WEIGHING IN ON EATING DISORDERS: COLLEGIATE SWIMMING COACHES' KNOWLEDGE AND ATTITUDES TOWARDS EATING DISORDERS AND UNHEALTHY WEIGHT LOSS BEHAVIORS IN FEMALE ATHLETES

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By Samantha T. Vavra
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Thesis Approvals:

Dr. Michael Sachs, Thesis Advisor, Department of Kinesiology
Dr. Lois A. Butcher-Poffley, Department of Kinesiology
Dr. Joseph DuCette, Department of Educational Psychology

ABSTRACT

This study examined collegiate swimming coaches' knowledge and attitudes towards eating disorders and unhealthy weight loss practices within their athletes along with their perceptions of sport specific pressures in swimming. I used a modified version of the 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athletes developed and utilized by Sherman, Thompson, Dehass, and Wilfret. I used email to distribute the link to an online version of the survey, and used SPSS to analyze the data.

The results suggest that NCAA Division I, II, and III collegiate swimming coaches are aware of the prevalence along with the fact that that athletes do participate in unhealthy weight loss practices and suffer from eating disorders. This study suggests that many coaches are knowledgeable about this topic, but I was unable to conclude whether swimmers experience sport specific pressures that put them at higher risk for or lead to eating disorders. Both participant gender and NCAA division coached were found to present statistically significant differences in survey responses.

Despite results being statistically significant, results are consistent with previous research examining eating disorders in sport. Results were not able to conclude if swimmers experience sport specific pressures leading to the development of eating disorders. It is hoped that future research will continue to examine the link between specific sports and the development of ED, as well as focus on providing coaches with more knowledge and education on this topic.

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CHAPTER 1

INTRODUCTION

Eating Disorders such as Anorexia, Bulimia, and Eating Disorder Not Otherwise Specified (EDNOS) affect a wide variety of individuals throughout the world today. In the United States, up to 24 million people are believed to be suffering or have suffered from some type of eating disorder (The Renfrew Center Foundation for Eating Disorders, 2003). In addition to this statistic, Bachner-Melman et al., (2006) determined that seven million women in the US practice some type of disordered eating pattern or behavior. Within a lifetime, .9% of women will suffer from anorexia, 1.5% will suffer from bulimia, and 3.5% of women will suffer from binge eating disorder (Ekern, 2013). Of those affected, 4.0% of individuals with anorexia, 3.9% with bulimia, and 5.2% with EDNOS will die due to complications related to the disease (Crow et al., 2009). Of all mental disorders recognized by the DSM-V, Anorexia Nervosa has the highest mortality rate. These numbers are frightening as the prevalence rates of this disease have continued to climb since 1950. Today, of every 10 people, four either have suffered or know someone who has suffered from an eating disorder (Ekern, 2013).

College students are a subgroup of the population that are at particularly high risk for the development of various addictions and disorders, and this includes eating disorders. Full-blown eating disorders have been found to typically manifest around the ages of 18 and 21, with links being found between body dissatisfaction and upholding the “ideal” body image of a college student. Coincidentally, this is also the time that changes are occurring for young adults and many are going off to college to begin the next chapter of their lives. Students experience changes in living situations, eating patterns, social circles, and must balance all of this with a new academic schedule. When students cannot cope with these changes, they may look to managing their food consumption as a control mechanism (Someah, 2012). Not adjusting properly to all of these changes can leave college students vulnerable to developing an eating disorder.

The topic of eating disorders in college students is important due to the rise in prevalence rates over the past few years. Within the past 13 years, eating disorder rates in female college students have risen from 23% to 32% (White, 2011). The American College Health Association reported that within a sample of nearly 100,000 students, 4% of students used vomiting, laxatives or diet pills to lose weight, and 61% dieted to lose weight (American College Health Association, 2010). Many college-aged women also buy into the thin-ideal and have a high concern over their body-image. Positive correlations have been found that relate low self-esteem with the practice of disordered eating, with these practices becoming more frequent depending on the individual's environment. Making new friends and joining sports teams or sororities may exacerbate their body image concerns (Ekern, 2012). College students also turn to disordered eating patterns if they attempt to fulfill the physical ideal to which society holds them. The development of eating disorders involves other pathology, including the following: body dissatisfaction, negative affect, thin-ideal internalization, self-objectification, and dietary restraint. Reduction of the pathology has the potential to lead to reductions of the disorder itself.

