

Cage
AS
36
.N6
P4555
2002
no. 2

“A STUDY OF EATING DISORDERS IN COLLEGE FEMALE ATHLETES”

A Thesis

Presented to

The Faculty of the Health, Physical Education, and Recreation Department

University of North Carolina at Pembroke

In partial fulfillment of the requirements for the
Master of Arts in Education in Physical Education

By

Jera Renee Courts

May 2002

334519

Table of Contents

	Page
Abstract	2
Chapter	
1. Introduction	3
2. Literature Review	4
3. Body	
Methods	16
Procedures	17
Results	17
4. Solution, Summary, and Conclusions	
Solution	25
Summary/Conclusions	30

Appendices

- A. Institutional Review Board Approval of Thesis
- B. Female Athletes' Survey
- C. Coaches' Survey
- D. Demographic Information (Totals) Table
- E. Section II Survey Results (Totals) Tables
- F. Section II Responses Tables
- G. Section III Survey Results (Totals) Tables
- H. Section III Responses Tables
- I. Coaches' Survey Results Tables

Works Cited 34

ABSTRACT

This study examined eating disorders in college female athletes and the knowledge and experience level of coaches on eating disorders in female athletes. Sixty-two female athletes that participated on six different sports teams and thirteen coaches from the University of North Carolina at Pembroke were surveyed. Results indicated that some of the female athletes portrayed behaviors that could indicate the possibility of an eating disorder. Two of the athletes admitted to having an eating disorder in the past and one athlete seemed to have an eating disorder at the present time. Over half of the coaches reported that they have been educated on and are adequately knowledgeable about eating disorders in college female athletes. Colleges and universities must take responsibility and assist their employees to conduct their athletic programs in a manner that recognizes the importance of the athlete's health and safety. Recognition of eating disorders, intervention and treatment plans should be established, as well as preventative education programs. To assist in this process, an eating disorder protocol was developed. Approaching this type of complex situation in this manner can contribute to identifying, treating, and possibly saving the life of an athlete with an eating disorder.

CHAPTER I

INTRODUCTION

A major problem that is arising in athletics today is eating disorders among college female athletes. In today's society, there are many pressures put on women to be thin and fit from the media, coaches, families, peers, and society as a whole. Athletes seem to be at an increased risk for developing eating disorders due to factors within the athletic environment. "Many athletes are being asked to lose weight so they can perform or compete better" (Thompson & Sherman, 1993, p.22). Studies have shown that sport activities, which focus on or require a small body size, thin shape, or low weight, tend to increase the prevalence of eating disorders in athletes. Some athletic activities require certain weights to play or participate. (Thompson & Sherman, 1993).

It is essential that all administrators associated with female athletes (coaches, athletic trainers, athletic directors, etc.) are not only knowledgeable about eating disorders but also know how to recognize these behaviors in athletes. Some coaches are blindsided when it comes to eating disorders primarily due to not being thoroughly educated about the disorders. A significant problem is how to best deal with the athlete who has an eating disorder. There needs to be a specific and consistent process in how to deal with athletes when a situation like this arises. The University of North Carolina at Pembroke currently does not have a specific protocol or guidelines to follow if the athletic department is confronted with an athlete with an eating disorder.

The main objective in this thesis project is to assess the needs of college female athletes who may have a potential eating disorder and to propose specific guidelines to help treat female athletes with eating disorders. The hypothesis for this study was that a

significant number of female athletes at the University of North Carolina at Pembroke will portray behaviors that characterize eating disorders. It was also predicted that a few athletes had an eating disorder in the past or currently have one. As for the coaches, it was predicted that a few of the coaches were educated about these disorders and that they had experienced athletes who have had an eating disorder.

To test the hypothesis; this study surveyed the female athletes at the University of North Carolina at Pembroke. It included questions that were based on the knowledge of eating behaviors and attitudes to help depict the possibility and characteristics of an eating disorder. Some of the questions came from Dr. David Garner's Eating Attitudes Test (EAT-26) from the University of Toledo. The second part of the study surveyed the coaches of the female athletes at the university to see how the coaches perceived eating disorders and how educated they actually were about eating disorders in female athletes. The protocol that was developed was intended to not only help female athletes with an illness like this, but also to possibly help save a female's life.

CHAPTER II

LITERATURE REVIEW

It has been estimated that more than two million Americans primarily young women and teen girls suffer from eating disorders (www.sikids.com/sportsparents.com). Some research studies have shown that about one out of every one hundred young women aged 10-20 is starving themselves to the point of sometimes resulting in death. Also, research has shown that 4% of college-aged females have bulimia. Other research has shown that rates of bulimia are as high as 15% in college females

(www.nmisp.org/eat/eat-fact.htm). A study of NCAA athletes found that female athletes were four times more likely to use vomiting to lose weight than male athletes (www.nmisp.org/eat/eat-athlete.htm). About 50% of anorexics have become bulimic or developed bulimic patterns (www.anred.com). "Ninety to ninety-five percent of eating disorders occur among young women" (www.nmisp.org/eat/eat-athlete.htm). Eating disorders are more common among young white women; however, recent studies have shown that one in four are non-whites (www.nmisp.org/eat/eat-fact.htm).

Many athletes are faced with eating disorders, which become an extremely serious problem. An important factor to consider is that eating disorders can affect female athletes in any sport, but some sports have higher risks than others. Female athletes in "appearance" sports or sports that emphasizes a very thin, lean body such as gymnastics, diving, figure skating, ballet, distance running, and swimming are at a higher risk for developing eating disorders. "Some studies have found greater tendencies toward eating disorders in athletes from thinness demand sports" (Thompson & Sherman, 1993, p.23). A greater risk for developing these disorders is associated with sports that involve anaerobic activities (www.nmisp.org/eat/eat-athlete.htm). "Approximately one-third of female athletes struggle with pathogenic weight control" (Hornak & Hornak, 1997, p.35).

The two common eating disorders that affect female athletes are anorexia nervosa and bulimia nervosa. Anorexia can be described as self-starvation. It is said to be the most lethal psychiatric/mental illness known (Guarda, 1998). Anorexics have an intense fear of gaining weight and display a distorted self body image. "One of the most frightening aspects of the disorder is that people with anorexia continue to think they are overweight even when they are bone-thin" (Hoffman, 1994, p.3). A common sign is that

the female weighs less than 15% below her normal body weight. Anorexics tend to refuse to eat enough to maintain their weight. The female athlete with anorexia becomes obsessed with food and weight. An individual may not eat at all with her team or others or may cut her food into tiny pieces to make it look like she is eating a lot of food. An athlete that does not eat develops numerous medical complications and suffers a loss of energy that is essential to participate in sports or athletics.

A female athlete that is anorexic will be affected by physical, psychological, and behavioral problems. A common indicator is that the female will experience an absence of her menstrual period. The female is at a higher risk of electrolyte imbalances and cardiac arrhythmias. Hyperactivity and fatigue are two common signs that coincide with anorexia. An individual may display perfectionist behaviors because she puts so much pressure on herself to be thin, look good, succeed in school, and be the best athlete. The female with anorexia will usually display a low self-esteem. She may have a high need for approval or fear of disapproval. Difficulty concentrating in the specific sport or activity may result. An athlete may have social withdrawal from teammates and coaches, as well as from others. She may also excessively weigh self, refuse to weigh self, or react negatively about having to be weighed. (Thompson & Sherman, 1993, p.9).

Female athletes with anorexia tend to use athletics as an excuse for their eating behaviors and disorder. An athlete may believe that weight loss contributes to becoming faster and stronger even though that restriction of food actually can make her slower and not as strong. Some females are able to perform well with their disorder, in denial that they are harming themselves because of how well they have achieved in their particular sport. Eventually performance is affected. The female may claim that she does not have

time to eat due to practices, competitions, training, and other activities involved with her sport. She may think that since she is nervous she cannot eat before activity because it will make her sick, feel bloated, and decrease her performance (www.anred.com). Also an anorexic eliminates fat from her diet such as meat because she feels a need to lower her body fat percentage. The female athlete may engage in compulsive exercise so she can burn a lot of calories. She may feel that she has to work hard and excessive so she does not gain weight. She may also believe that becoming smaller in weight and size will contribute to improving and excelling in her sport. A female's performance helps define her identity because being an athlete may be the one part of her life where she feels somewhat effective and in control (www.anred.com).

