology at the University of Maryland, developed the Rosenberg Self-Esteem Scale, and it is one of the most widely used measures of self-esteem in social science research. According to Rosenberg (1965), self-esteem is a positive or negative orientation toward oneself. It is an overall evaluation of one's worth or value, and people strive to have high self-esteem (Rosenberg, 1965). Self-esteem is only one component of the self-concept, which Rosenberg (1965) defines as a person's thoughts and feelings

related to himself or herself as an object. According to Rosenberg (1965), self-esteem, self-efficacy or mastery, and self-identities are all parts of the self-concept.

The Rosenberg Self-Esteem Scale is a Likert-type scale, consisting of 10 items that are answered on a four-point scale ranging from strongly agree to strongly disagree. The scale has fairly high reliability; the test-retest correlations are between .82 and .88. To score the items, a value was assigned to each of the 10 items as follows: For items 1, 3, 4, 7, 10: Strongly Agree=3, Agree=2, Disagree=1, and Strongly Disagree=0. For items 2, 5, 6, 8, 9: Strongly Agree=0, Agree=1, Disagree=2, and Strongly Disagree=3. The scale ranges from 0 to 30.

Researchers have differed in their total scoring and number of points they included in the response scale for each question. Some research, including this study, calculated the scale's total score by summing subjects' responses across all 10 questions (Kaplan and Pokorny, 1969; McCarthy and Hoge, 1982, Shahani, Dipboye, & Phillips, 1990; Hagborg, 1993). Some research, including this study, used a 4-point scale (similar to McCarthy and Hoge, 1982), whereas other research used a 6-point scale (Shahani, et al., 1990). Empirical evidence was performed to determine the validity and the reliability of the Rosenberg Self-Esteem Scale and its different versions.

The original Rosenberg Self-Esteem Scale (1965) was used to test the self-esteem levels of high school students. It used the 6-point Guttman scaling and was found to have a reproducibility of .92 and scalability of .72. This study showed a significant association ($p < 0.5$) between the Rosenberg Self-Esteem Scale and self-reports and nurses' and peers'

ratings of depression, psychological indicators of anxiety, peer group reputation, and other relevant constructs.

Rosenberg Self-Esteem scores between 15 and 25 are within the normal range. Scores below 15 suggest low self-esteem. And, scores above 25 suggest high self-esteem. Higher scores define higher self-esteem (Rosenberg, 1965). There are no discreet cut-offs when it comes to high and low self-esteem. Current literature was consulted to see what female college student-athletes represent right now with the scale. In one study, collegiate athletes mean score was 15.85 with a standard deviation of 1.33, according to Armstrong and Oomen (2009).

Body Cathexis Scale

The Body Cathexis Scale looks at how athletes view their bodies. Body cathexis is closely related to body image but is “the degree of satisfaction with the body, however, rather than the image per se” (Kaiser, 1997, p. 108). Body cathexis may be considered an integral part of body image and the self-concept (Robinson, 2003). It is the evaluative dimension of body image and is defined as positive and negative feelings toward one’s body (Jourard, 1958).

In this study, the Body Cathexis Scale asked student-athletes to rate the degree of satisfaction with several body parts and features, including facial features, complexion, hair, hips, thighs, buttocks, waist, stomach, bust, shoulders, arms, muscle tone, weight, height, and overall appearance. Student-athletes were able to respond on a scale with five different responses, including have strong feelings and wish change could somehow be

made, don't like, but can put up with, have no particular feelings one way or the other, am satisfied, and consider myself fortunate, for each of the body parts and features listed.

For the purposes of discussing the body cathexis of respondents, the responses for "am satisfied" and "consider myself fortunate" were combined to determine satisfaction, and the responses for "don't like, but can put up with" and "have strong feelings and wish change could somehow be made" were combined to determine dissatisfaction (Robinson, 2003). Values were assigned to each response as follows: have strong feelings and wish change could somehow be made=1; don't like, but can put up with=2; have no particular feelings one way or the other=3; am satisfied=4; consider myself fortunate=5.

In this study, the average body cathexis score was computed by adding up the answers for the 46 items in the body cathexis subscale and dividing the sum by 46 (the total number of body cathexis items), resulting in a number between 1 and 5.

Procedures

This study was performed following the guidelines of the University of Tennessee's Institutional Review Board for Human Subjects (see Appendix A). The athletic training and/or sports medicine departments of the selected institutions were sent an e-mail describing the study and requested for participation in the study (see Appendix A). Once an institution committed to participating in the study, the contact at that institution was sent the questionnaire link to distribute via e-mail to the female student-athletes at the institution (see Appendix A).

Operational Definitions

Anorexia Nervosa

The *Eating Disorders Sourcebook* (2007) defines anorexia nervosa as, “ A mental disorder manifested by extreme fear of becoming obese and an aversion to food, usually occurring in young women and often resulting in life-threatening weight loss, accompanied by a disturbance in body image, hyperactivity, and amenorrhea.” The *Clinical Manual of Eating Disorders* (2007) says that people with anorexia nervosa lose weight by restricting their food intake and excessive exercising. According to The *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association 2000), the four main criteria include: Refusal to maintain body weight at or above a minimally normal weight for age and height; Intense fear of gaining weight or becoming fat, even though underweight; Disturbance in the way in which one’s body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight; In postmenarcheal amenorrhea, i.e., the absences of at least three consecutive menstrual cycles.

