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Eating disorder symptoms among NCAA Division I female athletes in the Southeastern Conference

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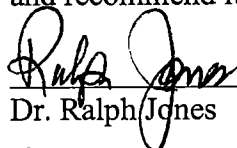
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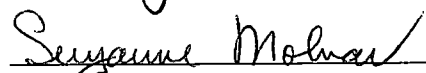
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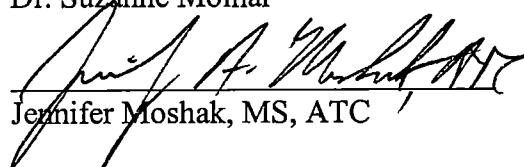
I am submitting herewith a thesis written by Catherine C.W. English entitled "Eating Disorder Symptoms Among NCAA Division I Female Athletes in the Southeastern Conference." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Human Performance and Sport Studies.


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We have read this thesis
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Dean of The Graduate School

Eating Disorder Symptoms Among
NCAA Division I Female Athletes in the
Southeastern Conference

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

Catherine C.W. English
August, 1999

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DEDICATION

This thesis is dedicated to the woman I admire the most, my mother. I thank her for her strength, inspiration, words of wisdom, and unconditional love. She has taught me invaluable lessons in life, and she has helped create the woman I am today. She has always been my number one fan and the best support system a child could want. Sometimes I wonder where my life may have lead if she had not chosen me to be her daughter and share in her life. I am eternally grateful to her and for having her as my mother.

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ABSTRACT

The purposes of this study were to determine: a) eating disorder symptoms among National Collegiate Athletic Association (NCAA), Division I, intercollegiate female athletes in the Southeastern Conference (SEC), b) if lean sport athletes were more prone to eating disorder symptoms than non-lean sport athletes, c) what percentage of athletes who were at risk for eating disorders sought help or support, and d) what kind of assistance was offered from athletic institutions in the SEC to help the student-athletes deal with eating disorder issues.

The participants in this study were NCAA, Division I, female intercollegiate athletes from four universities in the SEC. There were 325 participants all between 18-23 years old, and currently a member of an intercollegiate sport in the SEC. The selection of the participants was based on the geographical location and close proximity of the Division I universities in the SEC. Availability of participants was based on which schools and athletes agreed to participate in this study. The universities which had agreed to participate in this study were sent questionnaires which were to be completed and returned to the researcher for analysis.

Instrumentation used for this study involved two survey questionnaires and a clinical instrument. The first survey questionnaire served as the demographic questionnaire. Its purpose was to determine in what sport the participant was involved, and determined the age and year of eligibility of the participant.

The second instrument used in this study was the Eating Disorder Inventory-2 (EDI-2) questionnaire (Garner, 1991). The EDI-2, 91-item self-report, 6-point, Likert-

type scale questionnaire was used to measure symptoms related to anorexia nervosa and bulimia nervosa.

The final survey questionnaire was also designed to ascertain information from the participants regarding the type(s) of support system(s) offered by their athletic institutions for eating disorders. The survey questionnaire also addressed the question, "If there is not an organized support program available specifically for the female college athletes with eating disorders, would the athletes like to see their university implement such a program?"

The study determined that there were no significant differences when evaluating lean and non-lean sport athletes for the prevalence of eating disorder symptoms under the subscale BUL. There were, however, significant findings of lean sport athletes scoring higher than the general female college population for the prevalence of eating disorder symptoms; their scores were significantly higher than expected by chance at the .05 level of reliability (Hays, 1973).

The findings of the study also revealed that lean sport athletes were more prone to one type of eating disorder symptoms than were non-lean athletes: the lean sport athletes did score in the C range on DT significantly more often than did non-lean sport athletes. This difference also was significant at the .05 level of confidence (Hays, 1973).

Regarding the third question posed in the study, what percentage of athletes prone to eating disorders sought help or support, there were 17 (22.1%) participants who sought help from their athletic institution which already had a program designed to help female athletes deal with eating disorders, depression, and/or body dissatisfaction. The other

question posed in the purpose of the study was what kind of assistance was offered from athletic institutions in the SEC to help student-athletes deal with eating disorder issues. The response regarding this question was 223 (68.6%) participants stated their athletic department provided an organized support program specifically designed for female athletes to attend to discuss personal issues. There were 212 (65.2%) participants who noted that their athletic department provided organized team talks regarding eating disorders and other personal issues, however, due to the confidentiality issues surrounding this study, it was not possible to discuss which athletic institutions provided these types of programs.

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CHAPTER 1

INTRODUCTION

When contemplating the idea of sport, people often think of physical exertion, physical training, being in competitive physical condition, competition, and winning. All the above are also characteristics of sport and what athletes do to be a part of the sporting world. These characteristics in essence, separate athletes from everyday people.

Within society and the sporting world there have been many problems and issues which have plagued the everyday person and athlete. Among these problems and issues are eating disorders. Eating disorders have been extremely prevalent in both worlds, but female athletes have been known to be at a higher risk than the everyday person for developing an eating disorder (Wilmore, 1991; Thompson and Sherman, 1993).

For both male and female athletes, there have been the pressures to perform well and live up to the expectations of society, coaches, friends and family, but according to Wichmann and Martin's 1993 interview with Lionel Rosen, MD, at the time a professor of psychiatry at Michigan State University in East Lansing, female athletes also have had the pressure to be thin. Over the years, via media representation, the American society has played a part in the mental state of the female athletes. The American society has emphasized body image and thinness, and developed the requirement that people should pay special attention to their own physical appearance as well as take notice of others. Dr. Rosen also stated that society's expectation for women has become the motto, "thin is in" (Wichmann and Martin, 1993).

With the many pressures of society and the sports world, female athletes have

engaged in unhealthy eating and weight management behaviors, and sometimes have used extreme measures, which have resulted in the development of anorexia nervosa or bulimia nervosa to reshape their bodies. Female athletes have been pulled by society's motto, "thin is in" (Wichmann and Martin, 1993, p.133), and the sport world has created the image that thinner is faster, more graceful, and thinness will improve/enhance performance (Wichmann and Martin, 1993). From these mottos, the messages which have been sent to these athletes is that thinness will make them excel and become more successful in their sport.

Garner, Rosen (who was interviewed and quoted in Wichmann and Martin's 1993 article), and Barry (1998) also agreed that athletes feel the pressures to perform well and live up to the expectation of society, coaches, friends, family, and one's own expectations. Garner, Rosen, and Barry (1998) cited possible reasons for an increase in the prevalence of eating disorders among particular subgroups of athletes. One reason, as mentioned previously, is the pressure to diet and become thin from coaches, teammates, friends, family, society and/or one's self. With the thought of losing weight and becoming thin to improve or achieve optimal athletic performance, an individual who may be prone to eating disorders may initiate the onset of this disease by their actions of dieting and/or the use of pathogenic means to control their weight. Another reason was that certain sports may attract athletes with pre-existing eating disorders (Garner, Rosen, Barry, 1998; Thompson and Sherman, 1993). The final theory mentioned is that personality and family factors common in athletes may predispose them to develop eating disorders in conjunction with an individual's sociological background/upbringing

(Garner, Rosen, Barry, 1998; Striegel-Moore, Silberstein, Rodin, 1986).

In the literature review for this study, a comparison of the articles revealed that many authors seemed to agree that female athletes are usually prone to eating disorders. Petrie (1996), Wichmann and Martin (1993), Sundgot-Borgen and Corbin (1987) all agreed in their studies that most female athletes observed with eating disorders have been participants in sports which required leanness for performance or were judged on looks. The studies also agreed that a certain number of female athletes had dissatisfactions with their body in shape and/or had disturbed eating patterns, and/or wanted to lose weight.

One article which did have different findings compared to all the other articles in this review was by Ashley, Smith, Robinson, and Richardson (1996). None of the groups in the Ashley et al. samples exhibited psychopathological characteristics for significant disordered eating patterns. Ashley et al. also suggested that neither athletics in general nor a particular type of athletics predisposed one to exhibit attitudes associated with disordered eating. Instead, Ashley et al. (1996) stated it was a particular psychopathology which predisposed one to develop disordered eating patterns.

Statement of Purpose

The purposes of this study were to determine a) eating disorder symptoms among National Collegiate Athletic Association (NCAA), Division I, intercollegiate female athletes in the Southeastern Conference (SEC), and b) if lean sport athletes were more prone to eating disorder symptoms than non-lean sport athletes, c) what percentage of athletes who were prone for eating disorders sought help or support, and d) what kind of assistance was offered from athletic institutions in the SEC to help the student athletes

deal with eating disorder issues.

Definition of Terms

The following definitions were assigned to the terms used in this study.

Amenorrhea- abnormal absence of the menstrual cycle.

Anorexia Athletica- athletes who meet one or more of the following criteria: weight loss is greater than 5% of expected body weight, delayed puberty, menstrual dysfunction, GI complaints, absence of medical illness or affective disorder explaining the weight reduction, disturbance in body image, excessive fear of becoming obese, restriction of caloric intake, use of purging methods, binge eating, and compulsive exercising (Sundgot-Borgen, 1994).

Anorexia Nervosa-“refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected; intense fear of gaining weight or becoming fat, even though underweight” (American Psychiatric Association, 1994, p. 544).

Asceticism-“the tendency to seek virtue through the pursuit of spiritual ideals such as self-discipline, self-denial, self-restraint, self-sacrifice, and control of bodily urges” (Eating Disorder Inventory-2 Professional Manual, 1991, p. 6).

Binge Eating- eating high caloric foods such as sweets in an inconspicuous or secretive way as frequently as twenty times a day, or as little as two binge episodes a week for at least three months (Wichmann and Martin, 1993).

Body Dissatisfaction-“dissatisfaction with the shape of body parts such as hips, buttocks, and the belief that these parts are too big or fat” (Petrie, 1996, p. 221).

Bulimia Nervosa- “recurrent episodes of binge eating; an episode of binge eating is characterized by both of the following: a) eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances, b) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating); 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 3 months” (American Psychiatric Association, 1994, p. 549).

Drive for Thinness- “excessive concern with dieting, preoccupation with weight, extreme pursuit of thinness” (Petrie, 1996, p. 221).

Eating Disorder- a mental disorder that involves a distorted body image and is characterized by the excessive abuse of food.

Eating Disorder Inventory (EDI-2)- a 91 item self report psychological assessment instrument/questionnaire with 11 subscales (Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness, Maturity Fears, Asceticism, Impulse Regulation, and Social Insecurities) designed to measure a number of psychological and behavioral traits common in anorexia nervosa and bulimia nervosa (Garner, 1991).

Eumenorrhic- good/regular menstrual cycle.

Female Intercollegiate Athlete- female athlete between the ages of 18-23 years old participating in an intercollegiate sport at the NCAA Division I level.

Impulse Regulation- “the tendency toward impulsivity, substance abuse, recklessness, hostility, destructiveness in interpersonal relationships, and self-destructiveness” (Eating Disorder Inventory-2 Professional Manual, 1991, p.6).

Ineffectiveness- “feelings of inadequacy, insecurity, worthlessness, and not being in control of one’s life” (Petrie, 1996, p. 221).

Interoceptive Awareness- “lack of confidence in recognizing and accurately identifying emotions or visceral sensations of hunger or satiety” (Petrie, 1996, p. 221).

Interpersonal Distrust- “reluctance to form close relationships with others” (Petrie, 1996, p. 221).

Lean Sport- track, cross country, gymnastics, diving, cheerleading, tennis (Petrie, 1996); aesthetic, endurance and weight dependent sport (Sundgot-Borgen, 1993); activities which emphasize leanness, appearance is considered highly important to success (Sundgot-Borgen and Corbin, 1987).

Maturity Fears- “overwhelming sensation of adulthood demands and wants to retreat to the security of pre-adolescence” (Petrie, 1996, p. 221).

Non-lean Sport- basketball, volleyball, swimming, softball, soccer, golf (Petrie, 1996); technical, ball game, power sports (Sundgot-Borgen, 1993); activities not emphasizing leanness where appearance was deemed less essential to success (Sundgot-Borgen and Corbin, 1987).

Perfectionism- expectation of superior achievement by one's self; "excessive personal expectation of superior achievement" (Petrie, 1996, p. 221).

Prevalent/Prevalence- widely or commonly occurring or existing; generally accepted or practiced (The American Heritage Dictionary, Second College Edition, 1991).

Social Insecurity- "the belief that social relationships are tense, insecure, disappointing, unrewarding, and generally of poor quality" (Eating Disorder Inventory-2 Professional Manual, 1991, p. 6).

Scope of Study

For this study it was assumed that a) all subjects answered the survey questions honestly and to the best of their ability, b) the Eating Disorder Inventory-2 questionnaire was a reliable and valid survey for obtaining information from the subjects, and c) eating disorders possibly existed among female collegiate athletes.

The scope of this study included the following limitations and delimitation. The limitations were: a) the subjects involved in this study were current competitive female collegiate athletes from the Southeastern Conference (SEC), b) some SEC universities, sport teams, and individual athletes chose not to participate in this study, c) it was not possible to guarantee the subjects' responses to the questionnaire were answered honestly, d) the participants were not representative of all the current competitive female intercollegiate athletes across the United States, e) this study did not explore racial, ethnical, sociocultural, or socioeconomical differences between participants, did not include males, and did not include biological factors as contributing factors to the prevalence of eating disorders. The delimitation of this study was to current competitive

female intercollegiate athletes at the NCAA, Division I level in the Southeastern Conference.

Significance of the Study

Athletes have dealt with many stressors and issues in their incredibly time scheduled and disciplined lives. Some of the everyday stressors and issues that female intercollegiate athletes have dealt with include getting their school work done, passing classes, achieving good grades, performing well, excelling at their sport, and pleasing their coaches, team members, family and friends.

With the information I gained from my study, I wanted to better inform the athletic directors, coaches, and athletic trainers of the prevalence of eating disorder symptoms among the female intercollegiate athletes in the SEC. To educate the administrators of the athletic departments in the SEC on the prevalence of eating disorders, it was pertinent that they know what factors may trigger the onset of an eating disorder, why female athletes are prone to eating disorders, as well as the signs and symptoms associated with eating disorders.

Secondly, as a result of this study, I wanted the athletic departments in the SEC to take notice of, and address, the eating disorder issues among the female athletes. Since the athletic department “employs” the student-athletes, it is imperative that they recognize their roles and responsibilities to help athletes perform to their optimal performance in both psychologically and physiologically safe ways. With the suggested development (to the universities in the SEC) of a support group which is specifically designed to educate and offer individual counseling of female athletes on eating disorders, this could prevent

pre-existing eating disorders and/or assist in the termination and recovery of an eating disorder.