The second common eating disorder that occurs in athletes is bulimia nervosa. Bulimia is also referred to as the binge and purge disease. Some of the other methods that are used to get rid of the excessive amount of food are excessive exercise, using laxatives, or diuretics to avoid weight gain. This illness is ten times more common in females than males (McGilley & Pryor, 1998). On average, the bulimic usually engages in bingeing and purging once a day and sometimes up to twelve times per week. This specific behavior can range up to 46 times per week (McGilley & Pryor, 1998). The foods on which these individuals binge are sweets, snack food, and foods that usually involve minimal time to prepare (McGilley & Pryor, 1998). Sometimes, bulimics hoard food or swallow it without chewing.

There are many signs and behaviors that female athletes with bulimia may exhibit. An athlete may tend to set extremely high goals in their sport and obsess over exercising beyond what is required for the athlete's sport (Brownell & Fairburn, 1995).

It is difficult for an athlete with bulimia to eat with her teammates because she usually loses control and binges when she eats. She may end up avoiding eating, eating secretly, or binge eating and purging. The athlete is afraid that someone may discover her eating behaviors and/or disorder. It is hard for an athlete to hide laxatives and other purging products when she is with the team. A bulimic's tooth enamel may be eroded and she may have bad breath due to vomiting. To reduce nervousness and anxiety before competition, a bulimic athlete may engage in a binge and purge episode (www.anred.com). After a bulimic athlete experiences a loss in their sport competition, she may hoard a lot of food to help comfort herself to help relieve depression and shame (www.anred.com). Like anorexia, a common sign of bulimia, is the loss of or abnormal menstrual periods.

As an athlete with anorexia, the athlete with bulimia may display some behavioral and psychological problems. The bulimic athlete may also be a perfectionist in appearance, excelling in school, and being the best in her sport. These athletes want the feeling of recognition and approval. They may display a low self-esteem, depression, anger, and mood swings (Thompson & Sherman, 1993). Bulimic athletes may abuse alcohol or other drugs (Brownell & Fairburn, 1995).

Bulimia can also negatively affect and decrease sport performance. The most important physiological problems of bulimia that interfere with performance are dehydration and electrolyte abnormalities (Thompson & Sherman, 1993). Dehydration causes fatigue, muscle weakness, muscle cramps, loss of coordination, excessive thirst, and dizziness. A bulimic usually suffers from malnutrition because of vomiting which results in not having enough energy to participate. The female athlete may have

difficulty concentrating during performance because she concentrates so much on her weight, body, eating, and being depressed. Depression slows the athlete both mentally and physically due to psychomotor retardation. When an athlete is depressed and has a low self-esteem, her self-confidence level decreases so performance level also decreases (Thompson & Sherman, 1993).

Sports and athletics should be intended to promote physical fitness and good health. Unfortunately these activities can sometimes result in dangerous dieting, exercising, and eating disorders. There are several factors that help explain the causes of eating disorders in female athletes. The idealization of thinness in our society plays a role in eating disorders. Female athletes are encouraged to work through pain in order to excel and reach ambitions. Today, sports focus on weight and body fat composition and it is believed that lower body fat contributes to better performance (Thompson & Sherman, 1993). Athletes may be requested by their coaches to lose weight or decrease body fat to improve performance. As a team activity, some coaches will measure the athlete's body fat and share the results with the entire team. This may result in unhealthy eating habits and emotional consequences because this influences the members on the team to reach a lower body fat percentage (Guarda, 1998). Athletes also receive pressures from parents, peers, television, and the media to look "good" and have a fit athletic body. Most people with eating disorders share certain personality traits such as low self-esteem, feelings of helplessness, and a fear of becoming fat. Eating behaviors seem to be a way of handling stress and anxieties for individuals with anorexia and bulimia. Anorexics believe that controlling their weight allows them to take control of their bodies and gain approval from others. The truth is that they do not have control of

their body. Bulimics tend to consume large amounts of food to relieve stress or anxiety. When a bulimic binges, she purges for temporary relief because she feels guilty and depressed for eating so much. Body dissatisfaction plays a role in the cause of eating disorders in athletes because those who criticize their athletic performance express these concerns by being dissatisfied with their bodies (Powers & Johnson, 2002).

A few studies have been conducted in relation to eating disorders and college female athletes. A study was done by Mosley (1997), which examined the connection between athletics and eating disorders. Findings from this study indicate that eating disorders do not only affect female athletes. A poll in 1995 showed that 20% of college aged women and 10% of adult women suffer from eating disorders. Studies also showed that being preoccupied with weight starts at an early age. The article by Mosley discussed how female athletes in sports such as figure skaters, gymnasts, and runners are pressured to maintain a certain body fat percentage and weight. It was discussed that body composition may limit an athlete's ability to perform, but this does not necessarily mean that participating in sports such as gymnastics and diving will lead to developing an eating disorder. An important responsibility of a coach is to be knowledgeable about proper nutrition and healthy eating habits. It was pointed out that eating disorders are seen in people who suffer from low self-esteem. Mosley's study also showed that sports can actually help stop or prevent eating disorders, because females who participate in athletics benefit from higher levels of self-esteem. Further, active women report having more energy, being happier, and being more satisfied with their health. The key to avoiding eating disorders in female athletes is to have a balance of physical activity and healthy eating habits in order to achieve satisfaction. (Mosley, 1997). It was proven that

female athletes are at risk for developing eating disorders. However, participation in sports should have positive effects on a female's body and there are steps that can be taken to remain fit and perform well while avoiding an eating disorder.

Eating disorder screening tests such as the Eating Disorders Inventory 2 (EDI 2), the Bulimia Test-Revised (BULIT-R), and the Eating Attitudes Test 26 have been developed, but there has not been one developed specifically for eating disorders and athletes. There was a research study by Nagel, Black, Leverenz, and Coster (2000) on the evaluation of a screening test for female college athletes with eating disorders. The purpose of this study was to formulate a screening test to help find eating disorders in college female athletes. The subjects were 149 college female athletes from a Division I University with the mean age being 20 years old. The athletes participated in a variety of sports such as basketball, cheerleading, dance, golf, gymnastics, softball, swimming, tennis, track and cross-country, and volleyball. The three tests that were given to all subjects to complete were the Athletic Milieu Direct Questionnaire (AMDQ), the EDI-2, and the BULIT-R. All three of the tests were used to detect eating disorders in the female athletes. The Eating Disorder Examination Diagnostic Version, Edition 12.0D (EDE; Fairburn & Wilson, 1993) is an interview conducted by a licensed clinical psychologist experienced in eating disorders and athletes that was used to determine which of the three tests was more accurate or effective in screening eating disorders in the female college athletes.

The results indicated that in almost all the sports there were 35% with eating disorders. Twenty-five percent of the subjects were bulimic, 8% were put in the classification as eating disorder not otherwise specified, and 2% were anorexic. The test

that was the most accurate in identifying eating disorders in the subjects was the AMDQ. This test correctly identified about 4 out of every 5 subjects who had an eating disorder (Nagel, Black, Leverenz, & Coster, 2000).

In conclusion, the Nagel et al. (2000) felt that the AMDQ screening test should be used to detect and identify athletes at an early stage that may have an eating disorder because it is specific to the athletic population. This study presented a rather large percentage of subjects with eating disorders, which implies that these disorders are a serious problem for female college athletes. It was found that sports emphasizing a low body weight and leanness are at a higher risk for the prevalence of eating disorders. However, subjects with eating disorders were observed in every sport except softball and basketball. The four subjects that were identified as not otherwise specified were involved in cheerleading, gymnastics, swimming, and track. The only anorexic subject participated in dance company. There were 13 bulimic athletes of whom three were cheerleaders, three in dance company, one in modern dance, one golfer, four swimmers, and one track runner (Nagel, Black, Leverenz, & Coster, 2000).

Nagel et al. (2000) recommended some resourceful recommendations for athletic trainers. Objective goals should be set with each athlete in order to determine a realistic range for individual body fat. Weight loss programs should begin long before the season starts, and rapid weight-loss methods should never be encouraged. Athletes should have nutritional guidance through a dietitian or some other qualified professional. An athlete needs to consume healthy food and her diet should focus on enough calories to support her needs in relation to the specific sport's demands. If an athlete has to be weighed or has to have their body fat measured then it should be done privately away from others.