Bulimia Nervosa

The *Eating Disorders Sourcebook* (2007) defines bulimia nervosa as, “A Chronic morbid disorder involving repeated and secretive episodic bouts of eating characterized by uncontrolled rapid ingestion of large quantities of food over a short period of time, followed by self-induced vomiting, use of laxatives or diuretics, fasting, or vigorous exercise in order to prevent weight gain. It is often accompanied by feelings of guilt,

depression, or self-disgust.” The *Clinical Manual of Eating Disorders* (2007) says that people with bulimia nervosa struggle with recurrent binge eating, compensatory behaviors, and related cognitions. The five main criteria for bulimia nervosa according to DSM-IV-TR are: Recurrent episodes of binge eating. An episode of binge eating is characterized by eating, in a discrete period of time, an amount of food that is definitely larger than most people would eat during a similar amount of time and under similar circumstances and a sense of lack of control over eating during the episode; Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting, misuse of laxatives, diuretics, enemas, or other medications, fasting, or excessive exercise; The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for three months; Self evaluation is unduly influenced by body shape and weight; The disturbance does not occur exclusively during episodes of anorexia nervosa.

Eating Disorders Not Otherwise Specified

According to the *Eating Disorders Sourcebook* (2007), eating disorders not otherwise specified include, “Characteristics of one or more eating disorders but does not fit the diagnostic criteria for any one disorder.”

Eating Disorders

The *Eating Disorders Sourcebook* (2007) defines eating disorders as, “A group of mental disorders including anorexia nervosa, bulimia nervosa, pica, and rumination disorder of infancy.

Disordered Eating

According to the *Eating Disorders Sourcebook* (2007), disordered eating, “Refers to troublesome eating behaviors, such as restrictive dieting, bingeing, or purging, which occur less frequently or are less severe than those required to meet the full criterion for the diagnosis of an eating disorder.

Body Cathexis

The body cathexis is the evaluative dimension of body image (Jourard, 1958). It is the degree of feeling of satisfaction and dissatisfaction with the various parts or processes of the body (Secord and Jourard, 1953).

CHAPTER IV - RESULTS

Participants

This study included 439 female student-athlete respondents. A total of 17 institutions from Division I, II, and III competition levels participated in the study. The institutions that participated in the study were categorized by NCAA division level and geographic region, as defined by the U.S. Census Bureau. In terms of division level, five Division I schools, six Division II schools, and six Division III institutions participated in the study. In terms of geographic region, two Northeastern schools, six Midwestern schools, eight Southern schools, and three Western schools participated in the study. All demographic information, psychographic information, information regarding access to athletic departments' eating disorder resources, and questionnaire results are included in Appendix B.

Questionnaire Results

Demographic Profile

In the study, respondents ranged with regard to their year of athletic eligibility. Freshmen student-athletes responded to the questionnaire more than any other group, making up 34.9% of the total respondents (see Table 1). The majority of the respondents defined themselves as White (see Table 1). The student-athletes who responded to the study represented fairly evenly each NCAA competition level. According to the questionnaire results, 38.5% of the female student-athlete respondents competed in the NCAA Division I Level, 24.1% of the respondents competed in the NCAA Division II Level, and 37.4% of the respondents competed in the NCAA Division III Level (see

Table 1). In addition, it was important to ask respondents their scholarship category in order to determine other possible influential or contributory factors to student-athletes eating and exercising behaviors as well as self-esteem and body image satisfaction levels. Of the total respondents, 42.6% did not receive any sort of scholarship, 41.7% received a partial scholarship, and 15.7% received a full scholarship (see Table 1). It is important to note that Division III student-athletes are not allowed to receive athletic scholarships. It is also important to note that there were no guidelines set for the partial scholarship category. For example, the same weight was placed on a student-athlete who received 80% scholarship as a student-athlete who received only 20% scholarship. It also did not distinguish the type of scholarship was receiving from the institution. For example, it did not distinguish whether a student-athlete was receiving an athletic scholarship or another type of scholarship (i.e. academic scholarship, leadership scholarship, or other form of scholarship). These notes are important to consider when analyzing the questionnaire results and determining the meaning of those questionnaire results.

Perception of Athletic Departments' Eating Disorder Resources

In addition to demographic and psychographic questions, the female college student-athletes were asked about eating disorder prevention programs and treatment programs in their athletic departments in order to understand student-athletes perceptions of eating disorder resources available to them in their institutions. In the current study, 25.5% of the respondents said that their athletic departments offered eating disorder prevention classes (see Table 2); however, only 3.9% of respondents said their athletic departments required their athletes to take eating disorder prevention classes (see Table

2). In terms of eating disorder treatment resources, 67.9% of the respondents said their athletic departments offered treatment resources for their athletes. It is important to note that these responses were based on student-athletes' perceptions of their athletic departments eating disorder resources. For example, a student-athlete may have responded that her institution did not offer an eating disorder prevention class when in fact her institution did offer an eating disorder prevention class.

Psychographic Profile

In the current study, student-athletes were asked questions regarding their eating and exercising behaviors, their self-esteem, and their body image in order to determine their susceptibility to anorexia and bulimia, their self-esteem level, and their body image satisfaction level. The study's results showed that few student-athletes were susceptible to anorexia or bulimia (see Table 3). In fact, the study showed that less than 7% of student-athletes were susceptible to anorexia, and less than 2% were susceptible to bulimia (see Table 3). The study's results also showed that the majority of student-athletes fell within the normal self-esteem level (see Table 3). The results also showed that more than a quarter of the total student-athletes fell within the high self-esteem category (see Table 3). Overall, the student-athletes also appeared to be at least satisfied with their body image (see Table 3). Of the total student-athlete respondents, 23% fell within the very satisfied category for body image satisfaction (see Table 3).

Self-Esteem and Susceptibility to Eating Disorders

This study found that of the total respondents, 30 student-athletes were susceptible to anorexia. This study looked at the self-esteem level of those student-

athletes who were susceptible to anorexia and those student-athletes who were not susceptible to anorexia (see Table 4). The results showed that of the total group of student-athletes who were susceptible to anorexia, 50% of student-athletes who were susceptible had a normal self-esteem level (see Table 4). Another 46.7% of student-athletes who were susceptible to anorexia had a low self-esteem level (see Table 4). There were few student-athletes who had high self-esteem who were found susceptible to anorexia. The Chi-Square Test was .000, showing a strong relationship between self-esteem and susceptibility to anorexia.