CHAPTER 2

LITERATURE REVIEW

Eating disorders have been very prevalent in our society and especially in sport. Until recently there have not been many studies concerning the prevalence and possible reasons for eating disorders among female and male athletes. In this literature review, the following will be discussed: a) the prevalence of eating disorders will be discussed, b) why athletes may be prone to eating disorders, c) the methods used to lose weight, and d) the Eating Disorder Inventory-2 (EDI-2) clinical assessment instrument. Many studies mentioned in this literature review have used the original EDI as an assessment instrument regarding eating disorders, but recently it has been revised, EDI-2. With the revisions to the Eating Disorder Inventory, its purpose and revisions must be discussed.

The Prevalence of Eating Disorders

Wilmore, at the time, a member of the Department of Kinesiology and Health Education, The University of Texas at Austin, wrote an article in the *International Journal of Sport Nutrition (IJSN)* in 1991. Wilmore (1991) presented an overview of eating disorders in the *IJSN*, which provided definitions, clinical criteria for diagnosis, and discussion of the potential increased risk of eating disorders among female athletes. He concluded with a discussion of the prevalence of eating disorders in normal and athletic populations.

Eating and weight disorders in society in general and in sport have been a major focal point in clinical medicine since the early 1980's. The most studied eating disorders have been anorexia nervosa and bulimia nervosa. Wilmore (1991) described in his study

the diagnostic criteria of anorexia nervosa and bulimia nervosa based on what was published by the American Psychiatric Association's, 1987, *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised (*DSM-III-R*). Wilmore stated that according to the *DSM-III-R*, anorexics felt fat, but in actuality they were underweight. Anorexics restricted eating to lose weight and were typically obsessed with exercise. Purging through self-induced vomiting and/or the use of laxatives and diuretics were also related to being a part of this syndrome. Wilmore also stated that perfectionistic or "model" children, or those who were slightly overweight were considered high-risk populations for eating disorders.

Wilmore (1991) described bulimia nervosa as recurrent episodes of rapid consumption of a large amount of food in a discrete period of time; a feeling of lack of control over eating during these feeding binges; purging behavior included self-induced vomiting and/or the use of laxatives or diuretics; strict dieting or fasting; vigorous exercise to prevent weight gain; and a persistent over concern with the body shape and weight. It was reported that binge eating usually involved high caloric foods such as sweets eaten in an inconspicuous or secretive way. Wilmore also stated the frequency of binge eating ranged from twenty times a day, to as little as two binge episodes a week for at least three months. Wilmore continued by stating that vomiting can become a pleasurable and addictive behavior, giving a person the sensation of a "rush" or a "high" (p. 107).

Wilmore's article (1991), also noted that the research which has been done to find the prevalence of eating disorders in athletic populations is limited. Few studies have

addressed eating disorder prevalence issues in athletes, and those few studies which have attempted to get at the issue have had very small sample sizes. Finally, most of the studies which have examined the prevalence of eating disorders in the athletic populations failed to use the strict DSM-III-R now DSM-IV-R criteria.

In Wilmore's 1991 article, the study discussed and used the Eating Disorder Inventory (EDI), a 64-item questionnaire with eight subscales which addressed the areas of the Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interceptive Awareness, and Maturity Fears. Fourteen nationally ranked women distance runners were asked to complete the EDI questionnaire. Of the fourteen women, nine were amenorrheic and five were eumenorrheic. The EDI identified three of the five eumenorrheic athletes as having possible problems, not clearly indicating an eating disorder. Later, it was determined two of the three athletes identified by the EDI with possible problems received treatment for an eating disorder. Out of the nine amenorrheic runners, seven were diagnosed as having an eating disorder; four were diagnosed as having anorexia nervosa, two were diagnosed as having bulimia nervosa, and one person was diagnosed as having both anorexia nervosa and bulimia nervosa.

In the conclusion of Wilmore's article (1991), he indicated that female athletes were at a higher risk than the normal population for eating disorders. He stated, "athletes in sports in which additional body weight may hinder optimal performance, as well as athletes in those sports in which athletic performance is judged at least in part by the appearance of the athlete, comprise a subset of the female athletic population that would have to be considered at high risk for disordered eating" (p. 113). Wilmore also stated

that the prevalence data obtained to date may have underestimated the actual risk of developing an eating disorder.

Although Wilmore (1991) stated in his study that up to the year 1991, few studies have addressed eating disorder prevalence issues in athletes, and those few studies which have attempted to get at the issue have failed to use the strict *DSM-III-R* criteria. However, there was a prevalence study which did use the strict *DSM-III-R* criteria . This study was performed by Black and Burckes-Miller (1988a) which examined the prevalence of anorexia nervosa and bulimia nervosa in male and female college athletes from 22 Midwestern colleges. There was a response rate of 66% or a total of 695 athletes who completed the questionnaires, but for the purpose of this literature review, only the results of the female college athletes were discussed.

The purpose of Black and Burckes-Miller's (1988a) study was to determine the prevalence of male and female athletes who were anorexic or bulimic based on the criteria for anorexia nervosa and bulimia nervosa according to the *Diagnostic and Statistical Manual of Mental Disorders III-Revised (DSM-III-R)*. The instrumentation used for this study was a 41-item questionnaire titled "Eating Habits of Athletes (EHA)" (p. 137). This instrumentation was proven to be valid and reliable by Black and Burckes-Miller (Black and Burckes-Miller, 1988a). The *DSM-III-R* was used to develop the questions for the EHA as well as analyze the data.

The results of Black and Burckes-Miller's (1988a) study indicated that 382 women (55% of the total respondents) of eight sports (basketball, cheerleading, cross country/track, gymnastics, softball, swimming, tennis, and volleyball), 16 female athletes,

or 4.18% of 382 female athletes, met the criteria for anorexia nervosa as set by the *DSM-III-R*. A total of 150 female athletes, or 39.26% of 382 female athletes, met the criteria for bulimia nervosa. Black and Burckes-Miller performed a chi-square test which indicated the prevalence rate of anorexia nervosa and bulimia nervosa between the males and females. The results indicated that the prevalence of anorexia nervosa and bulimia nervosa were significantly greater for female athletes [$X^2(1)=3.9, p<.05$] than male athletes [$X^2(1)=52.8, p<.00001$] (Black and Burckes-Miller, 1988a).

Black and Burckes-Miller's (1988a) study identified how many female athletes met the medical criteria for anorexia nervosa and bulimia nervosa based on the *DSM-III-R*. It was stated in the study that the prevalency results were reported higher among college athletes than those reported for the general population. Black and Burckes-Miller also noted that their study indicated approximately one out of 33 college athletes met the criteria for anorexia nervosa where as in their literature research one out of every 100 women was anorexic (Black and Burckes-Miller, 1988a). For the athletes who may be bulimic, it was noted in the study that approximately one out of five (21.5%) college athletes could be classified as bulimic, where as in Black and Burckes-Miller's literature research, they noted the prevalence among college students may range from one out of 25 to one out of eight (Black and Burckes-Miller, 1988a). Black and Burckes-Miller also cited in their literature research that the prevalence of bulimia nervosa in the general population ranged from one out of 100 people to one out of 20 people (Black and Burckes-Miller, 1988a).

Black and Burckes-Miller's (1988a) study supported the idea that the prevalence

of eating disorders among college athletes is greater than college and non college populations. This study also alluded to a few issues which need further study that were discussed in the conclusion. Those issues were, how are athletics related to the development of eating disorders, does athletics amplify an already existing predisposition of eating disorders among athletes, does athletic participation result in the development of an eating disorder, does a person with an eating disorder engage in athletics because of certain pressures to be lean for performance, and does athletics contribute to the development of eating disorders.

In an article written by Wichmann and Martin (1993) which was published in *The Physician and Sports Medicine*, they defined two types of eating disorders, anorexia nervosa and bulimia nervosa. Wichmann and Martin discussed the issue that there was a proneness to eating disorders for female athletes and women in professions where special attention is paid to personal appearance (e.g. models and flight attendants). It was also discussed in this article why female athletes may be more prone to eating disorders than males.

Wichmann and Martin (1993) defined anorexia nervosa according to the DSM-III-R as an eating disorder that presented an intense fear of gaining weight. Other symptoms of anorexia nervosa were having a distorted body image, weighing 15% or more below what is considered normal for a person's age and height, and in some women, amenorrhea. Bulimia nervosa was described as, "the symptoms of recurrent episodes of binge eating, a minimum of two binges a week for at least three months; a lack of behavioral control during eating binges; the use of laxatives, self induced vomiting or

diuretics on a regular basis; strict dieting; performance of vigorous exercise to prevent weight gain; and a persistent over concern with gaining weight” (p. 126).

Wichmann and Martin (1993) reported both men and women were prone to eating disorders, but women were more prone to the disorders than men probably due to society’s expectations for women. According to Wichmann and Martin, society has stereotyped an attractive woman as being thin, and for a woman to be attractive, one must be thin, and “thin is in” (p. 133). Wichmann and Martin interviewed Lionel W. Rosen, MD, at the time a professor of psychiatry at Michigan State University in East Lansing. Dr Rosen expressed his perception that society has come to hate obesity. He noted that, “obesity is seen as a personal failing rather than a genetic consequence” (p. 133). Society has now developed a demand that people should pay special attention to their own appearance as well as others. Some women who were thought to be particularly susceptible to eating disorders due to societal pressures and the expectation to be thin were flight attendants, fashion models, and athletes (Wichmann and Martin, 1993). During the interview, Dr. Rosen expressed his opinion that female athletes experienced more pressure to be thin than males because women have the social pressure to be thin and males do not. While male athletes such as wrestlers or jockeys exhibited pathogenic weight control behaviors, they usually resumed normal eating behavior once their season ended. Female athletes on the other hand continued with pathogenic weight control behaviors during the off season (Wichmann and Martin, 1993).

Wichmann and Martin (1993), concluded that society places a great deal of emphasis on body image and thinness. With the emphasis of body image and thinness,

some people used extreme measures to reshape their bodies. Athletes risked developing pathogenic eating disorders as they attempted to meet weight requirements or lose weight because they believed it would improve performance. Wichmann and Martin also stated they believed that until society and sports eliminate the pressures which encourage eating disorder behaviors, eating disorders were going to be a continuous problem in the athletic arena as well as in society.

Sundgot-Borgen (1994) performed a quantitative study to examine possible risk and trigger factors responsible for precipitating or exacerbating eating disorders. For this study, elite female athletes were observed to identify risk and trigger factors for anorexia nervosa, bulimia nervosa, and anorexia athletica.

Sundgot-Borgen's study (1994) involved 522 elite athletes who qualified for the national team at junior or senior levels, or were members of a recruiting squad for those teams. The athletes represented 35 sports which were divided into six different categories; technical, endurance, aesthetic, weight dependent, ball games and power sports. The subjects were then identified as "at risk for eating disorders" or "not at risk" based on the Eating Disorder Inventory; a total of 103 athletes out of the initial 522 were categorized as being at risk for an eating disorder. Of the remaining athletes not identified as at risk for an eating disorder, 30 athletes were chosen at random for the control group.

The methodology of the Sundgot-Borgen (1994) study included a clinical examination and interviews of 133 athletes in the areas of demographics, weight history and body image, dieting history, binge eating and purging, training routines, affective

disorders, sexual functioning, life adjustment, menstrual history, medical history, psychiatric history, and family history of eating disorders. The clinical exam involved the calculation of fat based on each individual's skinfold measurement, several hematologic and endocrine measurements, but none of these results will be discussed in this literature review.

According to Sundgot-Borgen (1994), all differences were considered significant if the p-values were equal to or less than 5%. The athletes who competed in the aesthetic and endurance sports were leaner, and they had a significantly higher training volume than the athletes who competed in the other sports, $p < .05$. The prevalence of eating disorders was significantly higher among athletes in aesthetic and weight dependent sports than in the other sport groups, $p < .05$. The results for the eating disordered athletes and the controls had similar mean values for menarcheal age and body weight, while eating disordered athletes had a lower self-defined "ideal" weight, $p < .01$, and a lower percentage of body fat, $p < .01$. The history of the two groups showed that significantly more of the athletic controls (those who did not meet the criteria for anorexia nervosa, bulimia nervosa or anorexia athletica) than the eating disordered athletes had participated in other sports prior to participation in their current sport, $p < .05$.

The results indicated that eating disorders were a serious problem for elite female athletes, and that eating problems occurred with greatest frequency in sports where athletes were encouraged to be thin for either performance or appearance (Sundgot-Borgen, 1994). In Sundgot-Borgen's (1994) study, several risk factors or trigger conditions were identified and associated with the development of eating disorders in

athletes. Dieting at an early age appeared to be associated with the onset of eating disorders, and a significant number of athletes who began dieting to improve performance reported that their coach recommended they lose weight (Sundgot-Borgen, 1994). The data also suggested that the risk for eating disorders is increased if dieting is unsupervised. Sundgot-Borgen stated that the athletes who were dieting unsupervised had little knowledge about proper methods to lose weight, and were more likely to try fad diets. Other risk factors that were discussed in regard to the development of an eating disorder were the athletes' feelings of embarrassment of reaching puberty at an early age. According to Sundgot-Borgen, they cited that some athletes who were participating in sports where leanness was observed (gymnastics, diving, ballet, etc.) by spectators and judges, they experienced anxiety over their development of secondary sex characteristics. Another note made by Sundgot-Borgen (1994) was that extreme exercise seemed to be correlated to the development of anorexia nervosa. In some cases, Sundgot-Borgen stated that the athletes did not give a specific reason for the precipitation of their eating disorder, but the athletes noted significant weight loss and increase in training. Sundgot-Borgen cited that the onset of the athletes' eating disorders may have been produced by the physiological changes the body goes through with an increase in physical output, caloric deprivation, and changes in the level of endorphins creating a loss of appetite. This in essence may have precipitated the onset of an eating disorder. Other trigger factors which were thought to result in the onset of an eating disorder were the loss of a coach, an injury, or an illness.

In a quantitative study by Sundgot-Borgen and Corbin (1987), they identified the

extent to which preoccupation with weight and tendencies toward eating disorders were problems among female athletes. Sundgot-Borgen and Corbin (1987) administered the Eating Disorders Inventory (EDI) and a biographical questionnaire to 180 subjects.

The subjects for this study were athletes and nonathletes. The athletes were ballet dancers, bodybuilders/weight trainers, cheerleaders, gymnasts, swimmers, track-and-field team members, and volleyball players. All athletes played on collegiate teams or were members of a professional ballet company (Sundgot-Borgen and Corbin, 1987). The athletes were divided into two groups: a) athletes of lean sports where appearance was considered highly important to success, i.e., ballet, bodybuilders/weight trainers, cheerleaders, and gymnasts; and b) athletes of non-lean sports where appearance was less essential to success, i.e., swimming, track and field, and volleyball. The nonathlete subjects were college women who were not a part of a collegiate athletic team or a dance company.