Athletic trainers need to be able to recognize eating disorders and should initiate a discussion of the problem with the athlete. (Nagel, Black, Levernz, & Coster, 2000). It is also important that coaches be aware of the symptoms of these disorders as well. The last recommendation was that the AMDQ could be used to detect eating disorders. The key is prevention. If a problem is detected early then there is the possibility of preventing an eating disorder from occurring.

Another study, conducted by Kirk, Singh, and Getz (2001) investigated the risk of eating disorders among female college athletes and nonathletes. The purpose of this study was to compare subgroups of college women in relation to disordered eating behaviors. Another objective was to evaluate the risk of eating disorder behaviors among the female athletes participating in different sports. A relationship between age and symptoms of eating disorders in the athletic and nonathletic groups was also to be determined if one actually existed.

The subjects consisted of two groups, female college athletes and female college nonathletes, ranging from 16 to 25 years old at a university in Virginia. There were a total of 206 female athletes who participated in 11 varsity collegiate sports on the Division I level. The female athlete group, which made up 51% of the sample, included 15 volleyball, 24 soccer, 12 high-tech dance, 10 tennis, 18 cheerleaders, 18 softball, 31 lacrosse, 20 cross-country, 20 track, 27 swimming/diving, and 11 basketball players. Only one of the athletes was a graduate student. The female nonathlete group, which consisted of 197 full-time students, was formulated through random selection. The nonathlete group made up 48.9% of the sample. An important difference between the

two groups was the age of those who participated. For the female athletes, the mean age was 19.34 years and the female nonathletes' mean age was 18.59.

The instrument used in this study was the Eating Attitudes Test 26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982). This test measures attitudes about food and diet patterns that are similar to those of clinically diagnosed anorexic and bulimic patients (Kirk, Singh, & Getz, 2001). In this study, the test was used to measure levels of behavior in relation to eating disorders. The EAT-26 consists of 26 items divided into three different sections. The first section on dieting includes 13 questions relating to the avoidance of fatty foods and a preoccupation with being thinner. The second section with 6 questions focuses on thoughts about food and bulimic behaviors. The third section on oral control includes 7 questions related to self-control with eating and perceived pressure from others to increase body weight. "Garner et al. reported high validity and reliability of the EAT-26 as an instrument measuring eating attitudes associated with anorexia and bulimia" (Kirk, Singh, & Getz, 2001, p. 125).

EAT-26 scores of 20 or higher indicated eating disorder behaviors. Scores below 20 indicated a lower risk of the behaviors. The raw scores for the athletes were 8.09 and 9.97 for the nonathletes. In the athlete group, 10.7% scored 20 or higher on the EAT-26. In the nonathlete group, 15.2% scored a 20 or higher on the test. Even though the nonathlete group had a higher percentage who met eating disorder behavior criteria, the difference was not statistically significant. These results did not support the hypothesis that college athletes have a higher risk of eating disorders. The study did evaluate whether participants in any particular sport had significantly higher rates of eating disorder behaviors than others. The results indicated that there were some differences in

the percentages of the behaviors among each team, however none were found to be statistically significant. The results also suggested that younger college females might be more likely to be at higher risk for eating disorders than older college females.

A big difference in this study compared to previous ones was that the study did not support a higher incidence of disordered eating in the female athlete group. Previous studies have found college athletes to be at a higher risk of developing eating disorders, which could be due to various reasons. One reason could be that the resources colleges provide to athletes for mentoring, counseling, and academic support differ. "Division I female athletes generally have an intact support system consisting of coaches, trainers, physicians, and academic advisers, whereas nonathlete women often have to seek and build support while adjusting to college life" (Kirk, Singh, & Getz, 2001, p.127). Over these past few years, there have been efforts made to develop better support and guidance for athletes (Kirk, Singh, & Getz, 2001). This type of support could help reduce the effect of college pressures and sports participation pressures because a nurturing environment is provided. This study emphasized that more research needs to be conducted to get a better understanding of the risk factors associated with disordered eating behaviors, female athletes, and nonathletes as well. Also, peers, coaches, trainers, parents, and others associated with the female athletes and students need to be trained and thoroughly educated on the identification and symptoms of eating disorders.

CHAPTER III

METHODS

Subjects

The subjects in this study included 62 college female athletes at the University of North Carolina at Pembroke. The athletes were participants in six intercollegiate sports competing at the NCAA Division II level. The six different sports involved were: basketball, cross/country/track, soccer, softball, volleyball, and tennis. Two of the female athletes were participants on two different teams, so there was actually a total number of 64 subjects. One athlete ran track and played volleyball and the other athlete played soccer and tennis. The subjects' age range was from 18-23 years. The survey was conducted during the 2002 spring semester.

The coaches of the female athletes at the university were also surveyed. There were 13 coaches that have had a variety of years of experience coaching female athletes ranging from 1 year to 25 years. The coaches that were surveyed were as follows: assistant coach for basketball, head and assistant coaches for cross-country/track, head and two assistant coaches for softball, head and two assistants for soccer, head and assistant for volleyball, head coach for tennis, and the head athletic trainer. This survey was conducted during the same semester as the female athletes' survey. The Institutional Review Board for Research Involving Human Subjects at the University of North Carolina at Pembroke gave approval for the study to be conducted and for data collection. (Appendix A)

Procedures

Female athletes and coaches received a detailed explanation about this study. Each female team met on specific days as scheduled and the surveys were filled out without the researcher present to ensure privacy. The instruments used in this study were two different surveys. The survey (Appendix B) for the female athletes was based on eating attitudes and behaviors in relation to the possibility of an eating disorder. Some of the questions were derived from Dr. David Garner's Eating Attitudes Test 26 (EAT-26). The first section of the survey collected demographic information. The second section consisted of questions on behaviors such as preoccupation with food and being thinner, thoughts about food, diet behaviors, avoidance of certain foods, and pressure from others to eat. The third section consisted of questions about self-control and eating, bulimic behaviors such as vomiting and using laxatives, exercise behaviors, personal questions specific for females, and if the participant has been treated for an eating disorder in the past. A second survey (Appendix C), given only to the coaches, was based on experience with coaching female athletes, the knowledge level about eating disorders, experiences of having an athlete with an eating disorder, encouragement of weight loss, recognition of eating disorder terms, signs and symptoms, and factors related to eating disorders in athletes.

Results

For the female athletes' survey and the coaches' survey, the results were calculated by taking a percentage out of the total number. One set of tables for the female athletes' surveys was calculated by having a total for each question for each specific sport. The other set of tables includes totals for each question in relation to the

entire female athlete population. The results for the survey of the coaches were calculated by percentages out of the total number of coaches, which is 13.

Demographic Information Results for the Female Athletes (Appendix D)

There were variations in age for the athletes. Approximately 14% were 18, approximately 31% were 19, approximately 19% were 20, approximately 19% were 21, approximately 14% were 22, and only approximately 3% were 23 years of age. The female athletes (n=62) participated in six varsity Division II sports, which are basketball (n=8), cross-country/track (n=8), softball (n=17), volleyball (n=10), soccer (n=14), and tennis (n=7). There were 64 different responses for each question because two of the females participated on two different teams. The majority of the athletes were freshman, approximately 36%. There were approximately 22% sophomores, approximately 17% juniors, and 25% seniors. The most common ethnic group for the athletes was Caucasian, approximately 80%. Approximately 15% were African American, approximately 2% were American Indian, and approximately 5% classified themselves as other.