This study found that of the total respondents, 8 student-athletes were susceptible to bulimia. This study looked at the self-esteem level of those student-athletes who were susceptible to bulimia and those student-athletes who were not susceptible to bulimia (see Table 5). The results showed that of the total group of student-athletes who were susceptible to bulimia, 75% of student-athletes who were susceptible had a low self-esteem level (see Table 5). Another 25% of student-athletes who were susceptible to bulimia had a normal self-esteem level (see Table 5). There were no student-athletes who had a high self-esteem who were found susceptible to bulimia. The Chi-Square Test was .000, showing a strong relationship between self-esteem and susceptibility to bulimia.

Body Image Satisfaction and Susceptibility to Eating Disorders

This study found that of the total respondents, 30 student-athletes were susceptible to anorexia. This study looked at the body image satisfaction level of those student-athletes who were susceptible to anorexia and those student-athletes who were not susceptible to anorexia (see Table 6). The results showed that of the total group of

student-athletes who were susceptible to anorexia, 53.3% of student-athletes who were susceptible were satisfied with their body image (see Table 6). More than 46% of student-athletes who were susceptible to anorexia were dissatisfied with their body image (see Table 6). The results showed that 65.3% of student-athletes who were not susceptible to bulimia were satisfied with their body image. Another 24.7% who were not susceptible to bulimia were very satisfied with their body image. The Chi-Square Test was .000, showing a strong relationship between body image satisfaction and susceptibility to anorexia.

This study found that of the total respondents, 8 student-athletes were susceptible to bulimia. This study looked at the body image satisfaction level of those student-athletes who were susceptible to bulimia and those student-athletes who were not susceptible to bulimia (see Table 7). The results showed that of the total group of student-athletes who were susceptible to bulimia, 87.5% of student-athletes who were susceptible to bulimia were dissatisfied with their body image (see Table 7). Another 12.5% of student-athletes who were susceptible to bulimia were satisfied with their body image (see Table 7). The results showed that from the total student-athletes who were not susceptible to bulimia, 65.4% were satisfied with their body image. In addition, 23.4% of those student-athletes who were not susceptible to bulimia were very satisfied with their body image. The Chi-Square Test was .000, showing a strong relationship between self-esteem and susceptibility to bulimia.

Division Level and Self-Esteem

The current study examined the relationship between student-athletes' division level and self-esteem level (see Table 8). The Chi-Square Test for this relationship was .144, showing that there was a significant relationship.

Division Level and Body Image Satisfaction

The division level and body image satisfaction level was also examined in this study (see Table 9). The Chi-Square Test for this relationship was .568, showing that there was a significant relationship.

Division Level and Susceptibility to Eating Disorders

This study also looked at student-athletes' division level and susceptibility to eating disorders. The study looked at student-athletes' division level and susceptibility to anorexia (see Table 10). The Chi-Square Test for this relationship was .842, showing that there was a significant relationship.

Division level and susceptibility to bulimia (see Table 11). The Chi-Square Test for this relationship was .998, showing that there was a significant relationship.

CHAPTER V - DISCUSSION

The purpose of this study was to examine the susceptibility of eating disorders, self-esteem, and body image in female college student-athletes and compare Division I, Division II, and Division III female college student-athletes in order to determine if competition level was a factor in eating and exercising attitudes. This study examined the relationship between the susceptibility to eating disorders, self-esteem, and body image and Division I, Division II, and Division III female collegiate student-athletes. The current study proposed two research questions. The first question was what was the relationship between susceptibility to eating disorders and self-esteem and body image? The second question was whether there were differences between the competition levels?

Conclusions

The study found that there was not a significant relationship between student-athletes' competition levels and their body image satisfaction levels or self-esteem levels. The study also found that there was not a relationship between student-athletes' competition levels and their susceptibility to anorexia or bulimia.

The most significant findings were that there was a strong relationship between student-athletes' body image satisfaction level and susceptibility to eating disorders as well as student-athletes self-esteem level and susceptibility to eating disorders. The study found that female college student-athletes who were satisfied with their body image were not susceptible to developing an eating disorder. On the other hand, the study found that student-athletes who were dissatisfied with their body image were susceptible to developing an eating disorder. In addition, the study showed self-esteem affects a

student-athlete's susceptibility to eating disorders. Female college student-athletes with high self-esteem were not susceptible to eating disorders. They were less likely to develop anorexia or bulimia. On the other hand, female college student-athletes with low self-esteem were susceptible to eating disorders.

Picard (1999) said that athletes tend to show several personality characteristics similar to those characteristics found in individuals with eating disorders. As this study showed, there was not a significant relationship between student-athletes' competition levels and their susceptibility to eating disorders. Similar to the study by Johnson et al. (1999), this study showed that not many Division I female college student-athletes met the criteria for anorexia or bulimia. This study showed that none of the three competition levels had a significant amount of student-athletes who met the requirements for an eating disorder, but all had similar percentages. Many athletes share similar personality characteristics, regardless of competition level, which could explain this finding (Costin, 2007); however, this study showed that athletes' body image satisfaction levels as well as student-athletes' self-esteem levels determined their susceptibility to eating disorders. Costin (2007) said that having a strong sense of self as well as a healthy level of self-esteem helps protect any individual, athletes and non-athletes, from developing an eating disorder. Beals (1999) also said that athletes, similar to non-athletes, with eating disorders usually have low self-esteem and lack a strong sense of self-concept. Low self-esteem often leads to an obsession with body weight (Beals, 1999). This obsession with body weight leads to constant dissatisfaction. Athletes are competitors who are trying to achieve success in their sport and perform to the best of their abilities. Some athletes

believe that thinness helps them achieve fitness and top performance (Beals, 1999). Regardless of competition level, athletes are competing and striving to perform as best they can. If athletes have low self-esteem or personality characteristics that may lead to eating disorders or cause them to be more susceptible to eating disorders, then their competition level will not matter.