For this research study, the subjects were considered to have an exceptional preoccupation with weight if they scored above the mean for known anorexics on all three of the following subscales of the EDI: Drive for Thinness, Body Dissatisfaction, and Bulimia. The subjects were classified as having a tendency toward eating disorders if they scored at or above the mean for known anorexics on at least five of the EDI subscales. The results of this study, when athletes were compared to nonathletes in regards to the total number of EDI subscales scores above the means of known anorexics, revealed no differences; $p > .05$. A significant difference was noted for the total number of subscale scores for athletes who scored above the mean values for known anorexics. The

athletes in activities that emphasized leanness had higher scores than those not emphasizing leanness; $p < .05$. A similar number of athletes and nonathletes were also classified as having a preoccupation with weight based on the scores of the Drive for Thinness; $p > .05$. In the athletic groups 23% were classified as preoccupied with weight in the group emphasizing leanness compared to the 16% in the group not emphasizing leanness; $p > .05$.

Sundgot-Borgen and Corbin (1987) noted in their study that four athletes (6%) and three nonathletes (3%) were considered to have an exceptional preoccupation with weight, when they scored above the mean for known anorexics on the Body-Dissatisfaction and Bulimia scales as well as on the Drive for Thinness subscale. Three athletes (5%) and three nonathletes (3%) had scores on at least five of the subscales that classified them as having tendencies toward eating disorders. A p -value of $p > .05$, indicated that similar numbers of athletes (10%) and nonathletes (6%) were classified as having exceptional preoccupation with weight or tendencies toward eating disorders. All seven athletes were in the group classified as emphasizing leanness, and 20% of these athletes in this group had exceptional preoccupation with weight or tendencies toward eating disorders compared to zero athletes in the group not emphasizing leanness.

In the study by Sundgot-Borgen and Corbin (1987), their purpose was to find the tendencies toward eating disorders among 168 female athletes and nonathletes. The researchers found that 6% of the nonathletes, 20% of the athletes participating in activities that emphasized leanness, and 10% of all the athletes were either exceptionally preoccupied with weight or had tendencies toward eating disorders. These findings

provided further evidence that many females as well as female athletes were preoccupied with weight; they may also be dissatisfied with their bodies, therefore having some cognitive characteristics of anorexics and bulimics.

Methods Used to Lose Weight

In a quantitative study, Black and Burckes-Miller (1988b), wanted to expand the list of eating disorder weight loss methods surveyed, to investigate the frequency of the use of these weight loss methods by both female and male college athletes, and to investigate any gender differences. A total of 695 male and female athletes (382 women and 313 men) from 22 colleges and universities in the Midwest participated in this study by answering a 41-item questionnaire. This questionnaire was developed by the researchers and was titled "Eating Habits of Athletes." Black and Burckes-Miller (1988b) also used the *Diagnostic and Statistical Manual of Mental Disorders-III and III-R* by the American Psychiatric Association, 1987 which assisted them in forming their questions for the questionnaire. The researchers also used classifications developed by Feighner et al. in 1972 (i.e. caloric intake, how long fasting sessions last, how often fad diets are used, how many times self induced vomiting is used, how often laxatives, diuretics and enemas are used) to construct questions to assess the frequency of anorexic and bulimic weight loss methods. The questionnaire was multiple choice, and multiple responses were permitted on some items.

The results for this study examined the eating disorder weight loss methods such as excessive exercise, calorie counting, fasting, fad dieting, and pathogenic weight control. The results for this study indicated that 409 (88%) athletes took part in excessive

exercise to lose weight, and significantly more men than women used this strategy; $p=.0007$ (Black and Burckes-Miller, 1988b).

The cutting and counting of calories as a weight loss method was used by approximately 163 athletes (23.5%). These athletes reported consuming 600 calories or fewer, and no significant gender difference was noted for summary data. It was noted; however, that more men than women reported consuming 600 calories or fewer at least one day a month; $p=.04$, but that more women than men ate 600 calories or less at minimum one day a week; $p<.05$. Black and Burckes-Miller (1988b) found no significant gender differences for the other frequencies of occurrence.

The use of fasting as an eating disorder weight loss method was noted by Black and Burckes-Miller (1988b) to be practiced by 83 (11.9%) of the athletes. A significant difference was noted in the study; more women than men fasted, $p<.01$. No significant differences were found between men and women in the frequency of fasting.

The use of fad diets which were recorded showed that 74 athletes (10.6%) had tried diets in magazines and popular books that cut caloric intake and limited food choices (Black and Burckes-Miller, 1988b). No gender differences were noted for the frequency of use regarding fad diets, but a significantly larger number of women used fad diets than men, $p<.01$.

With the issue of using self induced vomiting as a method of weight loss, a significant difference was noted. More women used this method of weight loss than men, $p=.03$; however, no significant gender differences were noted for frequencies of use (Black and Burckes-Miller, 1988b).

The final eating disorder method discussed was pathogenic weight control. Twenty-six athletes (3.7%) used laxatives, 22 (3.2%) athletes used diuretics, and 10 (1.4%) athletes used enemas (Black and Burckes-Miller, 1988). Again, no significant data were found in the frequency of use between men and women or who used this method more (Black and Burckes-Miller, 1988b).

Black and Burckes-Miller (1988b) study looked at the different types of eating disorder weight loss methods, the frequency of use, and differences between genders. Issues and concerns brought about by this research project were not whether the frequency of use of these weight loss methods satisfied the criteria of an eating disorder, or even if the techniques used to lose weight were related to the diagnosis of an eating disorder. The concern was the number of athletes who used some kind of eating disordered weight loss method for temporary and rapid loss of weight, and why they used these methods instead of a more gradual and permanent weight loss. One last major finding discovered in the project was that the men were more apt to lose weight with a more active approach, such as excessive exercise, instead of the more passive approaches such as fasting, diets, and the use of laxatives.

In this study, it was astounding to notice the number of inadvisable methods to lose weight performed by college athletes such as fasting, dieting, self-induced vomiting, and the use of laxatives, diuretics, or enemas. The use of these methods is a cause for alarm, in general, regardless of the fact that athletes may develop an eating disorder from using these methods to obtain a weight or body image goal. Black and Burckes-Miller (1988b) believed that from the issues raised in this study, it seemed reasonable to further

explore the reasons why the college athletic subpopulation is prone to eating disorders and to develop effective programs for the amelioration, treatment, and prevention of this disorder.

In a quantitative study by Davis (1992), the role of personality factors and body images were observed in the study of weight and preoccupation among high performance female athletes. The participants for this study were ninety-nine female Canadian athletes who were either national or international level athletes. The female athletes were basketball players, divers, field hockey players, figure skaters, gymnasts, downhill skiers, synchronized swimmers, sprinters, and volleyball players. These athletes were given questionnaires which posed questions regarding each person's psychometry (psychological variables, intelligence, behavior, emotional reactions), and a body image scale and questions in relation to their dieting behavior. The athletes also submitted biographical data as well as height and weight measurements.

To measure the weight and diet concerns of the athletes, Davis (1992) used part of the Eating Disorder Inventory (EDI) questionnaire that was designed by Garner, Olmstead and Polivy in 1983. This questionnaire was a 64-item questionnaire designed to assess cognitive and behavioral characteristics of anorexia nervosa and bulimia nervosa (Davis, 1992). The EDI contained eight subscales, but only three were used for this study; the Drive for Thinness, Body Dissatisfaction, and Bulimia. These three were chosen because they focused on shape, weight, and eating. To measure the athletes' emotional reactivity, Davis used the Eysenck Personality Inventory (EPI), Form A, which was constructed by Eysenck and Eysenck in 1968. The EPI was a 57-item forced choice

inventory which measured two fundamental personality dimensions, “introversion/extroversion” and “neuroticism” (Davis, 1992).

Davis (1992) used a scale which was developed by Myers, Zivian, Kirkland and Zager in 1985 which consisted of 5 sketches of women in bathing suits varying in body shape from thin to obese. This scale assessed subjective body shape measurements of the athletes by having them mark which body shape best resembled their body size. Each picture was ranked 1-5; 1 as very thin to 5 as being obese.

Body mass index (BMI) was measured from the height and weight measurements which the athletes submitted at the same time they took the questionnaire. To measure dieting behavior, the subjects were asked if they wanted to gain or lose weight. They then had to check one of three statements which best described their personal dieting routine.

The results for Davis’s (1992) study showed 71% of the athletes wanted to lose weight, and 27% of the athletes said they were constantly dieting. In this study, it was noted that among high-performance athletes there was a considerably larger amount of dieting behavior and concern with weight and body image than in non-athletes. Davis also found from his study that a substantial number of underweight athletes, by objective means, wanted to be thinner, were dissatisfied with their bodies, and were frequent dieters. As a group, the athletes did not show a higher score than the control group on the self report measure of weight and diet concerns, but a significantly greater proportion of high performance athletes were classified as excessively weight preoccupied compared to the control group (Davis, 1992). As for the study of excessive weight preoccupation, the

most concern occurred with the gymnasts and synchronized swimmers, but as other studies have shown (Sundgot-Borgen and Corbin, 1987), these attitudes are not restricted to athletes in sports characterized by ultra thinness/leanness. Subjective body size was independently and strongly related to weight and diet concerns, while actual body weight accounted for no additional variance.

In summary, Davis (1992) stated, elite athletes with extreme attitudes towards weight, diet, and body image were relevant factors in how they saw their body, and why they may have a preoccupation with their body image. This study also supported the fact that athletes wanted to minimize body fat to low levels believing it would improve performance. As for the personality findings in this study, they supported previous studies where emotional reactivity has been said to be predictive of weight preoccupation. Davis believed that it is a woman's emotional responsiveness which influences her degree of reaction and responsiveness to social as well as institutional demand to conform to the expected size and appearance set by society and some coaching perceptions.

Why Athletes may be Prone to Eating Disorders

In a study by Petrie (1996), groups of female and male athletes (lean and non-lean sports) and non-athletes were examined to determine the frequency of psychological and behavioral indices of eating disorders; (i.e., lean sport- gymnastics, sprinting, diving; non-lean sports-basketball, volleyball, swimming). The basis for Petrie's quantitative study was to extend previous research examining sociocultural theories concerning the etiology of eating disorders by including female and male athletes of lean and non-lean sports and non-athletes, and controlling for the potential influences of physical size

through body mass indices. For the purpose of this literature review, only the results of the female lean, non-lean athletes and non-athletes will be discussed.

The hypothesis in Petrie's study (1996) for the females was: (a) athletes in the lean sports would record a higher score of a psychological Drive for Thinness than non-lean athletes and non-athletes, and (b) athletes of lean and non-lean sports would be more satisfied with their bodily physique and feel more effective and secure than non-athletes.

The participants for Petrie's study (1996) were from a Division I, NCAA university in the Midwestern region. There were 113 female varsity athletes who participated in this study. The 250 female non-athlete participants in this study were students from undergraduate psychology classes. These non-athlete students were not participating in an organized competitive sport.

The data collection process in Petrie's study (1996) involved the 64-item Eating Disorder Inventory (EDI), a self-report measure of psychological and behavioral characteristics common to anorexia and bulimia nervosa produced by D. Garner and M. Olmstead in 1983. The participants answered each item on a 6-point Likert type scale ranging from "always" to "never". The scores were obtained by totaling the items across which represent each sub-scale. The female athletes and non-athletes also provided the researchers with information regarding their current weight, height, age, and activity status, and from this their body mass indexes were calculated to try to control for the potential influence of physical size (Petrie, 1996). The athletes anonymously filled out the questionnaires at their team meetings. The non-athletes from the undergraduate psychology classes filled out their questionnaires during separate meetings where the men

were segregated from the women around the same time of the year the athletes completed their questionnaires.

The independent ANOVA tables in Petrie's study (1996) revealed the three groups (female lean and non-lean athletes and non-athletes) were of similar ages, $p=.96$, and they did not differ on body mass, $p=.95$ (Petrie, 1996). There were also no significant findings which revealed female athletes of lean sports, non-lean sports, and non-athletes to have a connecting relationship to engage Bulimia (BUL), Perfectionism (PERF), Interpersonal Distrust (ID), and Maturity Fears (MF). However, the results determined female lean sport athletes were more preoccupied with their weight and dieting than the other two groups. It was also determined female non-athletes reported higher levels of Drive for Thinness (DT) than female lean and non-lean athletes. On the Ineffectiveness (INEFF) subscale, the female non-athletes felt more insecure, inadequate, and worthless than the female lean and non-lean athletes. Interoceptive Awareness (IA) revealed no significant differences among the three groups. Although there were some differences mentioned in the results of this study, independent t-test revealed each female athlete group's and non-athlete group's scores still were significantly lower ($p<.01$) than that of the normative scores for anorexic females when compared to a study done by Garner and Olmstead in 1983 (Petrie, 1996).

The results of the study supported the first hypothesis which dealt with female lean-athletes, non-lean athletes, and non-athletes in that the lean sport athletes had higher DT scores than the non-lean sport athletes. The scores for Bulimia of the three groups were low and did not differ. Petrie (1996) believed, due to the low Bulimia score in the

study, that preoccupation with and pursuit of thinness did not appear to manifest themselves through bingeing and purging. It was thought lean sport athletes were more likely to engage in other pathogenic weight control behaviors to reach their desired weight or appearance. It was suggested in this study that a longitudinal study be performed to better understand the influences of sport environments on disordered eating and to track athletes prior to, through, and after, their participation in organized sports.

The second hypothesis was also supported by this study. Female non-athletes were noted to have more DT than the athletic group in spite of the three groups having the same body masses. The non-athletes also reported higher INEFF scores than the non-lean athletes. The scores on all other psychological indices of the athletes and non-athletes were similar. The results of this study suggested a positive relationship between sport involvement and various aspects of psychological health.

Petrie (1996) concluded that female lean sport athletes are more preoccupied with weight and dieting, but their involvement in sport was positively associated with their psychological health; i.e. feelings of worth, effectiveness, and satisfaction with bodily physique (Petrie, 1996). The results were also the same for the male athletes.

In a study by Ashley, Smith, Robinson, and Richardson (1996), the Eating Disorders Inventory-2 was used to compare disordered eating pathology between female intercollegiate athletes and a control group of non-athletic subjects enrolled in an advanced program of study. The 145 NCAA, Division I, female intercollegiate athletes were given an attitude towards eating assessment by completing the EDI-2, anonymously, as part of their regular preseason physical examination. These athletes were competitors

in volleyball, basketball, gymnastics, cheerleading, dance, soccer, swimming and diving, tennis, golf, cross-country running, and track-and-field. The control group consisted of fourteen high achieving females in an advanced program of study. They filled out their EDI-2, anonymously, during a regular class meeting.