Eating disorders in collegiate athletes, a subgroup of college students, have been and continue to be a growing concern. In the past few decades an abundance of research has been conducted in an attempt to better understand why eating disorders continue to plague athletes on many levels of competition. Although Sport Psychologists and medical professionals have been successful in uncovering some of the unknowns as to why eating disorders are overly prevalent within specific sports and sexes, there is still much left to discover.

Prior research has analyzed the connection between the type of sport an athlete competes in, and the relationship to the development of eating disorders. Most commonly discussed are lean and non-lean sports, in addition to sport specific triggers for the development of disordered eating or eating disorders. A lean sport as described by Reinkling and Alexander (2005) is a sport where a perfected aesthetic value is believed to be necessary in order to become successful. Sundgot-Borgen (1994) found that athletes competing in sports where low body weight and leanness were favored for optimum performance were more likely to suffer from eating disorders. Sport specific risk and trigger factors included casual comments about weight by teammates, lightweight sports attire, and pressure from coaches and trainers to lose weight. Sundgot-Borgen determined that nearly all eating disordered athletes included in the 1994 study were dieting to please a coach who recommended that losing weight would improve their performance.

Coaches recommend dieting and weight loss, although the question of how knowledgeable these coaches are of the development of eating disorders and unhealthy weight loss practices in their athletes still remains. In 2005, Sherman, Thompson, Dehass, and Wilfret published "NCAA Coaches Survey: The Role of the Coach in Identifying and Managing Athletes with Disordered Eating." Through surveys of 2,894 coaches from 23 NCAA collegiate sports, Sherman et al. found that coaches were "aware of the seriousness of many eating-related problems with their athletes" (Sherman et al., 2005, p. 455). Coaches successfully identified disordered eating and unhealthy weight loss practices leading to the most serious health consequences and negative performance for their athletes.

STATEMENT OF PURPOSE

The purpose of this study is to examine collegiate swimming coaches' knowledge and attitudes towards eating disorders and unhealthy weight loss practices within their athletes. Coaches' perceptions of sport specific pressures in swimming that can lead to the development of eating disorders and practice of unhealthy weight loss were also examined.

RESEARCH QUESTIONS

The following research questions are examined in this study:

1. What are coaches' knowledge and attitudes of eating disorders and unhealthy weight loss behaviors?
2. How prevalent do coaches believe eating disorders are in collegiate swimmers?
3. What sport specific pressures do coaches think lead to the development of eating disorders in collegiate swimmers?

DELIMITATIONS

The following delimitations were present in this study:

1. The questionnaire was sent to Division I, II, and III head and assistant swimming coaches.
2. A revised version of the 2003 NCAA questionnaire for Collegiate Coaches of Female Student-Athletes was used (Sherman et al., 2005).

LIMITATIONS

The following limitations were present in this study:

1. A self-report measure was used in this study.
2. Participants may not have been honest in their responses to the questionnaire.
3. Coaches may have provided responses that are socially acceptable.

DEFINTION OF TERMS

The following operational and conceptual terms are defined:

Anorexia Nervosa-an eating disorder that causes people to obsess about their weight and the food they eat. People with anorexia nervosa attempt to maintain a weight that's far below normal for their age and height. To prevent weight gain or to continue losing weight, people with anorexia nervosa may starve themselves or exercise excessively (NEDA, 2012).

Asymptomatic- having or showing no evidence of disease, in regards to eating disorders (Oxford, 2014).

Attitude(s)- A settled way of thinking or feeling about someone or something, typically one that is reflected in a person’s behavior (Oxford, 2014).

Binge Eating Disorder- a type of eating disorder that is characterized by recurrent binge eating without regular compensatory measures to counter the binge eating (NEDA, 2012).