Comparison of Section II Survey Results of the Female Athletes' Survey (Appendix E & F)

All questions from the survey are displayed in tables by each specific sport with the different responses to each of the 16 questions. In addition, there are tables that show the total female athlete group's responses for the 16 questions. The responses discussed are those related to questions that are more common indicators of an eating disorder and as well as that indicate large percentages and numbers. Question one asked if the athletes were afraid of gaining weight or being overweight. A little under half of the women's

soccer and tennis teams reported always and half of the cross-country team reported sometimes. Out of the total athlete group approximately 35% reported sometimes. Question 2 asked if the athletes believed themselves to be fat when others say or think they are too thin. There was not one athlete who reported always. Over 60% of the cross country/track team reported sometimes while a little under half of the softball team reported never. Question 4 asked about engaging in eating binges while being out of control and one softball player responded often and almost 65% of the soccer team reported sometimes. Out of all the athletes, approximately 36% reported that they sometimes engaged in binges. Question 7 asked if the athletes make themselves sick because they feel uncomfortably full and the whole cross country/track team reported never, half of the soccer team reported sometimes, and one softball player reported often. Seventy-five percent of the athlete population reported that they never make themselves sick when they feel uncomfortably full. Question 8 referred to feeling depressed or guilty after eating and 54% of all the athletes reported never while approximately 57% of the tennis team reported sometimes. In addition, one volleyball player and one soccer player reported that they always feel depressed or guilty after eating. Question 9 referred to being preoccupied with losing weight and being skinnier. Almost half of the female athlete population reported sometimes to this question. Approximately 22% of the soccer team reported that they are always preoccupied with losing weight. Question 10 asked about feeling fat or bloated and 57% of the tennis team reported often and a little over 21% of the soccer team reported always. Almost half of all the female athletes reported that they feel fat or bloated. Question 11 asked if the athletes avoid social situations that involve food and almost 90% of all the athletes reported never. Twenty-five percent of

the women's basketball team reported that they sometimes avoid social situations involving food. Question 12 asked if food dominates or controls their life. Half of the volleyball team and over 57% of the soccer team reported somewhat, while approximately 69% of all female athletes reported not at all. Question 15 asked about eating fat-free or low-fat foods and 20% of the volleyball team reported always while over 70% of the softball team reported sometimes. Almost 30% of all the athletes reported that they often eat these foods while almost half of all the athletes sometimes eat these types of food. The last question in Section II asked if the athletes had recently lost more than 15 pounds in a 2-3 month period. Two softball players, one volleyball player, and one soccer player reported that they had lost this amount of weight recently in a short period. Almost 94% of all the female athletes reported that they had not lost this amount of weight.

Comparison of Section III Survey Results of the Female Athletes' Survey (Appendix G & H)

Out of the nine questions in this section, seven are displayed in the tables that show each sports' responses to each question and eight are displayed in the totals tables that show the responses to each questions for the female athletes as a whole. The first four questions of this section were based on the frequency that these types of behaviors occur. Question 1 asked how often the athletes have gone on eating binges. Over 65% of all the athletes reported never, however over 21% of the soccer team reported 1-3 times a month and one soccer player and one tennis player reported 2-6 times a week. Question 2 asked how often they vomit to control weight and over 85% reported never. However, approximately 7% of soccer and approximately 14% of tennis reported that they vomit to

control weight 2-6 times a week. Question 3 asked how often the athletes have used laxatives to control their weight or shape. One soccer player reported less than one time a month, one reported 1-3 times a month, one reported once a week, and one reported once a day. One tennis player also reported that she uses laxatives once a day to control her weight or shape. Question 4 asked how frequent the athletes exercise to lose or to control weight. Half of the cross country/team reported never, approximately 43% of the tennis team exercises 2-6 times a week, approximately 29% of soccer and approximately 29% of tennis reported once a day, and a little over 21% of the soccer team exercises more than once a day.

The last five questions were based on female personal history and if an athlete has been treated for an eating disorder. Question 5 asked if these females have regular menstrual cycles, a little over 17% of all the athletes reported no. All of the basketball team reported that their menstrual cycles are regular, but 20% of the volleyball team and approximately 36% of the soccer team reported that they do not have regular menses. Question 6 asked if the females have ever lost their period for 3 months or more not due to pregnancy and almost 16% of all female athletes reported yes. Forty percent of the volleyball team, 25% of the cross country/track team, a little over 21% of the soccer team, and one softball player reported that they have lost their period for this amount of time. Question 7 asked if the females are on birth control pills and 31.25% of all the female athletes said that they do take pills. Question 8 asked if the athletes have ever been treated for an eating disorder. Only one athlete out of the whole female athlete sample has been treated for an eating disorder. A psychologist, nutritionist, and

psychiatrist treated her. In relation to question 8 was that one female wrote on the survey that she has had an eating disorder in the past, but she was never treated.

Results Summary of Female Athletes' Survey

The findings showed eating disorder behaviors in every sport. However, soccer, tennis, softball, and volleyball appeared to be at a higher risk for eating disorders. These four teams had athletes that displayed more signs and symptoms of these disorders compared to cross-country/track and basketball. An interesting finding from the survey was that half of the soccer team sometimes make themselves throw up after they eat because they feel uncomfortable. This can be considered a high amount especially for this type of behavior. It was not surprising to find that almost half of all the female athletes have a preoccupation with losing weight and becoming skinnier. Losing a significant amount of weight in a short period of time is a common sign of an eating disorder and four female athletes reported that they had lost more than 15 pounds in a 2-3 month period. Some of the female athletes do engage in excessive exercise beyond the requirements of their specific sport. A detrimental factor discovered was that one athlete vomits 2-6 times a week, which leads to the conclusion that this female may have an eating disorder. This athlete reported several other signs and symptoms of an eating disorder as well. Two athletes out of the entire female athlete group reported having an eating disorder in the past, however, only one received treatment.

Comparison of Coaches' Survey Results (Appendix I)

The results on how long the thirteen coaches have coached female athletes varied. Two coaches have coached females for 3 years while two others have coached females for 2 years. One coach has coached females for 1 year, one for 4 years, one for 7 years,

one for 10 years, one for 11 years, one for 12 years, one for 15 years, one for 19 years, and one for 20 years. Question 2 asked if the coaches have been thoroughly educated about eating disorders and approximately 62% reported yes and one coach reported that he/she has been somewhat educated. Question 3 asked if the coaches have experienced coaching a female athlete with an eating disorder. Seven coaches reported yes while two coaches did not know if they had. Question 3a asked how many times has this occurred. Out of the seven coaches that have experienced this, three said once, three said 2 times, and one said 25 times. The coach that said he/she has experienced an athlete with an eating disorder 25 different times was a coach who has coached for 20 years. Question 4 asked if the coaches who have experienced athletes with an eating disorder were involved in the treatment or intervention plan. Fifty-seven percent of the 7 coaches reported yes. Question 5 asked if the coaches have ever encouraged their female athletes to lose weight or body fat to help improve athletic performance, 38.5% of the coaches reported yes. Question 6 was a definition of a specific eating disorder, which was anorexia nervosa, and only one coach answered incorrectly. Question 7 was a definition of a specific eating disorder, which was bulimia nervosa, 2 coaches did not answer correctly. Question 8 asked the coaches to circle all the signs of anorexia in athletes. There were only 10 correct responses out of the 14 choices. All 13 coaches chose 3 of the symptoms, which were intense fear of gaining weight, obsessively counts calories and fat grams, and believe they are fat when they are actually extremely thin. Twelve coaches chose two other anorexia symptoms, which were excessively exercising and being cold a lot such as having purple fingers and fingernails. Eleven of the coaches chose two other symptoms, which were wearing baggy clothes or layered clothing and isolating self away from

teammates and others. Ten coaches chose one symptom, which was lanugo, which is soft baby hair on the body. Eight coaches chose another symptom, which was hyperactivity or fatigue. Only six coaches' chose mood swings. Question 9 asked the coaches to circle all the signs of bulimia in athletes. Out of the 15 possible choices, there were only 12 correct responses. All thirteen coaches chose three of the symptoms of bulimia which were makes trips to the bathroom after meals, engages in secretive eating, and bad breath. Eleven coaches chose two other bulimia symptoms that were hoards food and dental problems such as erosion of tooth enamel. Nine coaches chose three other symptoms, which were excessive weight loss or weight gain, fear of being fat, and mood swings. Eight coaches chose another symptom, which was isolation from teammates and others. Six coaches chose another symptom that was abuses alcohol or other substances. Only five coaches chose excessive exercise as a symptom. Also only four coaches chose obsessively counting calories and fat grams. The last question on the survey asked if the Female Athlete Triad consists of eating disorders, amenorrhea (absence of menstrual periods), and osteoporosis, a statement that is in fact true. All the coaches except for one answered true.