A total of 159 subjects completed all portions of the study. No significant differences, $p > .05$, between the control group and any of the athletic groups on any EDI-2 subscale scores approached significance, $p = .0765$ (Ashley et al., 1996). A difference in the perfectionism subscale scores approached significance, $p = .0765$, with the highest mean scores seen in the cheerleaders, basketball players, and the control group and the lowest mean scores in the gymnasts and tennis players (Ashley et al., 1996). There were no significant differences ($p > .05$) between athletes in lean sports, athletes in other sports, and the control group on EDI-2 subscale scores.

In conclusion, none of the groups in the sample by Ashley et al. (1996) exhibited the psychopathological characteristics for significant disordered eating patterns based on mean EDI-2 scores for eating disordered patients. It is uncertain why the cheerleaders, basketball players, and control subjects had higher perfectionism subscale scores. The results according to Ashley et al. also did not indicate a greater prevalence of eating disorders in athletes participating in lean sports than in other athletes. These results disagreed with other studies that found a greater prevalence of disordered eating patterns in athletes participating in lean sports, such as the studies by Petrie (1996), Sundgot-Borgen (1993), and Sundgot-Borgen and Corbin (1987). The results suggested that neither athletics in general nor a particular type of athletics predisposed one to exhibit

attitudes associated with disordered eating (Ashley et al., 1996). The control subjects, who were presumably high achievers, exhibited similar attitudes toward eating and body weight as the athletes in the sample. This suggested that collegiate athletes and students in an advanced program of study may have displayed the same degree of psychological traits indicative of eating disorders (Ashley et al., 1996). Ashley et al., concluded that the results suggested it was not athletics that predisposed an individual to develop disordered eating but a particular psychopathology associated with high achievement (Ashley et al., 1996).

The Eating Disorder Inventory-2

The original Eating Disorder Inventory (EDI) was developed and published by David M. Garner and Marion P. Olmstead in 1984, but with eating disorders being a complex and multidimensional disease, clinicians have focused on areas or issues which seem to be symptomatic of those who are eating disordered or prone to becoming eating disordered. In 1991, David Garner revised the EDI and published the EDI-2 Manual. Within the EDI-2 Manual, eating disorder symptomatology, a general description and content of the EDI-2, administration, scoring and interpretation, normative and descriptive information, as well as the reliability and validity of the EDI-2 are discussed. Garner (1991) cited in the EDI-2 Manual that the reliability of the EDI-2 assessment instrument was tested by Norring, 1989; Norring and Sohlberg, 1988; and Welch, Hall and Norring, 1990 to name a few. Garner (1991) also cited in the EDI-2 Manual some of the researchers who validated the EDI-2; Garner, Olmstead, Polivy, 1983 and Raciti and Norcross, 1987.

The revised EDI-2 was constructed with the original 64 items and eight subscales (Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness and maturity Fears) which measured a number of psychological and behavioral traits common in anorexia nervosa and bulimia nervosa. The revised instrument included 27 additional items with 3 new subscales: a) Asceticism, b) Impulse Regulation, and c) Social Insecurities.

According to the EDI-2, Asceticism was defined as the tendency to seek moral excellence through the pursuit of spiritual ideals (e.g. self discipline, self denial, self-restraint, self sacrifice, and control of bodily urges). The purpose of the Impulse Regulation subscale was to determine the tendency towards impulsivity, substance abuse, recklessness, hostility, destructiveness in interpersonal relationships and self-destructiveness. Finally, the Social Insecurity subscale measured the belief that social relationships were tense, insecure, disappointing, unrewarding, and generally of poor quality (Garner, 1991).

The EDI-2 has been used in both clinical and non-clinical settings. In clinical settings, the EDI-2 has been used for a variety of reasons other than as an assessment instrument to measure psychological and behavioral traits common in anorexia nervosa and bulimia nervosa. It has been used to plan patient treatments, assess patient progress and assist the clinician in understanding their patient(s) better.

The EDI-2 has also been used in non-clinical settings as an economical assessment instrument. The format of the EDI-2 makes it convenient to distribute the assessment instrument to large groups of people for the screening of eating disorder

symptomology. It is an affordable means of identifying those who may have “subclinical” eating problems, those who are excessively preoccupied with their weight, or those individuals who may be at risk for developing eating disorders (Garner, 1991). Its purpose is not to be used as the sole diagnostic tool for eating disorders, but it may be used as a screening tool for future reference in diagnosing a person with anorexia nervosa or bulimia nervosa.

CHAPTER 3

METHODS AND PROCEDURES

Over the past 15 years, women's intercollegiate athletics has grown tremendously across the United States, and, as it has grown, so have the expectations of the female athlete. With all the demands and expectations of the female athlete, they are stricken with many types of stressors and personal issues. One issue which is being discussed in the area of intercollegiate athletics is female athletes and eating disorders or disordered eating habits.

The purposes of this study were to determine a) the prevalence of eating disorder symptoms among National Collegiate Athletic Association (NCAA), Division I, intercollegiate female athletes in the Southeastern Conference (SEC), b) which sports (lean sports versus non-lean sports) had the highest prevalence of female intercollegiate athletes with eating disorder symptoms, c) what percentage of female athletes who were prone to eating disorder symptoms and would seek help or support, and d) what kind of assistance was offered from athletic institutions in the SEC to help the student athletes deal with eating disorder issues.

The procedures that were used in this study are presented under the following headings: description of participants, instrumentation, data collection method, and data analysis

Participants and Rationale for Selection

The participants in this study were NCAA, Division I, female intercollegiate athletes in the SEC. The participants were between 18-23 years old, and currently a

member of an intercollegiate sport in the SEC. The selection of the participants was based on the geographical location and close proximity of the Division I universities in the SEC. Availability of participants was based on which schools and athletes agreed to participate in this study.

Instrumentation

This study followed all guidelines for research with human subjects: a) the surveys developed by this researcher and the EDI-2 were approved by a panel of experts, b) Form A, also known as the Certification for Exemption from IRB Review for Research Involving Human Subjects was submitted to and approved by UTK's Sport and Physical Activity Unit Review Board, and c) Form A was submitted to and approved by UTK's Institutional Review Board.

Instrumentation used for this study involved two survey questionnaires and a clinical instrument. The first survey questionnaire (Appendix E), was designed by this researcher and served as the demographic questionnaire. Its purpose was to determine in what sport the participant was involved, and determined the age and year of eligibility of the participant. Determining the sport in which the participant was involved helped to classify the category in which their survey questionnaire was evaluated (lean sport or non-lean sport). The participant's age and year in college in terms of eligibility was used as background knowledge for the researcher.

The second instrument (Appendix F) used in this study was the Eating Disorder Inventory-2 (EDI-2) questionnaire (Garner, 1991). The EDI-2 is a common self-report measure of symptoms related to anorexia nervosa and bulimia nervosa and was revised

by Dr. David Garner in 1991. The EDI-2 is a revised edition of the original 64-item, self-report, 6-point, Likert-type scale questionnaire which was introduced in 1983 by Dr. David Garner, Dr. Marion Olmsted, and Dr. Janet Polivy. The current version of the EDI still contains the original 64 items, but has 27 additional items. The EDI-2 is comprised of the original eight subscales measuring: (1) Drive for Thinness, (2) Bulimia, (3) Body Dissatisfaction, (4) Ineffectiveness, (5) Perfectionism, (6) Interpersonal Distrust, (7) Interoceptive Awareness, and (8) Maturity Fears, plus three new subscales which measure Asceticism, Impulse Regulation, and Social Insecurity. The original EDI and the revised edition have been used in many studies including Sundgot-Borgen and Corbin (1987), Petrie (1996), Davis (1992), Wilmore (1991), and Ashley et al. (1996).

The final survey questionnaire (Appendix G) was also designed by this researcher. The purpose of this survey questionnaire was to ascertain information from the participants regarding the type(s) of support system(s) offered by their athletic institutions for eating disorders. The survey questionnaire also addressed the question, "If there is not an organized support program available specifically for the female college athletes with eating disorders, would the athletes like to see their university implement such a program?"

Data Collection Methods

A letter was mailed to the Athletic Director of each SEC university to explain the purpose of the research study and to seek their cooperation and the assistance of their athletic training staff to distribute and collect the survey questionnaires during the first week their institution resumes for the spring 1999 academic school year (Appendix A).

A self addressed stamped, envelope and note card were included with the letter to the Athletic Director to return to the researcher. The note card served as notification to the researcher regarding the participation status of the universities in the SEC, and which teams were able to participate in the study (Appendix B). The Athletic Directors were requested return the post card in the self addressed, stamped envelop provided to the researcher by December 14, 1998.

Upon receiving permission from the Athletic Directors, the survey questionnaires (Appendices E, F, G) and individual envelopes for the questionnaires were sent to the Head Athletic Trainers of each university willing to participate in the study along with a cover letter (Appendix C) instructing the athletic training staff on how to distribute, collect, and return the surveys. Accompanying the questionnaires and cover letter to the Athletic Trainers at each university was the official Informed Consent Statement (Appendix D). The Informed Consent Statement was read to all the participants and indicated that they anonymously and voluntarily complete the two survey questionnaires and the clinical assessment instrument. The participants were informed that the completion of the questionnaires was considered their informed consent, and that no participant was going to be offered or receive any money or incentives for participating in this study. The time allotted to the participants to peruse and answer the questionnaires was half an hour. Each university was given 2 weeks to distribute and return the survey questionnaires to the researcher.

The participants were requested to seal their completed questionnaires in a provided unmarked envelope. An athletic training staff member collected the envelopes

and enclosed them in the provided self addressed, stamped, manilla envelope and returned them to the researcher.

Once the questionnaires were returned to the researcher and were analyzed, they were stored in a locked filing cabinet in the researchers office in room 150 B of Stokely Athletic Center at UTK. Only the researcher and advisor had access to this information.

Data Analysis Method

When the survey questionnaires were returned, they were initially divided into two categories, lean sports and non-lean sports. The EDI-2 manual, which provided written instructions on scoring the questionnaires, was used to score, interpret the data of the EDI-2 questionnaire, and estimate the prevalence of eating disorders among the athletes in lean sports and non-lean sports.

Differences in the prevalence of eating disorders were estimated by comparing the percentage of athletes whose subscale scores, Drive for Thinness (DT) and Bulimia (BUL), fell in the clinical range for eating disorders, the subclinical range, and the normal range for female college students. The normative clinical ranges for eating disorders, and for female college students in general were graphed in the EDI-2 manual. The ranges in between were designated by this researcher as "subclinical."

The two subscales DT and BUL were isolated from the entire EDI-2 questionnaire and utilized for this study. The purpose of isolating the subscales DT and BUL was to note which participants were more at risk for the development of an eating disorder. According to Garner (1991), a past study by Garner, Garfinkel, Rockert, and Olmsted in 1987, the subscales DT and Body Dissatisfaction (DS) indicated that

individuals with elevated scores in these areas were more at risk for the development of eating disorders. Davis (1992) noted that the three subscales, DT, BUL, and BD better focused on pathological indices (shape, weight, and eating) related to eating disorders than did the other subscales. According to EDI-2 manual, of those three only the DT and BUL subscales had non-overlapping normative ranges. The BD subscale had overlapping normative ranges for the eating disorder group and the general female college student group which made complete score classification impossible.

After estimating the prevalence of eating disorder symptoms among the lean sport and non-lean sport participants, the prevalence percentages were compared to those reported (in the EDI-2 manual) for female college students in general. Differences were tested for statistical significance at the chance probability of 5% or less; i.e. $p < .05$ (Hays, 1973). Appropriate charts and graphs were also used to represent the statistical analysis used to describe the analytical data found in the study in relation to which sports (lean versus non-lean) seemed to have a higher incidence of eating disorder symptoms. These charts and graphs also assisted in expressing common repetitious ideas and thoughts throughout the spectrum of participants regarding the kind of assistance offered from their athletic department, and how many would seek help for dealing with an eating disorder issue.

CHAPTER 4

RESULTS AND DISCUSSION

The purposes of this study were to determine: a) eating disorder symptoms among National Collegiate Athletic Association (NCAA), Division I, intercollegiate female athletes in the Southeastern Conference (SEC), b) if lean sport athletes were more prone to eating disorder symptoms than non-lean sport athletes, c) what percentage of athletes who were at risk for eating disorders sought help or support, and d) what kind of assistance was offered from athletic institutions in the SEC to help the student athletes deal with eating disorder issues.

Presented in this chapter were the results and discussion of this study. Included in the results were the demographics questionnaire, the Eating Disorder Inventory-2, and Survey #3.

Survey #1-Demographics

The first three questions on Survey #1 of the Demographic Study were designed to provide demographic data of the participants. There were 325 NCAA, Division I, female intercollegiate athletes in the SEC that participated in the study. The participants' ages ranged from 18-23 years old, and current members of an intercollegiate sport in the SEC ranging in years of eligibility from freshman to senior status.

Survey #2-Eating Disorder Inventory-2

The purpose of the Eating Disorder Inventory-2 (EDI-2) was to determine a) the prevalence of eating disorder symptoms among NCAA, Division I, intercollegiate female athletes in the SEC, and b) if lean sport athletes were more prone to eating disorder

symptoms than non-lean sport athletes. The two subscales of the EDI-2 used were Bulimia (BUL) and Drive for Thinness (DT).

Presented in Table 1.1 is the total number of lean sport and non-lean sport athletes who scored in the Normative (N), Subclinical (SC), and clinical (C) ranges for Bulimia (BUL). There were a total of 167 lean sport athletes and 158 non-lean sport athletes. For the BUL subscale, 89.8% (n=150) of the lean sport athletes scored in the N clinical range for eating disorders and for female college students. There were 6.6% (n=11) of the lean sport athletes who scored in the SC and 3.6% (n=6) of the lean sport athletes who scored in the C range for eating disorders and for female college students. Of the 158 non-lean sport athletes, 88.0% (n=139) scored in the N range, 8.2% (n=13) scored in the SC range, and 3.6% (n=6) scored in the C range for eating disorders and for female college students.

Table 1.1

Total number of lean sport and non-lean sport athletes who scored in the Normal (N), Subclinical (SC), and Clinical (C) ranges for Bulimia (BUL).