The study found that most student-athletes at all competition levels fell within the normal to high range for self-esteem levels as well as defined themselves as satisfied with their body image. The study showed that there were few student-athletes who were defined as susceptible to eating disorders, which can be explained by the relationship this study found between student-athletes' body image satisfaction and self-esteem. There was a low amount of student-athletes who were susceptible to anorexia or bulimia because most student-athletes who responded to this study had normal to high self-esteem levels and were satisfied with their body image. These findings suggested that self-esteem and body image among student-athletes were not major issues. They showed that female college student-athletes seemed to be comfortable with themselves.

Several factors could explain female college student-athletes' body image satisfaction and normal to high self-esteem levels. Costin (2007) discussed the influence of coaches, parents, and peers on athletes. If athletes are well supported by people in their life, they will have higher self-esteem and a more satisfied body image. Involvement in college activities and people may also be a factor for student-athletes' higher self-esteem levels. Research showed that being a part of groups, clubs, and other activities led to more confidence and self-esteem in individuals. Another factor the variety of sports

opportunities provided to women as well as success within these sports opportunities. Beals (1999) said that athletes often times equate body image and self-esteem with their performance. For example, an athlete who performs at a high level and experiences success may have a more positive self-esteem level than those athletes who do not experience the same success.

Media coverage of women in sport may be an additional factor for positive self-esteem and body satisfaction of female college athletes nowadays due to campaigns such as Nike's Gamechangers for women in sport and adidas' Me, Myself for women in sport. These campaigns aim to promote and inspire women in sport through personal stories and experiences communicated through blogs and websites. Most research shows that the media does not cause a person to develop an eating disorder, but it does influence a person's self-esteem and body image, which are precursors of eating disorders (Costin, 2007). More current research needs to be performed in order to determine whether the media influences athletes' self-esteem and body image satisfaction positively or negatively nowadays. Research needs to look at what media and how much media athletes are exposed to and their self-esteem and body image satisfaction levels in order to determine if there is a positive relationship.

From this research, one saw that there were not significant differences between susceptibility of eating disorders based on an athlete's competition level. This research also showed that there were not significant differences between body image satisfaction levels or self-esteem levels based on a student-athlete's competition level. The major findings of this study showed that there was a significant relationship between a student-

athlete's self-esteem level and body image satisfaction level and a student-athlete's susceptibility to eating disorders. Because of these findings, it is important for athletic department to test student-athletes' self-esteem and body image satisfaction. If the athletic department finds that an athlete has low self-esteem or is dissatisfied with her body image, the athletic department can take the appropriate intervention steps for preventing the athlete from developing an eating disorder.

Recommendations

This study found the significant relationship between a student-athlete's self-esteem level and body image satisfaction level and a student-athlete's susceptibility to eating disorders. Because of this finding, it is recommended that athletic departments test their student-athletes' levels of self-esteem as well as their student-athletes' body image satisfaction levels in order to set up appropriate interventions programs for student-athletes who may be susceptible to eating disorders due to low self-esteem levels and/or body image dissatisfaction.

Future Research

This study included several limitations. The first limitation was that other researcher's created this study's questionnaire for the specific purpose of their study. The second limitation was that an athlete in the early stages (not yet in the full-blown stages of the disease) of anorexia nervosa or bulimia nervosa may have existed. The third limitation was that an athlete may not have been completely honest when completing the survey. The fourth limitation was that schools that agreed to participate in the study may

not have accurately represented the particular population. The fifth limitation was that athletes were asked to voluntarily complete the survey.

This study also included two significant delimitations. The first delimitation was that the investigator selected school participants on the basis of their competition level and geographic region, found using the NCAA website and the U.S. Census Bureau, respectively. The second delimitation was that the sample population only included female athletes.

This study built on past research to look at whether there was a relationship between female college athletes' competition level and their self-esteem level and their body image satisfaction level. Research also needs to occur for college male athletes regarding the relationship between competition level and susceptibility to eating disorders. This study looked specifically at female college athletes, but it is necessary to study the relationship between competition level, body image, and self-esteem for male college athletes in order to determine the appropriate prevention programs for these athletes and protect them from the developing an eating disorder.

More research also needs to be performed on eating disorder prevention programs and treatment resources. It is important to find out about the programs currently in place and at each competition level's schools. It is also important to find out student athletes' awareness of education and/or counseling programs and resources offered by schools in each competition level. This knowledge will help build awareness of the needs of athletes, which will help protect the physical and emotional health of this specific group.

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APPENDICES

APPENDIX A INSTRUMENTATION

Form A

This form may be reproduced on a personal computer and printed a high quality printer.
For PDF version of this form, [click here.](#))

FORM A

IRB # _____

Certification for Exemption from IRB Review for Research Involving Human Subjects

A. PRINCIPAL INVESTIGATOR(s) and/or CO-PI(s): (For student projects, list both the student and the advisor.)

Stephanie Dawkins

Dr. Rob Hardin - Advisor

B. DEPARTMENT:

Exercise, Sport and Leisure Studies

C. COMPLETE MAILING ADDRESS AND PHONE NUMBER OF PI(s) and CO-PI(s):

University of Tennessee

1914 Andy Holt Ave.

Knoxville, TN 37996

865-974-1281

sdawkins@utk.edu

robh@utk.edu

D. TITLE OF PROJECT:

Relationship between Body Image and Self-Esteem and Susceptibility to Eating Disorders

E. EXTERNAL FUNDING AGENCY AND ID NUMBER (if applicable):

N/A

F. GRANT SUBMISSION DEADLINE (if applicable):**G. STARTING DATE: (NO RESEARCH MAY BE INITIATED UNTIL CERTIFICATION IS GRANTED.)**

Upon IRB Approval

H. ESTIMATED COMPLETION DATE (Include all aspects of research and final write-up.):

May 31, 2009

I. RESEARCH PROJECT:**Objective(s) of Project** (Use additional page, if needed.):

The objective of this project is to understand the relationship between body image and self-esteem and the susceptibility to eating disorders of female student-athletes participating in NCAA athletic programs.