Results Summary of Coaches' Survey

The coaches had a wide range of experience in coaching female athletes. The findings showed that over 60% of the coaches have received a thorough education on eating disorders and athletes. More than half of the coaches have experienced eating disorders in female athletes. An interesting factor was that one coach who has coached for twenty years has experienced a female athlete with an eating disorder 25 times. This may be seen as having at least one athlete a year with an eating disorder, which is

extremely high. Over half of the coaches who have experienced athletes with a disorder were involved in the treatment/intervention plan. Approximately 40% of the coaches reported that they have encouraged their female athletes to lose weight or body fat, which can contribute to the prevalence of eating disorders in female athletes. The coaches, on average, were able to identify anorexia and bulimia and the signs associated with these disorders in athletes.

CHAPTER IV

SOLUTION, SUMMARY, AND CONCLUSIONS

Solution

A possible solution to help college female athletes with an eating disorder is for a college/university to have an eating disorder protocol/set of guidelines to follow when a situation arises. The purpose of this protocol is to stress how important it is to take the issue of an athlete with an eating disorder seriously and to act upon it immediately. The protocol needs to be used to help identify female athletes at risk for an eating disorder, to assess each female athlete's needs, and provide proper essential care and support.

I. Education Concerns for Coaches of Female Athletes

- A. Each year coaches should be required to go to seminars on eating disorders in female athletes that include identification of these disorders, intervention procedures, proper and adequate nutrition for female athletes, and proper weight loss methods for female athletes.
- B. Coaches need to learn how to identify symptoms of eating disorders in female athletes. Some common signs and symptoms are listed below:

a. Symptoms or Warning Signs of Athletes with Anorexia

1. Experienced significant weight loss
2. Believe they are fat when they are extremely thin
3. Obsessively counts calories and fat grams
4. Excessively exercises beyond normal training
5. Intense fear of gaining weight
6. Wears baggy clothes or layered clothing to hide thinness and provide warmth
7. Cold a lot (purple fingers and fingernails)
8. Isolates from teammates and others
9. Experiences wide mood swings
10. Difficulty concentrating
11. Lanugo (fine downy hair)

b. Symptoms or Warning Signs of Athletes with Bulimia

1. Excessive weight loss or weight gain
2. Engages in secretive eating
3. Obsessively counts calories and fat grams
4. Excessively exercises beyond normal training
5. Makes trips to bathroom after meals
6. Avoid team meals
7. Afraid of being or becoming fat
8. Obsessed with weight and food
9. Abuses alcohol or other substances
10. Hoards food
11. Experiences wide mood swings
12. Erosion of tooth enamel
13. Difficulty concentrating

C. What Coaches Should Never Do:

- a. Conduct group weigh-ins
- b. Punish athletes for not being a certain weight
- c. Make careless remarks about athletes' appearance or weight

II. Education /Prevention Programs for Female Athletes

- A. Each female team should attend seminars in relation to eating disorders, including the following topics:

- a. Effects of Eating Disorders on a Female Athlete's Body and Athletic Performance
- b. Proper Nutrition and Results of Malnutrition
- c. Proper Weight-Loss and Weight-Gain Methods
- d. Safe and Appropriate Exercise Programs

III. Approaching an Athlete With an Eating Disorder

- A. If a coach, teammate, family, or outside source suspects an athlete has an eating disorder; he/she should report it to the athletic trainer so an intervention strategy can be formulated.
- B. Depending on the relationship of the athlete and coach, the coach may be included in the initial meeting confronting the athlete.
- C. Ensure confidentiality with the athlete.
- D. Be prepared for a variety of reactions from the athlete in regard to acceptance of your concerns.
- E. Provide resources for treatment. If the female athlete is in denial and/or does not want help and the situation is out of hand in terms of physical and mental health then the athletic trainer or coach should insist on the athlete seeking treatment.

IV. Referral Plan

- A. Athlete should be seen by a medical team, which consists of a certified athletic trainer, psychologist, medical doctor, and nutritionist.
- B. The athletic trainer needs to interact with everyone on the team. He/she may act as a liaison between the team and the athlete.

- C. The university should establish the point person or leader of the medical team.
- D. There should be a good working relationship between the physician and psychologist.
- E. Depending on the situation, determine the priority of medical and psychological care. For example, an athlete in a physical health crisis should meet with the medical doctor first.
- F. The first step is for the female athlete to have a thorough medical examination which consists of:
 - a. Physical exam
 - b. Nutritional assessment
 - c. Lab tests
 - d. Assessment of weight, dieting, and eating behaviors
- G. Any medical problem or biochemical causes associated with the eating disorder need to be addressed and treated.
- H. The psychologist needs to work with the female athlete to resolve underlying psychological, family, and social problems. There also needs to be an assessment of other issues or disorders such as depression, anxiety, personality issues, and substance abuse.
- I. The nutritionist needs to work the female athlete to develop a proper food plan that best meets her needs.
- J. Depending on the severity of the athlete's disorder, she may have to receive inpatient hospitalization care or outpatient care.

V. Determination of the Female Athlete Being Able to Continue Participation in Her Sport or Having Leave the Sport

- A. Based on the physical health of the athlete as determined by the physician.
- B. The athlete's health and safety comes first.
- C. If cleared by a doctor to participate the female should be monitored closely on the following factors:
 - a. Vital Signs (Blood Pressure and Pulse)
 - b. Weight
 - c. Activity Level
- D. The physician, in conjunction with the psychologist will determine the frequency of weight checks, body fat, etc.
- E. If the female athlete is at high risk for injury/illness during athletic participation, the athlete may need to be held out of her sport or physical activity due to medical complications.

This protocol was developed by using the following sources:

Eating Disorder Referral and Information Center
www.edreferral.com/treatment.html

Eating Disorders: A Guide for coaches, parents, and friends (1995)
www.betterbodz.com/nutri/eatingdis.html

Murphy, S., & Gutekunst, L. (1997), Disordered eating among athletes

Summary/Conclusions

In conclusion, eating disorders are very complicated and dangerous for female athletes. The prevalence of eating disorders in athletic populations is alarming and cannot be ignored. The two most common eating disorders seen in college female athletes are anorexia and bulimia. One major cause of eating disorders in female athletes is stress they receive from their coaches, families, peers, and the media to be thin, fit, and look good. Eating disorders negatively affect a female athlete's mind, body, and performance.

The first hypothesis, which was that a significant number of female athletes at the University of North Carolina at Pembroke would portray behaviors that characterize eating disorders, was proven in this study. There were athletes out of all six sports that portrayed eating disorder behaviors. It was also proven in this study that eating disorders could be found in any sport, not just "appearance" sports. The teams that seemed to be at a higher risk for eating disorders in this study were soccer, tennis, softball, and volleyball. There were some interesting results from the surveys. Almost 65% of the soccer team reported that they sometimes engage in eating binges while being out of control. Half of the soccer team reported that they sometimes make themselves sick because they feel uncomfortably full which is an alarming factor. It was not surprising to find that almost half of the female athlete population is preoccupied with being skinnier and losing weight. It was also interesting that close to 57% of the tennis team feel guilty or depressed after they eat as well as feeling fat. Four of the female athletes have lost more than 15 pounds in a 2-3 month period, which is extremely unhealthy and could be dangerous depending on the situation. It is alarming that one athlete vomits 2-6 times a

week to control her weight. It was obvious that some athletes over exercise due to the fact that some exercise once a day or more than once a day beyond their normal daily training regimen. For the small percentage of the female athletes that have experienced a loss of their menstrual cycle, it may be concluded that their eating behaviors or the possibility of an eating disorder could be a contributing factor. It was predicted before the study that a few athletes had an eating disorder in the past. Actually one athlete has been treated while another athlete admitted to having an eating disorder but did not receive treatment. There was one female that seemed to have an eating disorder based on her responses. In reference to the ethnic background, ethnic differences cannot be inferred since most of the athletes were Caucasian.