Total number of lean sport athletes, 167	Normal	Subclinical	Clinical
Participants N	150	11	6
Percentage %	89.8%	6.6%	3.6%

Total number of non-lean sport athletes, 158	Normal	Subclinical	Clinical
Participants N	139	13	6
Percentage %	88.0%	8.2%	3.6%

Presented in Table 2.1 is the total number of lean sport and non-lean sport athletes who scored in the N, SC, and C ranges for DT. There were a total of 167 lean sport athletes, and 77.8% (n=130) scored in the N range, 13.2% (n=22) scored in the SC range, and 9.0% (n=15) scored in the C range for eating disorders and for female college students. Of the 158 non-lean sport athletes, 81.6% (n=129) scored in the N range, 13.3% (n=21) scored in the SC range, and 5.1% (n=8) scored in the C range for eating disorders and for female college students.

Tables 1.1 and 2.1 display the data revealed from this study regarding the first two questions posed in the study: a) what is the prevalence of eating disorder symptoms among NCAA, Division I, intercollegiate female athletes in the SEC, and b) which sports

Table 2.1
Number of lean sport and non-lean sport athletes who scored in the Normal (N), Subclinical (SC), and Clinical (C) ranges for Drive for Thinness (DT).

Total number of lean sport athletes, 167	Normal	Subclinical	Clinical
Participants N	130	22	15
Percentage %	77.8%	13.2%	9.0%

Total number of non-lean sport athletes, 158	Normal	Subclinical	Clinical
Participants N	129	21	8
Percentage %	81.6%	13.3%	5.1%

(lean versus non-lean) had the highest prevalence of female intercollegiate athletes with eating disorder symptoms.

Tables 1.1 and 2.1 display the data revealed from this study regarding the first two questions posed in the study: a) what is the prevalence of eating disorder symptoms among NCAA, Division I, intercollegiate female athletes in the SEC, and b) which sports (lean versus non-lean) had the highest prevalence of female intercollegiate athletes with eating disorder symptoms.

Chi-square test of significance at the .05 level of reliability was used to determine the results for the first purpose; what is the prevalence of eating disorder symptoms among NCAA, Division I, intercollegiate female athletes in the SEC. The Chi-square test of significance at the .05 level of reliability revealed no significant differences when comparing the lean and non-lean sport athletes for the prevalence of eating disorder symptoms under the subscale BUL. There were, however, significant findings when the DT scores were evaluated. The lean sport athletes were significantly different from the general female college population regarding the prevalence of eating disorder symptoms; their scores were significantly higher than expected by chance at the .05 level of reliability (Hays, 1973). There were no significant findings regarding non-lean sport athletes when their DT scores were evaluated.

Regarding the second question posed by this study, lean sport athletes scored in the clinical range on DT significantly more often than did non-lean sport athletes. This difference also was significant at the .05 level of confidence according to the Chi-square test of significance (Hays, 1973).

The results of this study found no significant differences when evaluating lean and non-lean sport athletes for the prevalence of eating disorder symptoms under the subscale BUL agreed with Petrie's 1996 study. Although Petrie (1996) was looking for a connecting relationship between lean sport athletes, non-lean sport athletes, and non-athletes to engage in BUL, PERF, ID, and MF, he found no significant findings which revealed female athletes and non-athletes to have a connecting relationship to engage BUL, or PER, ID, and MF. Petrie found the scores for BUL of the three groups to be low and they did not differ. The same was true of this study; there were very few participants in either lean or non-lean sports who scored in the C range for BUL, and there was no difference between the two groups.

This study also agreed with the research by Ashley, Smith, Robinson, and Richardson (1996) regarding the BUL findings. They stated that there were no significant differences between athletes in lean sports and athletes in other sports, but they made reference to the entire EDI-2, not just the subscale BUL.

The results of the Ashley et al. study also did not indicate a greater prevalence of eating disorders in athletes participating in lean sports than in other athletes. These results disagreed with other studies [Petrie (1996), Sundgot-Borgen (1993), and Sundgot-Borgen and Corbin (1987)] which found a greater prevalence of disordered eating patterns in athletes participating in lean sports. The results of the study by Ashley et al. (1996) suggested that neither athletics in general nor a particular type of athletics predisposed one to exhibit attitudes associated with disordered eating. Ashley et al., concluded that the results suggested it was not athletics that predisposed an individual to

develop disordered eating but a particular psycho pathology associated with high achievement (Ashley et al., 1996)

Unlike Ashley et al., this study agreed with the findings of Sundgot-Borgen and Corbin (1987) and those of Petrie (1996) regarding the DT scores of the lean sport athletes. The lean sport athletes' scores were higher than those of the general female college population. Furthermore, the lean sport athletes scored in the DT clinical range significantly more often than did the non-lean sport athletes; $p < .05$. These results agreed with other studies such as Sundgot-Borgen and Corbin (1987), Petrie (1996), and Wichmann and Martin (1993).

Sundgot-Borgen and Corbin (1987) wanted to identify the extent to which preoccupation with weight and tendencies toward eating disorders were problems among female athletes by evaluating the EDI-2 subscales scores of DT, BD, and BUL. Their study noted that athletes in activities that emphasized leanness had higher scores than those not emphasizing leanness; $p < .05$. A similar number of athletes and non-athletes were classified as having a preoccupation with weight based on the scores of DT; $p < .05$. Sundgot-Borgen and Corbin also found that 20% of the athletes participating in activities that emphasized leanness, and 10% of all athletes were either exceptionally preoccupied with weight or had tendencies toward eating disorders. The percentages found in this study were lower, but the results agreed overall with those of Sundgot-Borgen and Corbin (1987).

This study also supported Petrie's (1996) study; both found lean sport athletes scoring in the DT clinical range more often than the non-lean sport athletes; $p < .05$. One

of Petrie's hypotheses was that athletes in the lean sports would record a higher score on a psychological Drive for Thinness (DT) than non-lean sport athletes and non-athletes. The results demonstrated that female lean sport athletes were more preoccupied with their weight and dieting than the other two groups and that lean sport athletes had a higher DT than the non-lean sports athletes.

This study did not directly address Wichmann and Martin's (1993) observation that female athletes seem to be more pressured toward thinness than are male athletes. It did address Wichmann and Martin's concern that women athletes may be pressured even more than females in general, but the results only partially supported their conclusions. The results of this study demonstrated that lean sport athletes scored significantly higher on the DT subscale than expected by chance at the .05 level of reliability compared to the general female college population. The non-lean sport athletes did not display a difference in DT scores compared to the general female college population, therefore only part of Wichmann and Martin's conclusion was supported by this study. One speculation as to why there was not a difference between the DT scores of the non-lean sport athletes compared to the general female college population is that non-lean sport athletes may not experience as much pressure to be thin as female lean sport athletes. Female lean sport athletes may experience more pressure to be thin due to the demands of participating in a lean sport.

Survey #3

There were nine questions to Survey #3 which were developed to answer the last two purposes of this study; what percentage of athletes who were at risk for eating

disorders would seek help or support, and what kind of assistance was offered from athletic institutions in the SEC to help the student-athletes deal with eating disorder issues. Presented with each question is a table which illustrates how the participants answered each question.

Table 3.1 corresponds to question number one; Do you have someone who is in the athletic department you can confide in regarding personal issues? All participants answered this question, but only those who scored in the SC and C ranges for BUL and DT were documented. It was interesting to note that the majority of those participants who did score in the SC and C range were aware that they could confide in someone; they felt comfortable/secure enough to go to someone regarding personal issues. Although the numbers were small regarding those participants who felt like they did not have someone

Table 3.1

Question #1. Do you have someone who is in the athletic department you can confide in regarding personal issues?

Total of lean & non-lean sport athletes	Yes	No	No Answer
BUL Subclinical	15	7	2
BUL Clinical	4	6	2
DT Subclinical	29	12	2
DT Clinical	13	9	1

in the athletic department to confide in regarding personal issues, it would be interesting to know why they felt that way and what could be done to make their environment more inviting/conducive to reaching out for help.

Presented in Table 3.2 are the responses to the second half of question number one; If so, who? This table presented the answers of those participants who answered YES to the first half of question one. Some participants noted they were seeing two professionals, therefore each professional received half a point; .5. From this table it was interesting to note that the participants chose the coaches and athletic trainers most often as their confidants. This may have been due to the fact that coaches and athletic trainers interact more often with the participants/athletes than do other people in the athletic department.

Table 3.2
Question #1a. If so, who (coach, athletic trainer, etc)?

Total of lean & non-lean sport athletes	Athletic Trainer	Coach	Adm	Team Phys	Sport Psych	Team-mate	Performance Team	Nutritionist	Not Specified
BUL SC (15)	2.5	7.5		1					4
BUL C (4)		.5					.5	1	2
DT SC (29)	8.5	9	1	1.5	2	1		1	5
DT C (13)		4.5				1	.5		7

Note. Adm (Administrator) and Team Phys (Team Physician)

Table 4.1 corresponds to question number two; Does your athletic department have an organized support program specifically designed for female athletes that you can attend to discuss personal issues (e.g., eating disorders, depression, body dissatisfaction), as well as to the purpose statement, what kind of assistance was offered from athletic institutions in the SEC to help the student-athletes deal with eating disorder issues? All of the participants' responses are included in this table. It was interesting to note that 68.6% (n=223) of the participants answered YES to question number two, and that the kind of assistance which was offered from their athletic institution was an organized support program. However, 22.5% (n=73), almost a quarter of the participants surveyed, did not know if their athletic department provided an organized support program specifically designed for female athletes to attend to discuss personal issues. Possible reasons why these participants did not know of a program could have been due to a lack of communication to the student-athletes on behalf of the athletic departments, or the athletic departments did not have an organized support program specifically designed for female athletes. Unfortunately, since all the data were confidential regarding which universities in the SEC decided to participate in this study, it could not be determined from these responses which athletic departments actually provided an organized support program specifically designed for female athletes to attend to discuss personal issues.

The data presented in Table 4.2 corresponds to question number two. Presented in this table are the total number of SC and C lean and non-lean sport athletes, 77, who scored in the BUL and/or DT range who knew and who did not know if their athletic department had an organized support program specifically designed for female athletes.

Table 4.1

Question #2. Does your athletic department have an organized support program specifically designed for female athletes that you can attend to discuss personal issues (e.g., eating disorders, depression, body dissatisfaction)?

Total number of participants, 325	Yes	No	Do Not Know
Participants N	223	29	73
Percentage %	68.6%	8.9%	22.5%

Table 4.2

Total number of Subclinical (SC) and Clinical (C) lean and non-lean sport athletes who scored in the BUL and DT range who know and do not know if their athletic department has an organized support program specifically designed for female athletes.

Total number of SC & C lean and non-lean sport athletes who scored in the BUL and DT range, 77	Know of a program	Do not know of a program
Participants N	51	26
Percentage %	66.2%	33.8%

Of the 77 participants who scored in the SC and C range of BUL and/or DT, 66.2% (n=51) knew that their athletic departments provided organized support programs specifically designed for female athletes. The other 33.8% (n=26) of the participants who scored in the SC and C range of BUL and/or DT did not know of a program. Again, possible reasons why the participants were not aware of a program specifically designed for female athletes to attend and discuss personal issues may have been due to the lack of communication on behalf of the athletic department to the student-athletes, or because there were no such programs provided by the athletic departments.

Table 5.1 was developed from the NO responses of question number two; Does your athletic department have an organized support program specifically designed for

Table 5.1

Question #3. If your athletic department does not have an organized support program specifically designed for female athletes to discuss personal issues, would you like to have a program started? (NO responses from Question #2)

Total number of participants who answered NO to Q#2, 29	Yes	No	No Answer
Participants N	14	10	5
Percentage %	48.3%	34.5%	17.2%

female athletes that you can attend to discuss personal issues (e.g., eating disorders, depression, body dissatisfaction). Presented in Table 5.1 are the responses of all the participants of both lean and non-lean sports who answered question number three, If your athletic department does not have an organized support program specifically designed for female athletes to discuss personal issues, would you like to have a program started? There were 48.3% (n=14) who answered YES, 34.5% (n=10) who answered NO, and 17.2% (n=5) who DID NOT CARE whether their athletic department established an organized support program specifically designed for female athletes to discuss personal issues.

The data presented in Table 5.2 corresponded to question number three, isolating the NO responses of the lean and non-lean sport athletes of both the SC and C populations of BUL and DT. There were 42.9% (n=3) of the lean and non-lean participants who scored in the SC and C range who would like to have a program established specifically designed for female athletes to discuss personal issues. Those participants who did not want a program started included 42.9% (n=3), and those

Table 5.2

Total number of lean and non-lean sport athletes (7) who scored in the Subclinical and Clinical range of BUL and DT who would like, would not like, and do not care to have a program started that responded NO to question number 2.

Number of SC & C lean and non-lean sport athletes of BUL and DT that answered NO to Q#2, 7	Yes	No	Do not care
Participants N	3	3	1
Percentage %	42.9%	42.9%	14.3%

participants who did not care if a program was established included 14.3% (n=1).

The data in Table 5.2 partially answered the purpose statement, what percentage of athletes prone to eating disorders sought help or support. The data disclosed that 42.9% (n=3) of the lean and non-lean sport athletes of both the SC and C populations of BUL and DT would like to have a program established specifically designed for female athletes to discuss personal issues, alluding to the possibility that these participants would seek help or support for an eating disorder or other personal issue.

Presented in Table 6.1 are the responses of all the participants regarding question number four; If your athletic department had an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction in your athletic department, would you take advantage of this program? The responses to this question were interesting. One third of the participants answered YES, 33.8% (n=110), they would take advantage of a program designed specifically for female athletes to deal with eating disorders, depression, or body dissatisfaction.

Table 6.1

Question #4. If your athletic department had an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction in your athletic department, would you take advantage of this program?

Total number of participants, 325	Yes	No	No Answer
Participants N	110	103	112
Percentage %	33.8%	31.7%	34.5%

Approximately another one third of the participants, 31.7% (n=103), answered NO, they would not take advantage of such a program, and 34.5% (n=112) of the participants did not answer the question. Of these responses it was difficult to note which groups (the normal, subclinical, or clinical) were more likely to take advantage of such a program, therefore, Table 6.2 was developed to evaluate the number of lean and non-lean sport athletes of both the SC and C populations of BUL and DT.

Once the normal group was excluded from the results of question number four, the lean and non-lean sport athletes who scored in the SC and C ranges for BUL and DT were observed. It was interesting to note that once again the number of participants who answered YES, NO, and who DID NOT ANSWER the question at all, were split almost equally into thirds. There were 31.2% (n=24) who answered YES, they would take advantage of an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction. There were, however, 36.4% (n=28) of those participants who scored in the SC and C ranges for BUL and DT who stated NO, they would not take advantage of such a program, and 32.5% (n=25) of the participants DID NOT ANSWER the question.