1. Subjects (Use additional page, if needed.):

The participants will be female student-athletes at NCAA institutions.

2. Methods or Procedures (Use additional page, if needed.):

An e-mail will be sent to all female-student athletes describing the purpose of the study and containing a link that directs them to a Web site where the questionnaire (see attached) is hosted. The participants will be assured that all information gathered will be held confidential and presented only in group form. To assure confidentiality, participants' names will not appear on the questionnaires, the completion of which will constitute the respondents' consent to participate.

Sample selection was based upon Johnson, Crosby, Engel, Mitchell, Powers, Wittrock, and Wonderlich (2004). An e-mail was sent to the head sports trainer of a Division I, Division II, and Division III institution from each of the four regions designated by the U.S. Census Bureau. This letter requested participation in the study. Once, the participating universities are identified an e-mail will be sent to the head athletic trainer containing the URL of the on-line questionnaire. This person will then forward the e-mail to the student-athletes.

3. CATEGORY(S) FOR EXEMPT RESEARCH PER 45 CFR 46 (see reverse side for categories):

Category 2: Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior.

J. CERTIFICATION: The research described herein is in compliance with 45 CFR 46.101(b) and presents subjects with no more than minimal risk as defined by applicable regulations.

Principal Investigator

| | | |
|-------|------|-----------|
| _____ | Name | Signature |
| _____ | Date | |

Student Advisor

| | | |
|-------|------|-----------|
| _____ | Name | Signature |
| _____ | Date | |

Dept. Review
Comm. Chair

| | | |
|-------|------|-----------|
| _____ | Name | Signature |
| _____ | Date | |

APPROVED:

Dept.
Head

| | | |
|-------|------|-----------|
| _____ | Name | Signature |
| _____ | Date | |

NCAA Female Student-Athletes

You are being invited to participate in this study by responding to the following questionnaire about your experiences as a collegiate athlete. The information you provide will help coaches and administrators by gathering information about female student-athletes. The survey will take approximately 10 minutes to complete. The completion and submission of this survey indicates your informed consent to participate in this study. The confidentiality of your responses will be maintained and your identity will not be revealed in any published reports of the results of the survey.

Next

What year were you born?

1970

Previous

Next

What is your year of athletic eligibility?

- Freshman
- Sophomore
- Junior
- Senior

Previous

Next

What is your ethnicity?

- African-American
- Asian
- Hispanic
- Multi-Ethnic
- White
- Self-Identified

Previous

Next

What is your home state?

Alabama



Previous

Next

What is the state your college is in?

Alaska



Previous

Next

What NCAA division level do you compete in?

- Division I
- Division II
- Division III

Previous

Next

What is your primary sport in which you compete at the collegiate level?

- | | |
|---|--|
| <input checked="" type="checkbox"/> Cross-Country | <input type="checkbox"/> Skiing |
| <input type="checkbox"/> Field Hockey | <input type="checkbox"/> Swimming and Diving |
| <input type="checkbox"/> Soccer | <input type="checkbox"/> Indoor Track |
| <input type="checkbox"/> Volleyball | <input type="checkbox"/> Golf |
| <input type="checkbox"/> Basketball | <input type="checkbox"/> Lacrosse |
| <input type="checkbox"/> Bowling | <input type="checkbox"/> Rowing |
| <input type="checkbox"/> Fencing | <input type="checkbox"/> Softball |
| <input type="checkbox"/> Gymnastics | <input type="checkbox"/> Tennis |
| <input type="checkbox"/> Ice Hockey | <input type="checkbox"/> Outdoor Track |
| <input type="checkbox"/> Rifle | <input type="checkbox"/> Water Polo |

Previous

Next

What is your scholarship category?

- Full
- Partial
- None

Previous

Next

Is your primarily sport currently in season?

- Yes
- No

Previous

Next

Are you offered eating disorder prevention classes by your athletic department?

- Yes
 No

Previous

Next

Are you required to take eating disorder prevention classes by your athletic department?

- Yes
 No

Previous

Next

Does your athletic department offer treatment resources for athletes who have eating disorders?

Yes

No

Previous

Next

The following statements are about you or related to you. Please indicate the extent to which you agree with each statement by marking the box that best represents your feelings.

| | Always | Very Often | Often | Sometimes | Rarely | Never |
|---|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I think about dieting. | <input checked="" type="radio"/> | <input type="radio"/> |
| I eat when I am upset. | <input checked="" type="radio"/> | <input type="radio"/> |
| I think that my stomach is too big. | <input checked="" type="radio"/> | <input type="radio"/> |
| I stuff myself with food. | <input checked="" type="radio"/> | <input type="radio"/> |
| I think that my thighs are too large. | <input checked="" type="radio"/> | <input type="radio"/> |
| I feel extremely guilty after overeating. | <input checked="" type="radio"/> | <input type="radio"/> |
| I have gone on eating binges where I have felt that I could not stop. | <input checked="" type="radio"/> | <input type="radio"/> |

[Previous](#)[Next](#)

The following statements are about you or related to you. Please indicate the extent to which you agree with each statement by marking the box that best represents your feelings.