The hypothesis relating to coaches' education about eating disorders was rejected because over 60% of the coaches had been adequately educated about eating disorders. Also, a little over half of the coaches have experienced female athletes with eating disorders. It was interesting to find that the coach that has been coaching for 20 years has experienced a female athlete with an eating disorder on 25 different occasions. This seems to be an extremely high number because eating disorders were not as common or reported as much 20 years ago. Only a little under 40% of the coaches reported that they have encouraged their female athletes to lose weight or body fat to improve performance. This lends support to the belief that pressures from coaches can definitely contribute to the prevalence of eating disorders in female athletes. On average, the coaches seemed to be relatively knowledgeable about eating disorders in athletes. Most of the coaches identified anorexia and bulimia and the more common signs of each disorder.

One important limitation of this study was that with the type of self-report (survey) used the athletes and coaches may have felt some personal discomfort, which could contribute to the possibility of not responding to the surveys honestly. The female athletes may feel uncomfortable about reporting information because they are in denial or they do not want anyone to know about their disorder. Another limitation was the sample size was small which is due to the fact that the sample came from a small Division II university. Future research with larger sample sizes in a wider variety of sports is needed to focus on the increased risk of eating disorders and the impact on female athlete performance. Another limitation is that it is hard to generalize for all female college athletes because the results of this study were based on one university's athletes and coaches. Future research needs to be conducted to compare several different colleges/universities in order to better understand the risk and prevalence of eating disorders in college female athletes that participate in "appearance" and "non-appearance" sports. Further studies should be conducted using a specific assessment tool such as the AMDQ screening test to technically evaluate eating disorders in female athletes. The correlation of coaches' pressuring athletes to lose weight and body fat and the prevalence of eating disorders in female athletes needs to be further addressed and studied. Specific guidelines on how colleges/universities should deal with this type of situation need to be studied further as well. In general, more research needs to be done on eating disorders in female athletes because these disorders are becoming more common.

The best treatment for eating disorders is prevention and education. When athletes have an eating disorder, they need to get professional help from a physician,

psychologist, and nutritionist. Eating disorders can cause an athlete to become very ill, even lead to hospitalization. If an eating disorder is not detected early and treated properly, the risk of mortality is highly possible. Information about eating disorders is readily available. The results from the study were significant enough to prove that an eating disorder protocol/set of guidelines is needed at the University of North Carolina at Pembroke. Colleges and universities must take responsibility and educate their employees to conduct their athletic programs in a manner that recognizes the athlete's health and safety. Recognition of eating disorders, intervention and treatment plans should be established, as well as preventative education programs. The legal duty of the athletic department is to exercise ordinary care as the reasonable prudent person would in the same or similar circumstances.

Appendix A

Institutional Review Board for Research Involving Human Subjects
University of North Carolina at Pembroke
Pembroke, NC 28352

Memorandum

TO: Jera Courts
FROM: Ray Sutherland
DATE: 22 April 2002
SUBJECT: Approval of Proposal

Your research proposal "Eating Disorders Survey for Female Athletes at UNCP" Spring 02 has been approved by the Institutional Review Board for Research Involving Human Subjects of the University of North Carolina at Pembroke.



Ray Sutherland
Chair

Appendix B

Eating Disorders Survey For Female Athletes at The University of North Carolina at Pembroke

I. Please fill out the answer or circle one response to each question.

1. Age: _____
2. What year in college are you? Circle one
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Graduate
3. Ethnic/Racial Group Circle one
 - a. African American
 - b. Asian American
 - c. Caucasian
 - d. Hispanic
 - e. American Indian
 - f. Other
4. What sport or sports do you participate in? Circle all that apply
 - a. Women's Basketball
 - b. Women's Cross Country/Track
 - c. Cheerleading/Dance
 - d. Women's Soccer
 - e. Softball
 - f. Tennis
 - g. Volleyball

II. Please circle one answer for each statement.

1. Are you afraid of gaining weight or being overweight?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
2. Do you believe yourself to be fat when others say/think you are too thin?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never

3. Do you avoid eating when hungry?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
4. Have you engaged in eating binges where you were out of control and felt you could not stop?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
5. Do you cut food into real small pieces?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
6. Do you try not to eat foods high in fat or high in carbohydrates (bread, potatoes, rice)?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
7. Do you make yourself sick because you feel uncomfortably full?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
8. Do you feel depressed or guilty after you get done eating?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
9. Are you preoccupied with losing weight and being skinnier?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
10. Do you feel fat or bloated?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
11. Do you avoid social situations that involve food?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never
12. Would you say that food dominates or controls your life?
 - a. Very Much
 - b. Somewhat
 - c. Not at all
13. Do you go on diets?
 - a. Always
 - b. Often
 - c. Sometimes
 - d. Never

14. Do you feel pressure from others to eat?
a. Always b. Often c. Sometimes d. Never
15. Do you eat fat-free or low fat foods?
a. Always b. Often c. Sometimes d. Never
16. Have you recently lost more than 15 lbs in a 2-3 month period?
a. Yes
b. No

III. Circle one answer to each statement.

1. Have you gone on eating binges?
a. Never b. Less than 1 time a month c. 1-3 times a month
d. Once a week e. 2-6 times a week f. Once a day
g. More than once a day
2. Have you vomited to control weight?
a. Never b. Less than 1 time a month c. 1-3 times a month
d. Once a week e. 2-6 times a week f. Once a day
g. More than once a day
3. Have you used laxatives to control your weight or shape?
a. Never b. Less than 1 time a month c. 1-3 times a month
d. Once a week e. 2-6 times a week f. Once a day
g. More than once a day

4. Have you exercised to lose or to control your weight?

- a. Never
- b. Less than 1 time a month
- c. 1-3 times a month
- d. Once a week
- e. 2-6 times a week
- f. Once a day
- g. More than once a day

5. Do you have regular menstrual periods?

- a. Yes
- b. No

6. Have you ever lost your period for 3 months or more not because of pregnancy?

- a. Yes
- b. No

7. Do you take birth control pills?

- a. Yes
- b. No

8. Have you ever been treated for an eating disorder? If yes, answer #9.

- a. Yes
- b. No

9. If you have been treated for an eating disorder was it through a: (Circle all that applies)

- a. Counselor
- b. Medical Doctor
- c. Nurse
- d. Psychiatrist
- e. Psychologist
- f. Nutritionist
- g. Support Group

**** Reference **** - Some questions came from Dr. David M. Garner's Eating Attitudes Test (EAT-26).

7. Which eating disorder is best characterized as having episodes of bingeing and purging through vomiting, laxatives, diuretics, and/or excessive exercise?

- a. Bulimia Nervosa
- b. Binge Eating Disorder
- c. Anorexia Nervosa

8. Please circle all the signs of anorexia in athletes

- a. Intense fear of gaining weight
- b. Hoards food
- c. Obsessively counts calories and fat grams
- d. Eats in secret
- e. Believe they are fat when they are actually extremely thin
- f. Wears baggy clothes or layered clothing
- g. Excessively exercise
- h. Takes laxatives
- i. Cold a lot (may have purple fingers and fingernails)
- j. Erosion of tooth enamel
- k. Isolates from teammates and others
- l. Hyperactivity or fatigue
- m. Lanugo (soft fine baby hair on body)
- n. Mood swings

9. Please circle all the signs of bulimia in athletes

- a. Excessive weight loss
- b. Excessive weight loss or weight gain
- c. Stops eating major food groups such as meat and dairy products
- d. Makes trips to the bathroom after meals
- e. Excessively exercises
- f. Hoards food
- g. Hyperactivity or fatigue
- h. Obsessively counts calories and fat grams
- i. Isolates from teammates and others
- j. Dental problems such as erosion of tooth enamel
- k. Engages in secretive eating
- l. Fear of being fat
- m. Abuses alcohol or other substances
- n. Mood swings
- o. Bad breath

10. The Female Athlete Triad consists of Eating Disorders, Amenorrhea (absence of menstrual periods), and Osteoporosis.

True

False

Appendix D

Demographic Information (Totals)

Age	<u>18</u> 14.10%	<u>19</u> 31.30%	<u>20</u> 18.80%	<u>21</u> 18.80%	<u>22</u> 14.10%	<u>23</u> 3.10%
Yr. In College	<u>Freshman</u> 35.90%	<u>Sophomore</u> 21.90%	<u>Junior</u> 17.20%	<u>Senior</u> 25%		
Ethnic Group	<u>Caucasian</u> 79.70%	<u>African American</u> 14.10%	<u>American Indian</u> 1.60%	<u>Other</u> 4.70%		
Sport	<u>Basketball</u> 8	<u>X-Country/Track</u> 8	<u>Softball</u> 17	<u>Volleyball</u> 10	<u>Soccer</u> 14	<u>Tennis</u> 7