Table 6.2

Total number of lean and non-lean sport athletes (77) of both the Subclinical and Clinical populations of BUL and DT who would take advantage of an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction.

Total number of lean and non-lean sport athletes who scored in the SC and C range for BUL and DT, 77	Yes	No	No Answer
Participants N	24	28	25
Percentage %	31.2%	36.4%	32.5%

Other interesting facts about the responses were the percentage and numerical differences regarding the YES, NO, and NO ANSWER responses between question number four and question number three. There was a 3.9% (n=3) increase of participants stating, YES to question number four; the participants stated that they would like to have a program specifically designed for female athletes to discuss eating disorders, depression and/or body dissatisfaction, compared to question number three; if your athletic department does not have an organized support program specifically designed for female athletes to discuss personal issues, would you like to have a program started. Although there was not a significant increase of YES responses to question four compared to question three, it was interesting to note the difference.

There was also an increase of NO responses by 23.4% (n=18) of the participants to question number four compared to question number three, yet a decrease of NO ANSWER responses by 27.2% (n=21) of the participants of question number four compared to question number three. It was very noticeable that those participants who

were undecided about question number three; If your athletic department does not have an organized support program specifically designed for female athletes to discuss personal issues, would you like to have a program started?, responded NO to question number four which specifically asked them if they would take advantage of a program specifically designed for female athletes to deal with eating disorders, depression and/or body dissatisfaction. There was no reason noted by any of the participants why they changed their minds and marked a definite NO answer to question number four, yet were undecided or DID NOT ANSWER question number three.

Presented in Table 7.1 are the responses of all the participants of both the lean and non-lean sports who answered YES to question number two; Does your athletic department have an organized support program specifically designed for female athletes you can attend to discuss personal issues (e.g., eating disorders, depression, body dissatisfaction).

There were 19.3% (n=43) of the participants who answered YES to question number two whose response was they had taken advantage of their athletic department's program specifically designed to help female athletes deal with eating disorders, depression, and/or body dissatisfaction. There were, however, more participants who answered NO, 78.0% (n=174), they had not taken advantage of their athletic department's program, and there were 2.7% (n=6) of the participants who DID NOT ANSWER question number five.

Table 7.2 was broken down from Table 7.1, to differentiate which athletes of lean and non-lean sports who scored in the SC, and C range of BUL and DT had taken

Table 7.1

Question #5. If your athletic department does have an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction, have you taken advantage of this program?

Total number of athletes whose response was Yes to Question #2, 223	Yes	No	No Answer
Participants N	43	174	6
Percentage %	19.3%	78.0%	2.7%

Table 7.2

Total number of lean and non-lean sport athletes (17) of the Subclinical and Clinical populations of BUL and DT who answered YES to question number 2, and YES to question number five.

Total number of SC & C lean and non-lean sport athletes of BUL and DT who answered YES to question #2,17	Yes
Participants N	17
Percentage %	22.1%

advantage of an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction. The data which were presented in this table revealed that 22.1% (n=17) of the participants who scored in the SC and C range for BUL and DT, out of the 223 total number of participants who answered YES to question number two, answered YES, that they had sought help or support, or had taken advantage of an organized support program specifically designed for female athletes to deal with eating disorders, depression, and/or body dissatisfaction.

Table 7.2 like Table 5.2 also presented another answer to the purpose statement, what percentage of athletes prone to eating disorder symptoms sought help or support.

The data revealed that those participants of the lean and non-lean sports who scored in the SC and C range for BUL and DT, 22.1% (n=17) participants sought help from their athletic department which already had a program designed to specifically help female athletes deal with eating disorders, depression, and/or body dissatisfaction. This percentage was lower than that for the athletes in general.

Revealed in Table 8.1 were the responses to question number six which was a continuation of question number five. Those participants who answered NO to question number five provided an explanation of why they had not utilized their athletic department's program specifically designed to help female athletes deal with eating disorders, depression, and/or body dissatisfaction.

There were 79.9% (n=139) of the 174 participants who answered NO to question number five that noted they did not have an eating disorder, depression, and/or a body dissatisfaction issue. Some participants chose not to answer question number six and provide an explanation as to why they stated NO to question number five; 4.6% (n=8). It was interesting to note some of the explanations that the participants disclosed as to why they had not utilized their athletic departments program specifically designed to help female athletes deal with eating disorders, depression, and/or body dissatisfaction (*Table 8.1). Some participants disclosed that their problem was not significant enough for help; there was no time; they had no time or desire to seek help; one participant expressed that they had no time, but want to seek help in the future; they were planning to seek help soon; their problem was not a big deal; they did not have an eating disorder; they were not interested in a program; one participant noted that the program was a waste

Table 8.1

Question #6. If your answer was NO to number 5, why have you not utilized this program? Reasons why lean and non-lean sport athletes have not utilized an organized support program.

Total number of athletes answering NO to #6, 174	No Problems	No Answer	*Other
Participants N	139	8	27
Percentage %	79.9%	4.6%	15.5%

of time, they do not have a problem, and the program provides useless help; they were not comfortable talking to people; they were not comfortable sharing their feelings; they did not know much about their school's program; they could care for themselves; they felt in control; they did not need any support at that specific time; they could handle their problem on their own; they would rather talk to people they know and trust; they would rather talk to their family and friends; one participant believed that she had a problem, but was not ready to deal with her issues; some participants were too embarrassed to ask for help; one participant stated that she had tried to contact someone for help but they never returned her phone calls.

Presented in Table 9.1 were only the responses of those participants in lean and non-lean sports who scored in the SC and C range for BUL and/or DT. There were 15.6% (n=12) who stated YES, they were seeing a counselor or someone for an eating disorder or personal issue, and 77.9% (n=60) stated NO, they were not seeing a counselor or someone for an eating disorder. The data also revealed that 6.5% (n=5) of the participants DID NOT ANSWER question number seven.

What was interesting in this table was the number of participants who scored in

Table 9.1

Question #7. Do you see a counselor or someone now for an eating disorder or for other personal issues?

Total number of SC & C lean and non-lean sport athletes of BUL and DT, 77	Yes	No	No Answer
Participants N	12	60	5
Percentage %	15.6%	77.9%	6.5%

the SC and C range for BUL and DT whose response was NO, they were not seeing anyone for an eating disorder or for any other personal issue. Possible reasons for this may have been due to the fact that the participants had not realized they had an eating disorder issue, or that when they completed the EDI-2 assessment instrument they were not completely honest; either over or under scoring their responses.

The data presented in Table 9.2 were the responses of those participants who stated YES, they were seeing someone for an eating disorder or personal issue. Some professionals received half scores which indicated some participants were seeing more than one professional at a time. Unfortunately, there was no data provided as to why these participants chose one professional over another, but the most common professional that the participants were seeing was a psychologist, and the least common professional that the participants were seeing was a physician.

The data presented in Table 10.1 answered question number eight, as well as the purpose statement, what kind of assistance was offered from athletic institutions in the SEC, and included the responses from all participants.

Table 9.2

Question #7a. If so who (i.e., sport psychologist, family psychologist, family doctor, team doctor, etc.)?

Of those lean and non-lean sport athletes who answered, Yes, 12	Eating Disorder Specialist	Psychologist	Sport Psychologist	Physician	Social Worker	Nutritionist
Participant N	1	5.5	2	.5	2	1
Percentage %	8.3%	45.8%	16.7%	4.2%	16.7%	8.3%

Table 10.1

Question #8. Does your athletic department provide organized team talks regarding eating disorders and other personal issues?

Total number of participants, 325	Yes	No	No Answer
Participants N	212	70	43
Percentage %	65.2%	21.5%	13.2%

The data presented in Table 10.1 for question number eight revealed that there were 65.2% (n=212) participants who stated YES, their athletic department provided organized team talks regarding eating disorders and other personal issues. There were 21.5% (n=70) of the participants that stated NO, and 13.2% (n=43) of the participants that DID NOT ANSWER question number eight.

Based on the data, it was noted that there were a high number of participants who were aware that their university provided organized team talks regarding the specific issues of eating disorders and personal issues. It could not be determined from this data which universities actually provided organized team talks due to maintaining the confidentiality of which universities decided to participate in this study. For the same

reason, it was impossible to determine from this data if there were conflicting responses of YES and NO from participants of the same university.

A conclusion was made regarding the purpose statement, what kind of assistance was offered from athletic institutions in the SEC to help the student-athletes deal with eating disorders. According to the data presented in Table 10.1, the majority of the teams do provide organized team talks regarding eating disorders and other personal issues, but it is unclear as to how many universities provide this service to their student-athletes.

Represented in Table 11.1 were the responses of those participants who answered NO to question number eight that their athletic department does not provide organized team talks regarding eating disorders and other personal issues. Of those 70 participants who stated NO to question number eight, 45.7% (n=32) mentioned YES, they would like to see their athletic department provide organized team talks, 30.0% (n=21) stated NO, they did not want their athletic department to provide organized team talks, 8.6% (n=6) noted they DID NOT CARE or they MAY like to have an organized team talk sessions, and 15.7% (n=11) DID NOT ANSWER question number nine.

Presented in Table 12.1 are the total number of participants surveyed for this study according to the participants year of eligibility for athletics. Of the 325 participants for this study, 36.0% (n=117) were of freshman status, 27.7% (n=90) were of sophomore status, 19.7% (n=64) were of junior status, and 16.6% (n=54) were of senior status.

It was not surprising to find more freshman and sophomore participants among those surveyed for this study than juniors and seniors. The lack of juniors and seniors surveyed could have been due to the timing of when the surveys were presented to the

Table 11.1

Question #9. If your answer is NO to number 8, would you like to see your athletic department provide organized team talks with a sport psychologist or outside guest speakers knowledgeable in these areas?

Total number of participants who stated NO to question # 8, 70	Yes	No	Do Not Care/ Maybe	No Answer
Participants N	32	21	6	11
Percentage %	45.7%	30.0%	8.6%	15.7%

Table 12.1

Total number of participants surveyed according to year of eligibility for athletics.

Total number of participants, 325	Freshman (F)	Sophomore (So)	Junior (J)	Senior (Sr)
Participants N	117	90	64	54
Percentage %	36%	27.7%	19.7%	16.6%

participants: spring semester, when some of the fall and winter sports had completed their seasons. Other possible explanations for the lack of juniors and seniors surveyed may be that they were unavailable to receive the surveys or that they were uninterested in completing the survey due to their college athletic careers ending.

Presented in Table 13.1 is the total number of lean sport athletes surveyed according to age and year of eligibility for athletics. The data was separated according to lean sport athletes, age, and year of eligibility and how they scored on the EDI-2, BUL subscale; in the Normal (N), Subclinical (SC), or Clinical (C) ranges.

Presented in Table 13.2 are the percentages of underclassmen and upperclassmen lean sport athletes who scored in the N, SC, and C range for BUL. There were significant findings regarding this data, but there appeared to be a trend for underclassmen to score more in the N range, and less in the SC range. It was also interesting to notice that the percentage of both the underclassmen and upperclassmen who scored in the C range were similar.

Presented in Table 14.1 is the total number of non-lean sport athletes surveyed according to age and year of eligibility for athletics. The data was separated according to non-lean sport athletes, age, and year of eligibility and how they scored on the EDI-2, BUL subscale; in the Normal (N), Subclinical (SC), or Clinical (C) ranges.

Presented in Table 14.2 are the percentages of underclassmen and upperclassmen non-lean sport athletes who scored in the N, SC, and C range for BUL. There was a trend for underclassmen to score more in the C range, and less in the N range than the upperclassmen.

Table 13.1
Total number of lean sport athletes (167) surveyed according to age and year of eligibility for athletics who scored in the
Normal (N), Subclinical (SC), and Clinical (C) ranges for BUL.

# of lean sport athletes by age and year	17-F	18-F	18-So	19-F	19-So	20-F	20-So	20-J	20-Sr	21-F	21-So	21-J	21-Sr	22-J	22-Sr	23-J	23-Sr
# N	0	29	0	25	36	2	18	13	0	1	1	17	9	2	8	1	5
% N	0.0%	100%	0.0%	88.0%	94.4%	100%	83.3%	77.0%	0.0%	100%	100%	88.2%	88.9%	50.0%	87.5%	100%	80.0%

# SC	0	0	0	2	0	0	2	3	0	0	0	1	1	0	1	0	1
% SC	0.0%	0.0%	0.0%	8.0%	0.0%	0.0%	11.1%	23.0%	0.0%	0.0%	0.0%	5.9%	11.1%	0.0%	12.5%	0.0%	20.0%

# C	0	0	0	1	2	0	1	0	0	0	0	1	0	1	0	0	0
% C	0.0%	0.0%	0.0%	4.0%	5.6%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	5.9%	0.0%	50.0%	0.0%	0.0%	0.0%

Table 13.2

Percentage of underclassmen and upperclassmen lean sport athletes for BUL.

	Underclassmen (108)	Upperclassmen (55)
# N	104	46
% N	92.9%	83.6%

# SC	4	7
% SC	3.6%	12.7%

# C	4	2
% C	3.6%	3.6%

Table 14.1
Total number of non-lean sport athletes (158) surveyed according to age and year of eligibility for athletics who scored in the Normal (N), Subclinical (SC), and Clinical (C) ranges for BUL.

# of non-lean sport athletes by age and year	17-F	18-F	18-So	19-F	19-So	20-F	20-So	20-J	20-Sr	21-F	21-So	21-J	21-Sr	22-J	22-Sr	23-J	23-Sr
# N	1	36	0	12	20	4	9	15	2	0	1	11	16	1	11	0	1
% N	100%	87.8%	0.0%	92.3%	90.9%	80.0%	81.8%	88.2%	100%	0.0%	100%	86.4%	88.9%	100%	100%	0.0%	100%
# SC	0	3	1	0	2	0	2	2	0	0	0	1	2	0	0	0	0
% SC	0.0%	7.3%	100%	0.0%	9.1%	0.0%	18.2%	11.8%	0.0%	0.0%	0.0%	7.7%	11.1%	0.0%	0.0%	0.0%	0.0%
# C	0	2	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0
% C	0.0%	4.9%	0.0%	7.7%	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 14.2
Percentage of underclassmen and upperclassmen non-lean sport athletes for BUL.

	Underclassmen (95)	Upperclassmen (63)
# N	82	57
% N	87.4%	90.5%
# SC	8	5
% SC	8.4%	7.9%
# C	4	1
% C	4.2%	1.6%

Presented in Table 15.1 is the total number of lean sport athletes surveyed according to age and year of eligibility for athletics. The data was separated according to lean sport athletes, age, and year of eligibility and how they scored on the EDI-2, DT subscale; in the Normal (N), Subclinical (SC), or Clinical (C) ranges.