| | Always | Very Often | Often | Sometimes | Rarely | Never |
|---|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I think that my stomach is just the right size. | <input checked="" type="radio"/> | <input type="radio"/> |
| I am terrified of gaining weight. | <input checked="" type="radio"/> | <input type="radio"/> |
| I think about overeating. | <input checked="" type="radio"/> | <input type="radio"/> |
| I feel satisfied with the shape of my body. | <input checked="" type="radio"/> | <input type="radio"/> |
| I exaggerate or magnify the importance of weight. | <input checked="" type="radio"/> | <input type="radio"/> |
| I eat moderately in front of others and stuff myself when I am alone. | <input checked="" type="radio"/> | <input type="radio"/> |
| I like the shape of my buttocks. | <input checked="" type="radio"/> | <input type="radio"/> |

[Previous](#)[Next](#)

The following statements are about you or related to you. Please indicate the extent to which you agree with each statement by marking the box that best represents your feelings.

| | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|----------------------------------|-----------------------|-----------------------|-----------------------|
| On the whole, I am satisfied with myself. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| At times I think that I am not good at all. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I feel that I have a number of good qualities. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am able to do things as well as most other people. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I feel I do not have much to be proud of. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I feel useless at times. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I feel that I am a person of worth, at least on an equal plane with others. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I wish I could have more respect for myself. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| All in all, I am inclined to feel that I am a failure. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I take a positive attitude toward myself. | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

[Previous](#)[Next](#)

Please mark the box that represents your feelings about each of your following personal characteristics.

| | Have strong feelings and wish change could somehow be made. | Don't like, but can put up with. | Have no particular feelings one way or the other. | Am satisfied. | Consider myself fortunate. |
|--------------------------------|---|----------------------------------|---|-----------------------|----------------------------|
| Hair | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Facial complexion | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Appetite | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hands | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Distribution of hair over body | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Nose | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Fingers | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Elimination | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

[Previous](#) [Next](#)

Please mark the box that represents your feelings about each of your following personal characteristics.

| | Have strong feelings and wish change could somehow be made. | Don't like, but can put up with. | Have no particular feelings one way or the other. | Am satisfied. | Consider myself fortunate. |
|--------------|---|----------------------------------|---|-----------------------|----------------------------|
| Wrists | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Breathing | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Waist | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Energy level | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Back | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ears | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Chin | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Exercise | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

[Previous](#)[Next](#)

Please mark the box that represents your feelings about each of your following personal characteristics.

| | Have strong feelings and wish change could somehow be made. | Don't like, but can put up with. | Have no particular feelings one way or the other. | Am satisfied. | Consider myself fortunate. |
|--------------------|---|----------------------------------|---|-----------------------|----------------------------|
| Ankles | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Neck | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Shape of head | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Body build | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Profile | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Height | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Age | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Width of shoulders | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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Please mark the box that represents your feelings about each of your following personal characteristics.

| | Have strong feelings and wish change could somehow be made. | Don't like, but can put up with. | Have no particular feelings one way or the other. | Am satisfied. | Consider myself fortunate. |
|--------------|---|----------------------------------|---|-----------------------|----------------------------|
| Arms | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Chest | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Eyes | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Digestion | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hips | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| SKin texture | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lips | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Legs | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Please mark the box that represents your feelings about each of your following personal characteristics.

| | Have strong feelings and wish change could somehow be made. | Don't like, but can put up with. | Have no particular feelings one way or the other. | Am satisfied. | Consider myself fortunate. |
|----------------|---|----------------------------------|---|-----------------------|----------------------------|
| Teeth | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Forehead | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Feet | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sleep | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Voice | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Health | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sex activities | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Knees | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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Please mark the box that represents your feelings about each of your following personal characteristics.

| | Have strong feelings and wish change could somehow be made. | Don't like, but can put up with. | Have no particular feelings one way or the other. | Am satisfied. | Consider myself fortunate. |
|----------------------|---|----------------------------------|---|-----------------------|----------------------------|
| Posture | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Face | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Weight | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sex (male or female) | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Back view of head | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Trunk | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Thank you for your participation in this survey.

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End of interview. Thank you for your participation.

Request for Participation Letter

University of Tennessee
Knoxville, TN 37996

January 2009

Dear _____ :

Your school's voluntary participation in a survey regarding eating disorders within Division I, II, and III intercollegiate female athletics would be appreciated. As a University of Tennessee graduate student in business administration and sport management, I am conducting this study to determine the differences of susceptibility of eating disorders, self-esteem levels, and body image attitudes between Division I, II, and III female college athletes. The survey will require approximately 10 minutes to complete. All data will be kept confidential and will only be reported in group form. If you are able to assist me in data collection by sending the survey link to all of your female college athletes, please contact me via phone or e-mail as soon as possible.

Once again, I appreciate your willingness to participate in this study. I realize my request will require extra effort and I appreciate your cooperation. If you choose to participate in the study, please send the survey link to your college's student-athletes no later than February 16, 2009.

Thank you for your time. If you have any questions, please feel free to call me at 503-706-0777 or e-mail me at sdawkins@utk.edu. You can also reach Dr. Rob Hardin, my advisor, at 865-974-1281 or robh@utk.edu.

Sincerely,

Stephanie Dawkins

University of Tennessee, MBA/MS graduate student '09
Linfield College, undergraduate student '07

Dr. Rob Hardin

Advisor

Thank You and Survey Link Letter

University of Tennessee
Knoxville, TN 37996

February 2009

Hi _____ :

Thank you for your school's voluntary participation in a survey regarding eating disorders within Division I, II, and III intercollegiate female athletics. The survey will require approximately 10 minutes to complete. All data will be kept confidential and will only be reported in group form. Please send the survey link below to all your female student-athletes.