Appendix E

Section II Survey Results (Totals)

<u>Question</u>	<u>Always</u>	<u>Often</u>	<u>Sometimes</u>	<u>Never</u>
1	31.30%	17.20%	34.40%	17.20%
2	0.00%	21.90%	40.60%	37.50%
3	0.00%	3.10%	34.40%	62.50%
4	0.00%	1.60%	35.50%	62.90%
5	0.00%	3.10%	35.90%	60%
6	3.10%	10.90%	35.90%	50%
7	0.00%	1.60%	23.40%	75%
8	3.20%	9.50%	33.30%	54%
9	7.80%	14.10%	35.90%	42.20%
10	7.80%	28.10%	48.40%	15.60%
11	0.00%	0.00%	10.90%	89.10%
13	3.10%	9.40%	48.50%	39.10%
14	1.60%	3.10%	29.70%	65.60%
15	4.70%	29.70%	48.40%	17.20%

<u>Question</u>	<u>Very Much</u>	<u>Somewhat</u>	<u>Not at All</u>
12	3.10%	28.10%	68.80%

<u>Question</u>	<u>Yes</u>	<u>No</u>
16	6.25%	93.75%

Appendix F

Section II Responses

Table 1

Question #1

Afraid of Gaining Weight or Being Overweight

Sport	Always	Often	Sometimes	Never
Women's basketball	37.50%	25%	12.50%	25%
Women's cross country/track	0.00%	12.50%	50%	37.50%
Softball	23.50%	23.50%	41.20%	11.80%
Volleyball	40%	0.00%	40%	20%
Women's soccer	42.90%	14.30%	28.60%	14.30%
Tennis	42.90%	28.60%	28.60%	0.00%

Table 2

Question #2

Believe Yourself to be Fat When Others Say/Think You are Too Thin

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0%	50.00%	50%
Women's cross country/track	0.00%	0.00%	63%	37.50%
Softball	0.00%	17.60%	35%	47%
Volleyball	0%	30.00%	20.00%	40.00%
Women's soccer	0.00%	28.60%	50.00%	21.40%
Tennis	0.00%	29%	29%	43%

Table 3

Question #3

Avoid Eating When Hungry

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0.00%	50.00%	50.00%
Women's cross country/track	0.00%	0.00%	12.50%	87.50%
Softball	0.00%	5.90%	47.10%	47.10%
Volleyball	0.00%	10%	20%	70%
Women's soccer	0.00%	0.00%	14.30%	85.70%
Tennis	0.00%	0.00%	14.30%	85.70%

Table 4

Question #4

Engaged in Eating Binges Where You Were Out of Control

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0.00%	37.50%	62.50%
Women's cross country/track	0.00%	0.00%	12.50%	87.50%
Softball	0.00%	5.90%	23.50%	58.80%
Volleyball	0.00%	0.00%	30%	70%
Women's soccer	0.00%	0.00%	64.30%	35.70%
Tennis	0.00%	0.00%	28.60%	71.40%

Table 5

Question #5

Cut Food into Real Small Pieces

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0.00%	13%	88%
Women's cross country/track	0.00%	0.00%	25.00%	75.00%
Softball	0.00%	5.90%	29.40%	64.70%
Volleyball	0.00%	0.00%	70%	30%
Women's soccer	0.00%	7.10%	57.10%	35.70%
Tennis	0.00%	0.00%	0.00%	100%

Table 6

Question #6

Try Not to Eat Foods High in Fat or Carbohydrates

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	25%	12.50%	62.50%
Women's cross country/track	0.00%	0.00%	50.00%	50.00%
Softball	0.00%	5.90%	59%	41%
Volleyball	10%	10.00%	30.00%	50.00%
Women's soccer	7.10%	7.10%	14%	14%
Tennis	0.00%	28.60%	42.90%	28.60%

Table 7

Question #7

Make Yourself Sick Because You Feel Uncomfortably Full

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0.00%	25%	75%
Women's cross country/track	0.00%	0%	0.00%	100.00%
Softball	0.00%	5.90%	24%	71%
Volleyball	0.00%	0.00%	20.00%	80.00%
Women's soccer	0%	0%	50%	50%
Tennis	0.00%	0.00%	0.00%	100.00%

Table 8

Question #8

Feel Depressed or Guilty After You Get Done Eating

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	12.50%	25%	62.50%
Women's cross country/track	0.00%	0.00%	0.00%	100%
Softball	0.00%	5.90%	52.90%	41.20%
Volleyball	10%	0.00%	50%	40%
Women's soccer	7%	21.40%	7.10%	57.10%
Tennis	0.00%	14.30%	57.10%	28.60%

Table 9

Question #9

Preoccupied with Losing Weight and Being Skinnier

Sport	Always	Often	Sometimes	Never
Women's basketball	12.50%	12.50%	12.50%	62.50%
Women's cross country/track	0.00%	0.00%	12.50%	87.50%
Softball	0.00%	11.80%	47.10%	41.20%
Volleyball	10%	10%	40%	40%
Women's soccer	21.40%	28.60%	35.70%	7.10%
Tennis	0.00%	14.30%	57.10%	28.60%

Table 10

Question #10

Feel Fat or Bloating

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	12.50%	62.50%	25%
Women's cross country/track	0.00%	12.50%	62.50%	25%
Softball	5.90%	23.50%	58.80%	11.80%
Volleyball	10%	30%	40%	20%
Women's soccer	21.40%	35.70%	35.70%	7.90%
Tennis	0.00%	57.10%	28.60%	14.30%

Table 11

Question #11

Avoid Social Situations that Involve Food

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0.00%	25.00%	75.00%
Women's cross country/track	0.00%	0.00%	0.00%	100.00%
Softball	0%	0%	12%	88%
Volleyball	0.00%	0.00%	10.00%	90.00%
Women's soccer	0.00%	0.00%	14.30%	85.70%
Tennis	0.00%	0.00%	0.00%	100%

Table 12

Question #12

Say that Food Dominates or Controls Your Life

Sport	Very Much	Somewhat	Not at All
Women's basketball	0.00%	12.50%	87.50%
Women's cross country/track	0.00%	0.00%	100.00%
Softball	0%	24%	77%
Volleyball	0.00%	50.00%	50.00%
Women's soccer	7.10%	57.10%	35.70%
Tennis	14.30%	0.00%	85.70%

Table 13

Question #13

Go on Diets

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0.00%	50%	50%
Women's cross country/track	0.00%	0.00%	25%	75%
Softball	0.00%	11.80%	64.70%	23.50%
Volleyball	10%	0.00%	40%	50%
Women's soccer	7.10%	21.40%	36%	36%
Tennis	0.00%	14.30%	71.40%	14%

Table 14

Question #14

Feel Pressure from Others to Eat

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	0.00%	25%	75%
Women's cross country/track	0.00%	0.00%	0.00%	100%
Softball	0.00%	0.00%	29.40%	70.60%
Volleyball	0.00%	10%	50%	40%
Women's soccer	7.10%	7.10%	28.60%	57.10%
Tennis	0.00%	0.00%	43%	57.10%

Table 15

Question #15

Eat Fat-Free or Low-Fat Foods

Sport	Always	Often	Sometimes	Never
Women's basketball	0.00%	37.50%	25%	37.50%
Women's cross country/track	0.00%	25%	50%	25%
Softball	0.00%	29.40%	70.10%	0.00%
Volleyball	20%	20%	40%	20%
Women's soccer	7.10%	28.60%	35.70%	28.60%
Tennis	0.00%	42.90%	57.10%	0.00%

Table 16

Question #16

Recently Lost More than 15 lbs in a 2-3 Month Period

Sport	Yes	No
Women's basketball	0.00%	100.00%
Women's cross country/track	0.00%	100.00%
Softball	11.80%	88.20%
Volleyball	10%	90%
Women's soccer	7.10%	92.90%
Tennis	0.00%	100%