Presented in Table 15.2 are the percentages of underclassman compared to upperclassman. There were no significant findings regarding this data, but there appeared to be a trend for upperclassmen to score more in the N range and less in the C range for DT.

Presented in Table 16.1 is the total number of non-lean sport athletes surveyed according to age and year of eligibility for athletics. The data was separated according to non-lean sport athletes, age, and year of eligibility and how they scored on the EDI-2, DT subscale; in the Normal (N), Subclinical (SC), or Clinical (C) ranges.

Presented in Table 16.2 are the percentages of underclassmen and upperclassmen who scored in the N, SC, and C range for DT. There was a trend for underclassmen to score more in the SC and C range for DT, and less in the N range than the upperclassmen.

Table 15.1
Total number of lean sport athletes (167) surveyed according to age and year of eligibility for athletics who scored in the
Normal (N), Subclinical (SC), and Clinical (C) ranges for DT

# of lean sport athletes by age and year	17-F	18-F	18-So	19-F	19-So	20-F	20-So	20-J	20-Sr	21-F	21-So	21-J	21-Sr	22-J	22-Sr	23-J	23-Sr
# N	0	30	0	25	36	2	18	13	0	1	1	16	9	2	8	1	5
% N	0.0%	73.3%	0.0%	72.0%	80.6%	50.0%	77.8%	84.6%	0.0%	100%	100%	75.0%	88.9%	50.0%	100%	0.0%	80.0%
# SC	0	7	0	3	2	0	3	2	0	0	0	2	1	0	0	1	1
% SC	0.0%	23.3%	0.0%	12.0%	5.6%	0.0%	16.7%	15.4%	0.0%	0.0%	0.0%	12.5%	11.1%	0.0%	0.0%	100%	20.0%
# C	0	1	0	4	5	1	1	0	0	0	0	2	0	1	0	0	0
% C	0.0%	3.3%	0.0%	16.0%	13.9%	50.0%	5.6%	0.0%	0.0%	0.0%	0.0%	12.5%	0.0%	50.0%	0.0%	0.0%	0.0%

Table 15.2

Percentage of underclassmen and upperclassmen lean sport athletes for DT.

	Underclassmen (113)	Upperclassmen (54)
# N	86	44
% N	76.1%	81.5%
# SC	15	7
% SC	13.5%	13.0%
# C	12	3
% C	10.6%	5.6%

Table 16.1
Total number of non-lean sport athletes (158) surveyed according to age and year of eligibility for athletics who scored in the Normal (N), Subclinical (SC), and Clinical (C) ranges for DT.

# of non-lean sport athletes by age and year	17-F	18-F	18-So	19-F	19-So	20-F	20-So	20-J	20-Sr	21-F	21-So	21-J	21-Sr	22-J	22-Sr	23-J	23-Sr
# N	1	40	1	13	22	5	11	17	2	0	1	14	18	1	11	1	1
% N	100%	75.0%	100%	84.6%	81.8%	60.0%	81.0%	88.2%	100%	0.0%	100%	71.4%	88.9%	100%	90.9%	0.0%	100%
# SC	0	7	0	2	2	1	2	2	0	0	0	2	2	0	1	0	0
% SC	0.0%	17.5%	0.0%	15.4%	9.1%	20.0%	18.2%	11.8%	0.0%	0.0%	0.0%	14.3%	11.1%	0.0%	9.1%	0.0%	0.0%
# C	0	3	0	0	2	1	0	0	0	0	0	2	0	0	0	0	0
% C	0.0%	7.5%	0.0%	0.0%	9.1%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 16.2

Percentage of underclassmen and upperclassmen non-lean sport athletes for DT.

	Underclassmen (94)	Upperclassmen (64)
# N	74	55
% N	78.7%	85.9%
# SC	14	7
% SC	14.9%	10.9%
# C	6	2
% C	6.4%	3.1%

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purposes of this study were to determine: a) eating disorder symptoms among National Collegiate Athletic Association (NCAA), Division I, intercollegiate female athletes in the Southeastern Conference (SEC), b) if lean sport athletes were more prone to eating disorder symptoms than non-lean sport athletes, c) what percentage of athletes who were at risk for eating disorders sought help or support, and d) what kind of assistance was offered from athletic institutions in the SEC to help the student-athletes deal with eating disorder issues.

The participants in this study were NCAA, Division I, female intercollegiate athletes from four universities in the SEC. There were 325 participants all between 18-23 years old, and currently a member of an intercollegiate sport in the SEC. The selection of the participants was based on the geographical location and close proximity of the Division I universities in the SEC. Availability of participants was based on which schools and athletes agreed to participate in this study. The universities which had agreed to participate in this study were sent questionnaires which were to be completed and returned to the researcher for analysis. The results of the study were presented as follows: (a) Survey #1, description of the demographics of the study; (b) Survey #2, data analysis of the responses from the EDI-2 assessment instrument; (c) Survey #3, responses from questions one through nine on Survey #3; and (d) additional data which was developed from the compiled data of the demographic survey and the EDI-2 assessment

instrument.

The study determined that there were no significant differences when evaluating lean and non-lean sport athletes for the prevalence of eating disorder symptoms under the subscale BUL. There were, however, significant findings of lean sport athletes scoring higher than the general female college population for the prevalence of eating disorder symptoms; their scores were significantly higher than expected by chance at the .05 level of reliability (Hays, 1973).

The findings of the study also revealed that lean sport athletes were more prone to one type of eating disorder symptoms than were non-lean athletes: the lean sport athletes did score in the C range on DT significantly more often than did non-lean sport athletes. This difference also was significant at the .05 level of confidence (Hays, 1973).

Regarding the third question posed in the study, what percentage of athletes prone to eating disorders sought help or support, there were 17 (22.1%) participants who sought help from their athletic institution which already had a program designed to help female athletes deal with eating disorders, depression, and/or body dissatisfaction. The other question posed in the purpose of the study was what kind of assistance was offered from athletic institutions in the SEC to help student-athletes deal with eating disorder issues. The response regarding this question was 223 (68.6%) participants stated their athletic department provided an organized support program specifically designed for female athletes to attend to discuss personal issues, and 212 (65.2%) participants noted that their athletic department provided organized team talks regarding eating disorders and other personal issues. Due to the confidentiality issues surrounding this study, it was not

possible to discuss which athletic institutions provided these types of programs.

Conclusions

The conclusions which were drawn from this study are the following:

- (1) There were no significant differences when evaluating lean and non-lean sport athletes for the prevalence of eating disorder symptoms under the subscale BUL.
- (2) Lean sport athletes scored significantly higher on the DT score compared to the general female college population.
- (3) Lean sport athletes scored in the C range on DT more often than the non-lean sport athletes.
- (4) It could not be determined from this study why lean sport athletes had a high incidence of DT symptoms, but normal incidence of BUL symptoms. It may be that these athletes are at higher than average risk of developing full-blown eating disorders. It also could be that they simply have adapted temporarily to the current demands of their sports. Only a follow-up study could settle this uncertainty.
- (5) It could not be determined from this study how honest the participants were when answering the surveys.
- (6) It was determined that some athletic institutions/departments in the SEC provided an organized program specifically designed to help female athletes deal with eating disorders, depression, body dissatisfaction, and/or personal issues.

- (7) There were 22.1% (n=17) of the lean and non-lean sport athletes who scored in the SC and C range for BUL and DT (at risk for eating disorders) who stated that they participate in an organized program specifically designed to help female athletes deal with eating disorders, depression, body dissatisfaction, and/or personal issues and they had sought help or support.
- (8) It was determined that some athletic institutions/departments in the SEC provided organized team talks for their female athletes to discuss eating disorders and/or personal issues.
- (9) It could not be determined how many or specifically which schools provided programs to help student athletes deal with eating disorder issues and/or personal issues due to the confidentiality limitations of the study.

Recommendations

The following suggestions are offered as recommendations for future study in this area:

- (1) acquire a larger number of participants from various sports
- (2) incorporate a larger geographic area and/or include other NCAA, Division I universities from across the United States
- (3) present the surveys to the universities at the beginning of the fall semester instead of the spring semester which would allow for more time to receive the returning surveys and analyze the data
- (4) replicate the survey 5 years later and re-analyze the same population/universities for an increase in awareness on behalf of the student-athletes regarding the existence of an organized program specifically

designed to help female athletes deal with eating disorders, depression, body dissatisfaction, and/or personal issues

- (5) conduct a similar study regarding eating disorders among male athletes, and observe any differences between lean and non-lean sport athletes using the exact same sports.
- (6) conduct a similar study regarding eating disorders among male athletes and compare the results to this study.
- (7) survey the number of participants who may use over exercising, a characteristic of bulimia nervosa as a pathogenic weight control method.
- (8) expand the demographic questionnaire to include the participant's race, ethnicity, socioeconomic and sociocultural background, scholarship status, participation status (first string/second string athlete) height, weight, what they consider to be their ideal weight, what the least and most they have weighed since they have turned 18 years old, and how often they are satisfied with their body and body weight.

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APPENDICES

Appendix A

Notification to Contact Form

Notification to Contact Form

December 20, 1998

Dear (Athletic Director),

I am a graduate student at the University of Tennessee, Knoxville (UTK) working on my Master's thesis. I am also a Graduate Assistant Certified Athletic Trainer for the Women's Athletic Department, and a member of the UTK Women's Performance Team which is a group organized to assist female athletes who are dealing with mental health and performance issues. One of the main issues with which the Performance Team is concerned is eating disorders. This topic has gained much attention over the past 15 years in women's athletics.

The purpose of this letter is to request the cooperation of your Athletic Department to participate in a study exploring the prevalence of female intercollegiate athletes with eating disorders at the NCAA, Division I level in the SEC. This study examines eating disorder symptoms among female intercollegiate athletes, and the type of assistance that is offered from athletic institutions to help student athletes deal with eating disorder issues. I am requesting your permission to survey your female athletes and to utilize your Athletic Training staff for assistance in distributing the surveys to your female student athletes and collecting and returning them to me.

Participation in this study involves a maximum of thirty minutes of each team's time to complete three questionnaires which are enclosed for your perusal. Individual informed consent of each athlete is given by them completing the questionnaires. The survey questionnaires are to be completed voluntarily and anonymously by each athlete. Participating in this study does not involve any anticipated emotional or physical risks. Since the survey questionnaires are completed on a voluntary and anonymous basis, the subjects are under no obligation to complete the survey, and can withdraw from answering the survey without any penalty. **No specific team, university or individual results will be identified, assuring complete confidentiality.**

Researching the prevalence of eating disorder symptoms among female intercollegiate athletes, and what kind of assistance is offered from their athletic institution to help them deal with eating disorder issues are of vital importance. Dr. David M. Garner, Director and Clinical Psychologist of the Toledo Center for Eating Disorders, who also developed the Eating Disorder Inventory-2 clinical assessment instrument (EDI-2), one of the survey questionnaires in my study, was very supportive of my efforts towards exploring the prevalence of eating disorder symptoms. On my behalf, Dr. Garner wrote the Psychological Assessment Resources, Inc. which has the copyright to the EDI-2, to ask that I be allowed to use the EDI-2 at no cost to me for my research study. I believe athletes have many pressures placed on them these days. If the Athletic Department staff (i.e. Athletic Director, Athletic Trainers, Coaches, etc.) can assist in helping student

athletes deal with the issues of an eating disorder, that will be one step further towards getting help for the student athlete.

Please return the self addressed, stamped post card to me by **December 11, 1998** indicating whether or not your female teams will participate in this study. If you are interested in having your female athletes participate in this study, please indicate which sports may participate. By January 1, 1999, I will send the questionnaires to your Head Athletic Trainer along with instructions on how to distribute them. Once all the teams have completed the questionnaires, the Athletic Training staff is to return them to me as soon as possible in the self addressed and stamped envelope which will be provided.

Please find a sample of the questionnaires enclosed. Once you have completed reviewing the questionnaires, please destroy the Eating Disorder Inventory-2 (EDI-2). It is a clinical instrument for professional use only. Thank you for your cooperation and for considering my request. I am looking forward to receiving your response card indicating your university's participation status.

At the conclusion of this study, I will send you a summary of the results regarding this study if you so request. If you have any questions, please call me at home or work (H: 423-690-5645; W: 423-974-6485)

Sincerely,

Catherine CW English, ATC
M.S. Candidate

University of Tennessee, Knoxville
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Joy T. DeSensi, Ed.D.
Professor and Thesis
Advisor
423-974-1282

enclosure

Appendix B

Note/Response Card

Note/Response Card

Front:

Please fill out the card and return it in the self addressed stamped envelope.

_____ Yes, our female intercollegiate athletes at _____
may participate in your study on the prevalence of eating disorder symptoms.

_____ No, our female intercollegiate athletes at _____ may
not participate in your study on the prevalence of eating disorder symptoms.

Back:

Please indicate which sports may participate and the approximate number of athletes per sport:

_____ Basketball _____ Volleyball _____ Swimming _____ Field _____ Softball
_____ Golf _____ Track _____ Diving _____ Soccer _____ Gymnastics
_____ Tennis _____ Rowing _____ Cross Country _____ Other

Appendix C

Explanation/Information Letter

Explanation/Information Letter

Name of University	University of Tennessee, Knoxville
Athletic Department	Women's Athletic Training Department
Address	117 Stokely Athletic Department
City, State, and Zip Code	Knoxville, TN 37996-2110

January 1, 1999

Dear (Name of Head Athletic Trainer) and Athletic Training Staff,

I am a graduate student at the University of Tennessee, Knoxville (UTK) working on my Master's thesis. I am also a Graduate Assistant Certified Athletic Trainer for the Women's Athletic Department, and a member of the UTK Women's Performance Team which is a group organized to assist female athletes who are dealing with many mental health and performance issues. One of the main issues with which the Performance Team is concerned is eating disorders. This topic has gained much attention over the past 15 years in women's athletics.

In response to a letter which was sent to (NAME OF ATHLETIC DIRECTOR), your Athletic Director, granted me permission to contact you regarding your female athletes' participation in this study. The purposes of this study are to determine a) eating disorder symptoms among National Collegiate Athletic Association (NCAA), Division I, intercollegiate female athletes in the Southeastern Conference (SEC), b) if lean sport athletes are more prone to eating disorder symptoms than non-lean sport athletes, c) what percentage of athletes who were at risk for eating disorders would seek help or support, and d) what kind of assistance is offered from athletic institutions in the SEC to help the student athletes deal with eating disorder issues.