<http://survey.utk.edu/mrIWeb/mrIWeb.dll?I.Project=ATHLETESUSCEPTI>

Thank you for your time. If you have any questions, please feel free to call me at 503-706-0777 or e-mail me at sdawkins@utk.edu. You can also reach Dr. Rob Hardin, my advisor, at 865-974-1281 or robh@utk.edu.

Sincerely,

Stephanie Dawkins
University of Tennessee, MBA/MS graduate student '09
Linfield College, undergraduate student '07

Dr. Rob Hardin
Advisor

APPENDIX B RESULTS

Table 1: Respondent Demographic Profile

| | Count | Valid Percent |
|-----------------------------|--------------|----------------------|
| Athletic Eligibility | | |
| Freshmen | 153 | 34.9 |
| Sophomore | 118 | 26.9 |
| Junior | 87 | 19.8 |
| Senior | 81 | 18.5 |
| Ethnicity | | |
| African-American | 23 | 5.2 |
| Asian | 12 | 2.7 |
| Hispanic | 8 | 1.8 |
| Multi-Ethnic | 14 | 3.2 |
| White | 365 | 83.1 |
| Self-Identified | 17 | 3.9 |
| NCAA Division Level | | |
| Division I | 169 | 38.5 |
| Division II | 106 | 24.1 |
| Division III | 164 | 37.4 |
| Scholarship Category | | |
| Full | 69 | 15.7 |
| Partial | 183 | 41.7 |
| None | 187 | 42.6 |

Table 2: Respondent Perception of Athletic Department Eating Disorder Resources

| | Count | Valid Percent |
|--|--------------|----------------------|
| Athletes Required to Take Eating Disorder Prevention Classes by Their Athletic Department | | |
| Yes | 17 | 3.9 |
| No | 422 | 96.1 |
| | | |
| Athletes Offered Eating Disorder Prevention Classes by Their Athletic Department | | |
| Yes | 112 | 25.5 |
| No | 327 | 74.5 |
| | | |
| Athletes Offered Eating Disorder Treatment Resources by Their Athletic Department | | |
| Yes | 298 | 67.9 |
| No | 141 | 32.1 |

Table 3: Respondent Attitudinal Profile

| | Count | Valid Percent |
|--------------------------------|--------------|----------------------|
| Susceptible to Anorexia | | |
| Yes | 30 | 6.8 |
| No | 409 | 93.2 |
| Susceptible to Bulimia | | |
| Yes | 8 | 1.8 |
| No | 431 | 98.2 |
| Body Image Satisfaction | | |
| Very Dissatisfied | 1 | .2 |
| Dissatisfied | 54 | 12.3 |
| Satisfied | 283 | 64.5 |
| Very Satisfied | 101 | 23.0 |
| Self-Esteem Level | | |
| Low | 42 | 9.6 |
| Normal | 268 | 61.0 |
| High | 129 | 29.4 |

Table 4: Relationship between Self-Esteem and Susceptibility to Anorexia

| Self-Esteem Level | Frequency and Percentages | Susceptible to Anorexia | Not Susceptible to Anorexia | Total |
|--------------------------|----------------------------------|--------------------------------|------------------------------------|--------------|
| Low | Frequency | 14 | 28 | 42 |
| | % within Anorexia | 46.7 | 6.8 | 9.6 |
| Normal | % of Total | 3.2 | 6.4 | 9.6 |
| | Frequency | 15 | 253 | 268 |
| High | % within Anorexia | 50.0 | 61.9 | 61.0 |
| | % of Total | 3.4 | 57.6 | 61.0 |
| Total | Frequency | 1 | 128 | 129 |
| | % within Anorexia | 3.3 | 31.3 | 29.4 |
| Total | % of Total | .2 | 29.2 | 29.4 |
| | Frequency | 30 | 409 | 439 |
| Total | % within Anorexia | 100.0 | 100.0 | 100.0 |
| | % of Total | 6.8 | 93.2 | 100.0 |

*Chi-Square Test was $\leq .000$

Table 5: Relationship between Self-Esteem and Susceptibility to Bulimia

| Self-Esteem Level | Frequency and Percentages | Susceptible to Bulimia | Not Susceptible to Bulimia | Total |
|--------------------------|----------------------------------|-------------------------------|-----------------------------------|--------------|
| Low | Frequency | 6 | 36 | 42 |
| | % within Bulimia | 75.0 | 8.4 | 9.6 |
| Normal | % of Total | 1.4 | 8.2 | 9.6 |
| | Frequency | 2 | 266 | 268 |
| High | % within Bulimia | 25.0 | 61.7 | 61.0 |
| | % of Total | .5 | 60.6 | 61.0 |
| Total | Frequency | 0 | 129 | 129 |
| | % within Bulimia | .0 | 29.9 | 29.4 |
| Total | % of Total | .0 | 29.2 | 29.4 |
| | Frequency | 8 | 431 | 439 |
| Total | % within Bulimia | 100.0 | 100.0 | 100.0 |
| | % of Total | 1.8 | 98.2 | 100.0 |

*Chi-Square Test was $\leq .000$

Table 6: Relationship between Body Image and Susceptibility to Anorexia

| Body Image Satisfaction Level | Frequency and Percentages | Susceptible to Anorexia | Not Susceptible to Anorexia | Total |
|--------------------------------------|--|--------------------------------|------------------------------------|-----------------------|
| Very Dissatisfied | Frequency % within Anorexia % of Total | 0 .0 .0 | 1 .2 .2 | 1 .2 .2 |
| Dissatisfied | Frequency % within Anorexia % of Total | 14 46.7 3.2 | 40 9.8 9.1 | 54 12.3 12.3 |
| Satisfied | Frequency % within Anorexia % of Total | 16 53.3 3.6 | 267 65.3 60.8 | 283 64.5 64.5 |
| Very Satisfied | Frequency % within Anorexia % of Total | 0 .0 .0 | 101 24.7 23.0 | 101 23.0 23.0 |
| Total | Frequency % within Anorexia % of Total | 30 100.0 6.8 | 409 100.0 93.2 | 439 100.0 100.0 |