Appendix G

Section III Survey Results (Totals)

<u>Question</u>	<u>Never</u>	<u>< 1 Mon.</u>	<u>1-3 Times a Mon.</u>	<u>Once a Wk.</u>	<u>2-6 Times a Wk.</u>	<u>Once a Day</u>	<u>>Once a Day</u>
1	65.60%	18.80%	12.50%	0.00%	3.10%	0.00%	0.00%
2	85.90%	6.25%	1.60%	0.00%	6.25%	0.00%	0.00%
3	92.20%	1.60%	1.60%	1.60%	1.60%	3.10%	0.00%
4	18.80%	1.60%	1.60%	9.40%	35.90%	21.90%	10.90%

<u>Question</u>	<u>Yes</u>	<u>No</u>
5	82.80%	17.20%
6	15.60%	84.40%
7	31.25%	68.75%
8	1.60%	98.40%

Appendix H

Section III Responses

Table 1

Question #1

Gone on Eating Binges

Sport	Never	< 1 Time a Mon.	1-3 Times a Mon.	Once a Wk.	2-6 Times a Wk.	Once a day	> Once a day
Women's basketball	62.50%	25%	12.50%	0.00%	0.00%	0.00%	0.00%
Women's cross country/track	87.50%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%
Softball	64.70%	17.60%	17.60%	0.00%	0.00%	0.00%	0.00%
Volleyball	80%	10%	10%	0%	0%	0%	0%
Women's soccer	35.70%	35.70%	21.40%	0.00%	7.10%	0.00%	0.00%
Tennis	85.70%	0.00%	0.00%	0.00%	14.30%	0.00%	0.00%

Table 2

Question #2

Vomited to Control Weight

Sport	Never	< 1 Time a Mon.	1-3 Times a Mon.	Once a Wk.	2-6 Times a Wk.	Once a Day	> Once a Day
Women's basketball	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Women's cross country/track	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Softball	88.20%	5.90%	5.90%	0.00%	0.00%	0.00%	0.00%
Volleyball	80%	0.00%	0.00%	0.00%	20%	0.00%	0.00%
Women's soccer	71.40%	21.40%	0.00%	0.00%	7.10%	0.00%	0.00%
Tennis	85.70%	0.00%	0.00%	0.00%	14.30%	0.00%	0.00%

Table 3

Question #3

Used Laxatives to Control Your Weight or Shape

Sport	Never	< 1 Time a Mon.	1-3 Times a Mon.	Once a Wk.	2-6 Times a Wk.	Once a Day	> Once a Day
Women's basketball	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Women's cross country/track	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Softball	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Volleyball	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Women's soccer	71.40%	7.10%	7.10%	7.10%	0.00%	7.10%	0.00%
Tennis	85.70%	0.00%	0.00%	0.00%	0.00%	14.30%	0.00%

Table 4

Question #4

Exercised to Lose or to Control Your Weight

Sport	Never	< 1 Time a Mon.	1-3 Times a Mon.	Once a Wk.	2-6 Times a Wk.	Once a Day	> Once a Day
Women's basketball	25%	0.00%	0.00%	12.50%	25%	25%	12.50%
Women's cross country/track	50%	0.00%	0.00%	12.50%	25%	0.00%	12.50%
Softball	5.90%	5.90%	0.00%	17.60%	41.20%	23.50%	5.90%
Volleyball	40%	0.00%	0.00%	0.00%	40%	20%	0.00%
Women's soccer	7.10%	0.00%	7.10%	0.00%	35.70%	28.60%	21.40%
Tennis	0%	0.00%	0.00%	14.30%	42.90%	28.60%	14.30%

Table 5

Question #5

Have Regular Menstrual Periods

Sport	Yes	No
Women's basketball	100%	0.00%
Women's cross country/track	87.50%	12.50%
Softball	88.20%	11.80%
Volleyball	80%	20%
Women's soccer	64.30%	35.70%
Tennis	85.70%	14.30%

Table 6

Question #6

Ever Lost Your Period for 3 Months or More Not Because of Pregnancy

Sport	Yes	No
Women's basketball	0.00%	100%
Women's cross country/track	25%	75%
Softball	5.90%	94.10%
Volleyball	40%	60%
Women's soccer	21.40%	78.60%
Tennis	0.00%	100%

Table 7

Question #7

Take Birth Control Pills

Sport	Yes	No
Women's basketball	25%	75%
Women's cross country/track	12.50%	87.50%
Softball	35.30%	64.70%
Volleyball	50%	50%
Women's soccer	35.70%	64.30%
Tennis	14.30%	85.70%

Appendix I

Coaches' Survey Results

Table 1

Been Thoroughly Educated about Eating Disorders

<u>Yes</u>	<u>No</u>	<u>Somewhat</u>
61.50%	30.80%	7.70%

Table 2

Have Experienced Having a Female Athlete with an Eating Disorder

<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
7	4	2
53.80%	30.80%	15.40%

Table 3

Number of Times

<u>1 Time</u>	<u>2 Times</u>	<u>25 Times</u>
3	3	1
42.90%	42.90%	14.20%

Table 4

Involved in the Treatment/Intervention Plan

<u>Yes</u>	<u>No</u>
4	3
57%	43%

Table 5

Encouraged Female Athletes to Lose Weight or Body Fat to Help Improve Performance

<u>Yes</u>	<u>No</u>
5	8
38.50%	61.50%

Table 6

ED Best Characterized as Self-Starvation and Body Weight That is 15% Below Normal

Correct Answer: Anorexia Nervosa

Correct **Incorrect**

92.30% 7.70%

Table 7

ED Best Characterized as Episodes of Binging and Purging Through Different Activities

Correct Answer: Bulimia Nervosa

Correct **Incorrect**

84.60% 15.40%

Table 8

Female Athlete Triad Consist of ED, Amenorrhea, and Osteoporosis

Correct Answer: True

Correct **Incorrect**

92.30% 7.70%

Works Cited

- Anorexia Nervosa and Related Eating Disorders, Inc. (1998). www.anred.com
- Anorexia Nervosa and Related Eating Disorders, Inc. (2001). www.anred.com
- Brownell, K.D. & Fairburn, C.G. (1995). Eating Disorders and Obesity: A Comprehensive Handbook. New York: Guilford Press.
- Eating disorders: a guide for coaches, parents, and friends. (1995)
www.betterbodz.com.
- Eating disorders and athletes. Sports Parents. www.sikids.com/sportsparents.com
- Eating Disorder Referral and Information Center. www.edreferral.com
- Garner, D. (1982). Eating Attitudes Test 26.
- Guarda, A. (1998). Hopkins Q & A: young athletes and eating disorders.
Consumer Health News.
- Hoffman, L. (1994). Decade of the brain: eating disorders. Decade of the Brain: Eating Disorders, 93 (3477), pp. 1-18.
- Hornak, J.N., & Hornak, J.E. (1997). The role of the coach with eating disordered athletes: recognition, referral, and recommendations. Physical Educator, 54(1).
- Kirk, G., Singh, K., & Getz, H. (2001). Risk of eating disorders among female college athletes and nonathletes. Journal of College Counseling, 4(2), pp. 122-133.
- McGilley, B., & Pryor, T. (1998). Assessment and treatment of bulimia nervosa. American Family Physicians, 57(1).
- Mosley, B. (1997). Striking the balance. Women's Sport and Fitness, 19(4), pp. 29-30.

Murphy, S., & Gutekunst, L. (1997). Disordered Eating among Athletes: The Athletic Trainer's Role. Champaign, IL: Human Kinetics Publishers.

Nagel, D., Black, D., Leverenz, L., & Coster, D. (2000). Evaluation of a screening test for female college athletes with eating disorders and disordered eating. Journal of Athletic Training, 35(4), pp. 431-440.

National Eating Disorders Screening Program. Screening for Mental Health, Inc. www.nmisp.org/eat/eat-fact.htm.

Powers, P., & Johnson, C. (2002). Athletes and Eating Disorders. National Eating Disorders Screening Program. Screening for Mental Health, Inc. www.nmisp.org/eat/eat-athlete.htm.

Thompson, R.A., & Sherman, R.T. (1993). Helping Athletes with Eating Disorders. Champaign, IL: Human Kinetics Publishers.