As a Certified Athletic Trainer, I know that time is limited in our busy lives, and that I am asking a large request of you to assist me in collecting data for my Master's thesis. I understand it may be difficult to call a team meeting to have all your female athletes complete the questionnaires at once, therefore, below are a few suggestions on ways which are acceptable to distribute and collect the questionnaires:

1. Call a team meeting; before or after practice. Notify the athletes that 30-40 minutes of their time is all that is needed to complete the questionnaires.
2. Take the questionnaires on the road trips. Take 5-10 minutes to read the instructions to the female student athletes. The instructions can be read in the airport, on the bus, or in the hotel. Distribute the questionnaires and have the athletes return them to you at a designated time during or after the road trip.

Please find enclosed survey questionnaires, individual envelopes for the survey questionnaires to be placed in and sealed after they are completed, one official informed consent statement, and one manilla envelop self addressed, stamped and ready to be returned to the researcher.

Below is an outline of how to distribute and collect the survey questionnaires:

1. Read the informed consent statement prior to distributing the questionnaires.
2. Instruct the participants to not write their names on the questionnaires.
3. Distribute the survey questionnaires to the participants.
4. Inform the participants to place their completed questionnaires in the blank envelope which accompanied the survey questionnaire and seal it shut.
5. Have all the participants place, or once the questionnaires are collected by you, place the sealed questionnaires in the manilla envelope which is self addressed, stamped and ready to be returned to the researcher.

Please return the questionnaires to me by **February 11, 1999**. At the conclusion of this study, I will send you a summary of the results if you so request. Thank you very much for your cooperation and assistance with distributing and collecting the questionnaires. I appreciate your efforts especially since I know what it is like to be continuously busy either in or out of season with your respective sports as an Athletic Trainer. If at any time you have questions regarding this study, please call me at home or work (H: 423-690-5645; W: 423-974-6485).

Sincerely,

Catherine CW English, ATC
M.S. Candidate

University of Tennessee, Knoxville
117 Stokely Athletic Center
Volunteer Boulevard
Knoxville, Tennessee 37996

Joy T. DeSensi, Ed.D.
Professor and Thesis
Advisor
423-974-1282

Appendix D
Informed Consent

Informed Consent

Title: Eating Disorder Symptoms Among National Collegiate Athletic Association, Division I, Female Intercollegiate Athletes in the Southeastern Conference (SEC).

Purpose of the Study: The purposes of this study are to determine a) eating disorder symptoms among National Collegiate Athletic Association (NCAA), Division I, intercollegiate female athletes in the Southeastern Conference (SEC), b) if lean sport athletes are more prone to eating disorder symptoms than non-lean sport athletes, c) what percentage of athletes who were at risk for eating disorders would seek help or support, and d) what kind of assistance is offered from athletic institutions in the SEC to help the student athletes deal with eating disorder issues.

Confidentiality: As the participant in this study and to assure anonymity, do not sign your name to the questionnaire. Completion of the questionnaire will be considered your informed consent statement. The researcher and thesis advisor will be the only people who will have access to your questionnaire responses, and these responses will not be shared with your Athletic Director, Coach, or Athletic Trainer at any time. **In the research study, no references will be made directly to you as an individual, the university you attend and/or to your team.**

Potential Risks: Participating in this study does not involve any anticipated emotional or physical risks. Since the survey questionnaire is completed on a voluntary and anonymous basis, you are under no obligation to complete the survey, and can withdraw from answering the survey without any penalty. In the event you do complete the survey questionnaire, the survey will be kept to keep accurate records for this study in a locked filing cabinet at all times.

Potential Benefits: Participating in this study will help the athletic departments (i.e., athletic directors, coaches, athletic trainers, etc.) be better informed of the prevalence of eating disorders among the female intercollegiate athletes in the SEC. With a better informed Athletic Department staff, hopefully an understanding of the prevalence of eating disorders in women's athletics will be reached, and athletic departments will realize that there is a need to help their student athletes deal with eating disorder issues.

For more information or questions please contact:

Catherine CW English, ATC or
University of Tennessee, Knoxville

117 Stokely Athletic Center
Knoxville, TN 37996-2700
423-974-6485

Joy T DeSensi, Ed.D
Professor and Thesis
Advisor
423-974-1282

Appendix E
Survey #1 Demographic Study

Survey #1 Demographic Study

Directions: Please circle the correct response.

1. I am an current intercollegiate athlete participating in (circle one answer only):

1. Basketball
2. Volleyball
3. Swimming
4. Field
5. Softball
6. Golf
7. Track
8. Cross country
9. Diving
10. Gymnastics
11. Tennis
12. Rowing
13. Soccer
14. Other _____

2. I am _____ years old.

1. 18
2. 19
3. 20
4. 21
5. 22
6. 23
7. 24
8. Other _____

3. I am a _____ (in terms of eligibility):

1. Freshman
2. Sophomore
3. Junior
4. Senior

Appendix F

Survey #2 Eating Disorder Inventory-2 Clinical Assessment Instrument

Survey #2 Eating Disorder Inventory-2 Clinical Assessment Instrument

Instructions: For each item, decide if the item is true about you ALWAYS (A), USUALLY (U), OFTEN (O), SOMETIMES (S), RARELY (R), OR NEVER (N). Circle the letter that corresponds to your rating on the EDI-2 Answer Sheet. For example, if your rating for an item is OFTEN, you would circle the O for that item on the Answer Sheet. *Respond to all of the items*, making sure that you circle the letter for the rating that is true about you. **DO NOT ERASE!** If you need to change an answer, make an "X" through the incorrect letter and then circle the correct one.

- (1) I eat sweets and carbohydrates without feeling nervous.
- (2) I think that my stomach is too big.
- (3) I wish that I could return to the security of childhood.
- (4) I eat when I am upset.
- (5) I stuff myself with food.
- (6) I wish that I could be younger.
- (7) I think about dieting.
- (8) I get frightened when my feelings are too strong.
- (9) I think that my thighs are too large.
- (10) I feel ineffective as a person.
- (11) I feel extremely guilty after overeating.
- (12) I think that my stomach is just the right size.
- (13) Only outstanding performance is good enough in my family.
- (14) The happiest time in life is when you are a child.
- (15) I am open about my feelings.
- (16) I am terrified of gaining weight.
- (17) I trust others.
- (18) I feel alone in the world.
- (19) I feel satisfied with the shape of my body.
- (20) I feel generally in control of things in my life.
- (21) I get confused about what emotion I am feeling.
- (22) I would rather be an adult than a child.
- (23) I can communicate with others easily.
- (24) I wish I were someone else.
- (25) I exaggerate or magnify the importance of weight.
- (26) I can clearly identify what emotion I am feeling.
- (27) I feel inadequate.
- (28) I have gone on eating binges where I felt that I could not stop.
- (29) As a child, I tried very hard to avoid disappointing my parents and teachers.
- (30) I have close relationships.

(continue)

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- (31) I like the shape of my buttocks.
- (32) I am preoccupied with the desire to be thinner.
- (33) I don't know what's going on inside me.
- (34) I have trouble expressing my emotions to others.
- (35) The demands of adulthood are too great.
- (36) I hate being less than best at things.
- (37) I feel secure about myself.
- (38) I think about bingeing (overeating).
- (39) I feel happy that I am not a child anymore.
- (40) I get confused as to whether or not I am hungry.
- (41) I have a low opinion of myself.
- (42) I feel that I can achieve my standards.
- (43) My parents have expected excellence of me.
- (44) I worry that my feelings will get out of control.
- (45) I think my hips are too big.
- (46) I eat moderately in front of others and stuff myself when they're gone.
- (47) I feel bloated after eating a normal meal.
- (48) I feel that people are happiest when they are children.
- (49) If I gain a pound, I worry that I will keep gaining.
- (50) I feel that I am a worthwhile person.
- (51) When I am upset, I don't know if I am sad, frightened, or angry.
- (52) I feel that I must do things perfectly or not do them at all.
- (53) I have the thought of trying to vomit in order to lose weight.
- (54) I need to keep people at a certain distance (I feel uncomfortable if someone tries to get too close).
- (55) I think that my thighs are just the right size.
- (56) I feel empty inside (emotionally).
- (57) I can talk about personal thoughts or feelings.
- (58) The best years of your life are when you become an adult.
- (59) I think my buttocks are too large.
- (60) I have feelings I can't quite identify.
- (61) I eat or drink in secrecy.
- (62) I think that my hips are just the right size.
- (63) I have extremely high goals.
- (64) When I am upset, I worry that I will start eating.
- (65) People I really like end up disappointing me.
- (66) I am ashamed of my human weaknesses.
- (67) Other people would say that I am emotionally unstable.
- (68) I would like to be in total control of my bodily urges.
- (69) I feel relaxed in most group situations.
- (70) I say things impulsively that I regret having said.
- (71) I go out of my way to experience pleasure.

(continue)

- (72) I have to be careful of my tendency to abuse drugs.
- (73) I am outgoing with most people.
- (74) I feel trapped in relationships.
- (75) Self-denial makes me feel stronger spiritually.
- (76) People understand my real problems.
- (77) I can't get strange thoughts out of my head.
- (78) Eating for pleasure is a sign of moral weakness.
- (79) I am prone to outburst of anger or rage.
- (80) I feel that people give me the credit I deserve.
- (81) I have to be careful of my tendency to abuse alcohol.
- (82) I believe that relaxing is simply a waste of time.
- (83) Others would say that I get irritated easily.
- (84) I feel like I am losing out everywhere.
- (85) I experience marked mood shifts.
- (86) I am embarrassed by my bodily urges.
- (87) I would rather spend time by myself than with others.
- (88) Suffering makes you a better person.
- (89) I know that people love me.
- (90) I feel like I must hurt myself or others.
- (91) I feel that I really know who I am.

Eating Disorder Inventory-2 Answer Sheet

- | | | | | | |
|-----|-------------|-----|-------------|-----|-------------|
| 1. | A U O S R N | 35. | A U O S R N | 69. | A U O S R N |
| 2. | A U O S R N | 36. | A U O S R N | 70. | A U O S R N |
| 3. | A U O S R N | 37. | A U O S R N | 71. | A U O S R N |
| 4. | A U O S R N | 38. | A U O S R N | 72. | A U O S R N |
| 5. | A U O S R N | 39. | A U O S R N | 73. | A U O S R N |
| 6. | A U O S R N | 40. | A U O S R N | 74. | A U O S R N |
| 7. | A U O S R N | 41. | A U O S R N | 75. | A U O S R N |
| 8. | A U O S R N | 42. | A U O S R N | 76. | A U O S R N |
| 9. | A U O S R N | 43. | A U O S R N | 77. | A U O S R N |
| 10. | A U O S R N | 44. | A U O S R N | 78. | A U O S R N |
| 11. | A U O S R N | 45. | A U O S R N | 79. | A U O S R N |
| 12. | A U O S R N | 46. | A U O S R N | 80. | A U O S R N |
| 13. | A U O S R N | 47. | A U O S R N | 81. | A U O S R N |
| 14. | A U O S R N | 48. | A U O S R N | 82. | A U O S R N |
| 15. | A U O S R N | 49. | A U O S R N | 83. | A U O S R N |
| 16. | A U O S R N | 50. | A U O S R N | 84. | A U O S R N |
| 17. | A U O S R N | 51. | A U O S R N | 85. | A U O S R N |
| 18. | A U O S R N | 52. | A U O S R N | 86. | A U O S R N |
| 19. | A U O S R N | 53. | A U O S R N | 87. | A U O S R N |
| 20. | A U O S R N | 54. | A U O S R N | 88. | A U O S R N |
| 21. | A U O S R N | 55. | A U O S R N | 89. | A U O S R N |
| 22. | A U O S R N | 56. | A U O S R N | 90. | A U O S R N |
| 23. | A U O S R N | 57. | A U O S R N | 91. | A U O S R N |
| 24. | A U O S R N | 58. | A U O S R N | | |
| 25. | A U O S R N | 59. | A U O S R N | | |
| 26. | A U O S R N | 60. | A U O S R N | | |
| 27. | A U O S R N | 61. | A U O S R N | | |
| 28. | A U O S R N | 62. | A U O S R N | | |
| 29. | A U O S R N | 63. | A U O S R N | | |
| 30. | A U O S R N | 64. | A U O S R N | | |
| 31. | A U O S R N | 65. | A U O S R N | | |
| 32. | A U O S R N | 66. | A U O S R N | | |
| 33. | A U O S R N | 67. | A U O S R N | | |
| 34. | A U O S R N | 68. | A U O S R N | | |

Appendix G

Survey #3

Survey #3

Please answer the following questions as briefly as possible. To many of the questions, a Yes or No answer will be acceptable.

1. Do you have someone who is in the athletic department you can confide in regarding personal issues? If so, who (coach, athletic trainer, etc)?

2. Does your athletic department have an organized support program specifically designed for female athletes you can attend to discuss personal issues (e.g., eating disorders, depression, body dissatisfaction)?

3. If your athletic department does not have an organized support program specifically designed for female athletes to discuss person issues, would you like to have a program started?

4. If your athletic department had an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction in your athletic department, would you take advantage of this program?

5. If your athletic department does have an organized support program specifically designed for female athletes to deal with eating disorders, depression, or body dissatisfaction, have you taken advantage of this program?

6. If your answer is NO to number 5, why have you not utilized this program?

7. Do you see a counselor or someone now for an eating disorder or for other personal issues? If so who (i.e., sport psychologist, family psychologist, family doctor, team doctor, etc.)?

- 8 Does your athletic department provide organized team talks regarding eating disorders and other personal issues?

9. If your answer is No to number 8, would you like to see your athletic department provide organized team talks with a sport psychologist or outside guest speakers knowledgeable in these areas?

Vita

Catherine CW English was born in Seoul City, South Korea on October 14, 1975. She was adopted and raised by her mother, Barbara Wagner. At the age of 12, Catherine and her mother moved from Southern California to a small town in central Illinois. In June of 1993, Catherine graduated from Newman Community District High School.

Upon high school graduation, Catherine started college in August of 1993 at Western Illinois University (WIU) in Macomb, Illinois where she majored in Physical Education with an emphasis in athletic training. In April of 1997, Catherine took her National Athletic Trainers' Association (NATA) Certification exam and became a Certified Athletic Trainer. She graduated Magna Cum Laude from WIU and received her Bachelor of Science degree in May of 1997 and started graduate school at the University of Tennessee, Knoxville as a Graduate Assistant Athletic Trainer for the Women's Athletic Department in July, 1997. In August of 1999, Catherine received her Master's of Science degree in Human Performance and Sport Studies with an emphasis in Sport Administration.

The future plans for Catherine include pursuing her PhD in Human Ecology with an emphasis in community health at the University of Tennessee, Knoxville while maintaining her Graduate Assistant position in the Women's Athletic Department as a Certified Athletic Trainer.