Bulimia Nervosa- a serious, potentially life-threatening eating disorder characterized by a cycle of bingeing and compensatory behaviors such as self-induced vomiting designed to undo or compensate for the effects of binge eating (NEDA, 2012).

Clinical Eating Disorder- meets the criteria for an eating disorder diagnosis (Anderson and Petrie, 2012).

Disordered Eating- can include behaviors which reflect many but not all of the symptoms of feeding and eating disorders such as Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, Other Specified Feeding and Eating Disorders (OSFED) or Avoidant/Restrictive Food Intake Disorder (ARFID) (NEDA, 2012).

Eating Disorders- also referred to as ED; serious emotional and physical problems that include extreme emotions, attitudes, and behaviors surrounding weight and food issues (NEDA, 2012).

Female Athlete Triad- a medical condition often observed in physically active girls and women, and involves three components, (1) low energy availability with or without disordered eating, (2) menstrual dysfunction, and (3) low bone mineral density (De Souza et al., 2014).

Knowledge- Facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject (Oxford, 2014).

Lean Sport- those sports that place a competitive or aesthetic value on leanness, evaluations of body appearance, pressure to diet or maintain a low body weight, including distance running and swimming, gymnastics, dance and diving (Reinkling & Alexander, 2005, Ferrand et al., 2007).

Osteoporosis- a skeletal disorder characterized by compromised bone strength predisposing a person to an increased risk of fracture (Manore et al., 2007).

Other Specified Feeding or Eating Disorder- formerly Eating Disorders Not Otherwise specified (EDNOS), a feeding or eating disorder that causes significant distress or impairment, but does not meet the criteria for another feeding or eating disorder (NEDA, 2012).

Perfectionism- Striving for and setting of exceedingly high personal standards related to performance which is underlined by overly critical evaluations of ones' behavior, delineated by two higher order dimensions of personal standards perfectionism and evaluative concerns/self-critical perfectionism (Dickie et al., 2012; Frost et al., 1990).

Subclinical Eating Disorder- participation in symptoms of eating disorders, such as binge eating, excessive dieting, or vomiting, but not sufficient in number or severity to warrant an actual eating disorder diagnosis (Anderson & Petrie, 2012).

Symptomatic- showing that a particular disease is present, in regards to Eating Disorders (Oxford, 2014).

Unhealthy Weight Loss Practices- includes extreme caloric restriction, food group elimination, skipping meals, high fat and high-caloric consumption, and compulsive over-exercising (Body Image and Disordered Eating, 2000).

CHAPTER 2

REVIEW OF EXISTING LITERATURE

The present study is intended to examine collegiate swimming coaches' knowledge and attitudes towards eating disorders and unhealthy weight loss practices in their female athletes. In addition the study examined coaches' perceptions of sport specific pressures that may lead to the development of ED's and unhealthy weight loss practices. The study was conducted using Division I, II, and III female swimming coaches at NCAA member institutions throughout the United States. A majority of previous research and subsequent literature examined the prevalence and problematic results of eating disorders and unhealthy weight loss practices in athletes. The populations involved in this literature represented a variety of sports and athletes, but very few focused primarily on female swimmers. In addition, prior research examined the effect of sport specific pressures and sport type on the development of ED's. It can be expected that sport specific pressures vary from sport to sport, with swimmers experiencing pressures that are unique to the culture of swimming. Along with sport specific pressures, psychosocial factors that have been found to positively correlate with ED pathology was discussed, as well as whether participation in sport is seen as a protective or destructive factor in the development of these disorders. The literature review was be broken down into the following sections and due to the fluid nature within the topic of Eating Disorders in Sport, some overlapping may occur between sections. Sections and Subsections in the literature review include: Eating Disorders in Collegiate Athletics, Eating Disorders in Lean vs. Non-Lean sports, Eating Disorders in Swimming, Sport Pressures in Swimming, The Female Athlete Triad, Coaches' Knowledge of Eating

Disorders and Healthy vs. Unhealthy Weight Loss Behaviors, Participation in Sport: Protective or Destructive, Gaps in Research and Need for the Current Study.