*Chi-Square Test was $\leq .000$

Table 7: Relationship between Body Image and Susceptibility to Bulimia

| Body Image Satisfaction Level | Frequency and Percentages | Susceptible to Bulimia | Not Susceptible to Bulimia | Total |
|--------------------------------------|--|-------------------------------|-----------------------------------|-----------------------|
| Very Dissatisfied | Frequency % within Bulimia % of Total | 0 .0 .0 | 1 .2 .2 | 1 .2 .2 |
| Dissatisfied | Frequency % within Bulimia % of Total | 7 87.5 1.6 | 47 10.9 10.7 | 54 12.3 12.3 |
| Satisfied | Frequency % within Bulimia % of Total | 1 12.5 .2 | 282 65.4 64.2 | 283 64.5 64.5 |
| Very Satisfied | Frequency % within Bulimia % of Total | 0 .0 .0 | 101 23.4 23.0 | 101 23.0 23.0 |
| Total | Frequency % within Bulimia % of Total | 8 100.0 1.8 | 431 100.0 98.2 | 439 100.0 100.0 |

*Chi-Square Test was $\leq .000$

Table 8: Relationship between Division Level and Self-Esteem

| NCAA Level | Frequency and Percentages | Low Self-Esteem | Normal Self-Esteem | High Self-Esteem | Total |
|---------------------|----------------------------------|------------------------|---------------------------|-------------------------|--------------|
| Division I | Frequency | 21 | 98 | 50 | 169 |
| | % within Self-Esteem Level | 50.0 | 36.6 | 38.8 | 38.5 |
| Division II | Frequency | 13 | 63 | 30 | 106 |
| | % within Self-Esteem Level | 31.0 | 23.5 | 23.3 | 24.1 |
| Division III | Frequency | 8 | 107 | 49 | 164 |
| | % within Self-Esteem Level | 19.0 | 39.9 | 38.0 | 37.4 |
| Total | Frequency | 42 | 268 | 129 | 439 |
| | % within Self-Esteem Level | 100.0 | 100.0 | 100.0 | 100.0 |
| | % of Total | 9.6 | 61.0 | 29.4 | 100.0 |

*Chi-Square Test was $\leq .144$

Table 9: Relationship between Division Level and Body Image Satisfaction

| NCAA Level | Frequency & Percent | Very Dissatisfied | Dissatisfied | Satisfied | Very Satisfied | Total |
|---------------------|--|--------------------------|---------------------|------------------|-----------------------|--------------|
| Division I | Frequency % within Body Image Level % of Total | 0 .0 | 19 35.2 | 109 38.5 | 41 40.6 | 169 38.5 |
| Division II | Frequency % within Body Image Level % of Total | 1 100.0 | 16 29.6 | 64 22.6 | 25 24.8 | 106 24.1 |
| Division III | Frequency % within Body Image Level % of Total | 0 .0 | 19 35.2 | 110 38.9 | 35 34.7 | 164 37.4 |
| Total | Frequency % within Body Image Level % of Total | 1 100.0 | 54 100.0 | 283 100.0 | 101 100.0 | 439 100.0 |
| | | .2 | 12.3 | 64.5 | 23.0 | 100.0 |

*Chi-Square Test was $\leq .568$

Table 10: Relationship between Division Level and Susceptibility to Anorexia

| NCAA Division Level | Frequency & Percent | Susceptible to Anorexia | Not Susceptible to Anorexia | Total |
|----------------------------|--|--------------------------------|------------------------------------|-----------------------|
| Division I | Frequency % within Anorexia % of Total | 13 43.3 3.0 | 156 38.1 35.5 | 169 38.5 38.5 |
| Division II | Frequency % within Anorexia % of Total | 7 23.3 1.6 | 99 24.2 22.6 | 106 24.1 24.1 |
| Division III | Frequency % within Anorexia % of Total | 10 33.3 2.3 | 154 37.7 35.1 | 164 37.4 37.4 |
| Total | Frequency % within Anorexia % of Total | 30 100.0 6.8 | 409 100.0 93.2 | 439 100.0 100.0 |

*Chi-Square Test was $\leq .842$

Table 11: The Relationship between Division Level and Susceptibility to Bulimia

| NCAA Division Level | Frequency & Percent | Susceptible to Bulimia | Not Susceptible to Bulimia | Total |
|----------------------------|--|-------------------------------|-----------------------------------|---------------------------|
| Division I | Frequency % within Bulimia % of Total | 3 37.5 .7 | 166 38.5 37.8 | 169 38.5 38.5 |
| Division II | Frequency % within Bulimia % of Total | 2 25.0 .5 | 104 24.1 23.7 | 106 24.1 24.1 |
| Division III | Frequency % within Bulimia % of Total | 3 37.5 .7 | 161 37.4 36.7 | 164 37.4 37.4 |
| Total | Frequency % within Bulimia % of Total | 8 100.0 1.8 | 431 100.0 98.2 | 439 100.0 100.0 |

*Chi-Square Test was $\leq .998$

VITA

Stephanie Dawkins is from Corbett, Ore. She graduated valedictorian from Corbett High School in June 2003. She graduated cum laude from Linfield College in McMinnville, Ore., in May 2007. Stephanie earned an MBA from University of Tennessee in Knoxville, TN in December 2008. She will earn her master's of science in sport management in May 2009.

Stephanie competed in athletics from elementary school through college. She was a Division III student-athlete where she competed in softball, volleyball, and cross-country. She currently serves as a graduate assistant for Lady Vol Athletics in marketing.