EATING DISORDERS AND UNHEALTHY WEIGHT LOSS PRACTICES IN COLLEGIATE ATHLETICS

Prior research has attempted to estimate the prevalence rate of eating disorders among female collegiate athletes. In addition to investigating prevalence rates, questions have been raised as to why these women are believed to be at higher risk for development of eating disorders in comparison to their non-athlete counterparts. While eating disorders do not plague every sport and female athlete, research has yielded conflicting results as to how common and widespread the development of these disorders is among collegiate athletes. Thompson and Sherman (1999) viewed athletics as a "microcosm of the world at large," predicting that those athletes at highest risk include white female athletes, particularly those participating in sports that "emphasize a thin, lean body to enhance athletic performance" (Thompson & Sherman, 1999). Therefore, athletes' participation in particular sports and the effects of any sport specific pressures can be attributed to the variance found in previously determined prevalence rates.

In addition to specific sport participation, eating disorders and disordered eating behaviors have been found to be more pervasive among female athletes in comparison to their male counterparts. Being that the lifetime prevalence of eating disorders is three times higher in females than males (Hudson et al., 2007) it is no surprise that female athletes are more often plagued by these disorders. With the ultimate goal of improving performance, female athletes turn to abuse of laxatives and diet pills, fasting, and self-induced vomiting more often than males who practice these pathological weight loss methods.

As cited by Thompson and Sherman, "white female athletes in sports that emphasize thinness" are at highest risk for developing an eating disorder (Thompson & Sherman, 1999). The pervasiveness of clinical and subclinical eating disorders, eating behaviors, and weight control behaviors among female collegiate athletes was questioned by Greenleaf et al. (2009). Through an evaluation of 204 female collegiate athletes participating in seventeen different sports, Greenleaf et al. found that nearly one fourth of athletes displayed behaviors symptomatic of eating disorders and unhealthy weight loss practices. A significant number of athletes were found to be participating in binge eating, over exercising, and dieting to control their weight.

Of the estimated seven million women suffering from Eating Disorders in the US, the NCAA has reported, "64 percent of member schools report at least one female athlete with a diagnosed eating disorder" (Gaines & Burnett, 2014). Anderson and Petrie (2012) provided additional evidence in regards to prevalence rates while also examining how often athletes participated in weight control behaviors. This assessment of collegiate swimmers, divers, and gymnasts by Anderson and Petrie established that the prevalence rates of clinical and subclinical disorders were higher than that found in previous studies. Anderson and Petrie believed that their rates were higher in relation to previous research due to sport specific pressures that are unique the sports they examined. Dependent on individuals sampled and measures utilized, prevalence rates may vary, but a general consensus among current research has determined that eating disorders and unhealthy weight loss behaviors are an issue in the athletic community. Although prevalence rates vary, Sherman and Thompson (2014) continue to reiterate the fact that eating disorders and unhealthy weight loss practices are non-discriminatory and occur in all sports.

RISK FACTORS FOR ED AND UNHEALTHHY WEIGHT LOSS PRACTICES IN SPORT

Additional research has evaluated the idea that participation in sport presents unique risk factors that increase the potential for the development of eating disorders. It has been hypothesized that female athletes not only face sociocultural pressures, but also pressures from coaches, teammates, and themselves in order to be as competitive as possible in their specific sport. Hausenblas and Carron (1999) found that self-motivation, high achievement expectations, and striving for perfectionism in order to be as successful in collegiate athletics were risk factors that increased the likelihood of developing an eating disorder. Collegiate female athletes were also found to face additional environmental pressures to maintain a low body fat percentage and weight in order to achieve optimal performance standards in their sport.

Differential pressures have been found to vary from sport to sport, as examined by Kirk, Singh, and Getz (2001). These sport specific pressures have been found to either increase or decrease the risk of an athlete developing an eating disorder. Kirk et al. divided sports into two categories, those placing a higher emphasis on body leanness vs. those with a lower emphasis on body leanness. Although athletes participating in "lean" sports often meet cultural body ideals, they have been found to have a harder time fulfilling the bodily demands of their sport in comparison to non-lean sports.

The relationship between lean vs. non-lean sports in relation to the development of eating disorders was also examined by Sanford-Martens, Davidson, Yakushko, Martens, Hinton, and Beck (2005). Sanford-Martens et al. were interested in whether there was a difference in the frequency of clinical and subclinical eating disorders within these two groupings of athletes. Placement into lean vs. non-lean sport group depended on whether participation in the sport required a specific weight or thinness in order to be successful. Results displayed no difference between lean and non-lean sport athletes, which conflicts with additional research. Reinkling and Alexander (2005) and Picard (1998) found that participation in lean sports placed athletes at higher risk for developing an eating disorder when compared to non-lean sport athletes. These findings were attributed to the fact that lean-sport athletes face more significant pressure to maintain a low body weight in sports that emphasize thinness.

An additional investigation into development of ED in lean vs. non-lean sports by Kong and Harris (2014) revealed similar results compared to previous research. The role of body image in sport, influences from sports that influence leaner body shapes, pressure from coaches, and the role of competition were examined to determine which if any led to a higher prevalence of ED in athletes. Lean-sport athletes reported more disordered eating patters, and met criteria for anorexia nervosa, bulimia nervosa or EDNOS. Kong and Harris provided evidence that "female elite athletes from leanness focused sports also reported vomiting and laxative use to control weight, greater discrepancy between their current and ideal weight, and leaner ideal figures and sporting ideal figures," (Kong & Harris, 2015, p.153). These results contribute to the assumption that elite, lean-sport athletes experience more significant pressures to perform at the highest level, which can lead to the development of ED and weight preoccupation. Research has provided evidence to support a positive correlation between sports that promote leanness and body dissatisfaction in competitive athletics (Howells & Grogan, 2012).

The topic of thinness in sport and its relationship to either enhanced or decreased sport performance and the development of disordered eating/eating disorders has appeared in previous research. The idea that "thin is going to win" drives athletes to practice negative weight control behaviors, as they see these behaviors as tools for success in their particular sport (deBruin et al., 2011). Thompson and Sherman discussed thinness as an advantage in sports with regard to both performance and appearance. Sports where thinness is favored include synchronized swimming, gymnastics, swimming, diving, and figure skating. Participation in these sports requires athletes' to wear attire that is often tight and revealing, making their body shape and weight more noticeable.

The nature of specific sports where athletes' bodies are evaluated or judged has been found to place athletes at higher risk for developing ED's. Whether intentional or not, coaches and judges intensify social and performance pressures experienced by athletes who participate in sports that emphasize a slim body type. Often coaches provide their athletes with the misconception that performance will be enhanced by a lower body weight. Common issues when determining weight is that coaches do not take into account the body composition of lean athletes, perceiving higher numbers on the scale as a negative factor for sport performance. These social pressures exasperated by coaches are a key factor related to the development of ED's and disordered eating practices.

Psychosocial factors such as negative mood, distorted body image, social and personal pressures and weight concerns have been linked to the formation of eating disorders among athletes. Prior research has examined these correlates, but little is still known about which are specifically linked to the development of eating disorders among athletes. Petrie, Greenleaf, Reel, and Carter (2009) examined both the similarities and differences between athletes that were subclinically eating disordered and those who displayed concern of psychosocial correlates. Petrie et al. also investigated which psychosocial correlates were most common and relevant to the clinical or subclinical eating disorder diagnosis. Those athletes who were found to be eating disordered reported more significant pressure from coaches, higher levels of sadness, depression, guilt and shame. Additionally, Petrie et al. established that symptomatic, asymptomatic and eating disordered groups all expressed the importance of being thin and attractive. Petrie et al. also revealed that symptomatic and eating disordered groups internalized sociocultural attitudes on a stronger level and were more concerned with their body image than those who were asymptomatic. Reel et al. (2013) also found that athletes who displayed more negative feelings towards their bodies were at greater risk for internalizing direct comments about weight-related pressures in the sporting environment.

Interpersonal and social triggers have been associated with the development of eating disorders among athletes. Through a qualitative study interviewing collegiate female athletes, Arthur-Cameselle and Quatromoni (2010) found that internal factors such as negative mood states, low self-esteem, perfectionism/achievement and desire for control contributed to the onset of eating disorder symptoms. In addition to these factors, it was determined that external factors such as negative influences on self-esteem, hurtful relationships, hurtful role models, and sport performance resulted in eating disorders.

A construct in prior research have shown to positively correlate and contribute to the development of eating disorders in both female athletes and non-athletes is perfectionism. Perfectionism in athletics is seen as critical in affective, cognitive, and behavioral outcomes (Gotwals et al., 2012), and has been defined as "striving for and setting of exceedingly high personal standards related to performance which is underlined by overtly critical evaluations of one's behavior" (Frost et al., 1990, p.450). As cited by Schwarz, Gairett, Aruguete, and Gold (2005) athletes were found to score higher on levels of perfectionism, with perfectionism being positively correlated with ED pathology, dieting, and bulimia. Additionally, perfectionism has been broken down into two dimensions: personal standards perfectionism and evaluative concerns/self-critical perfectionism (Dickie et al., 2012). Of the two dimensions, Shanmugan and Davies (2015) found self-critical perfectionism, or being critical of oneself and personal abilities, as a critical contributor and predictor of eating psychopathology. Although it was not found to be a significant contributor, Shanmugan and Davies cited that personal standards perfectionism was positively correlated with ED pathology.

The frequency of weight, size, and appearance pressures affecting athletes across a variety of sports has been evaluated throughout previous research. Female athletes may experience conflicting pressures in both sport and society to conform to the "body ideal" as examined by Reel, SooHoo, Petrie, Greenleaf, and Carter (2010). The pressures that athletes face within their sporting environment have been found to differ from those they face in society with research by Reel et al. (2013) supporting this notion. Conflicting pressures in the sport vs. social environment are capable of explaining an athlete's unique beliefs towards eating behaviors and body image in contrast to their non-athlete counterparts.

DeBruin et al. (2011) cited the idea that athletes have an “athletic” body and a “social” body. An “athletic” body was defined by Greenleaf as “the internal image one has of his or her body and the evaluation of that image within the athletic context” and the “social” body referring to body evaluation in everyday life (Greenleaf, 2002, p.64). Depending on their sport and whether they meet the body norms held by society, athletes experience “body satisfaction transiency.” The concept of “body satisfaction transiency” is based on the views of body image held by athletes, with athletes being satisfied with their “athletic” or “social” body and dissatisfied with the other. DeBruin et al. (2011) provided evidence supporting the idea that dissatisfaction with either body may lead to eating-related problems, with more negative body image regarding their “athletic” body.

Recently, practices of unhealthy weight loss behaviors have become so widespread that specific sporting environments have been found to normalize these behaviors. A comfort level has been developed in sports where athletes are surrounded by teammates who practice unhealthy weight loss behaviors such as purging to control weight. When surrounded by teammates who participate in the same behaviors, the stigma associated with the negative behaviors was reduced along with the fear of practicing or reporting these behaviors (DiPasquale & Petrie, 2013).

The NCAA division in which an athlete competes has also been considered as a potential factor in the development of eating disorders and practice of unhealthy weight loss behaviors. Previous research has proposed that athletes competing in lower level NCAA sports (Division II and III) will engage in bulimic behaviors in comparison to

Division I athletes (Powers & Johnson, 1996). Kato, Javis, and Culpepper (2011) cited that Division I elite athletes were less likely to participate in bulimic behaviors as they are seen as more destructive to performance and require more secrecy. Division III athletes were found to be more weight preoccupied and Division I athletes were less satisfied with their appearance and displayed greater body dissatisfaction (Kato et al., 2011). In addition to evaluating differences in ED pathology across NCAA divisions, Williams et al., (2003) also examined whether scholarship recipients were at higher risk than non-scholarship athletes. Williams et al. did not find Division or scholarship status to be a precipitating factor in the development of eating disorder pathology or unhealthy weight loss practices.

EATING DISORDERS AND UNHEALTHY WEIGHT LOSS PRACTICES IN SWIMMING

As discussed above, we are already aware that eating disorders and unhealthy weight loss practices have continued to be of growing concern in a variety of athletes and sports. Swimmers are a specific subgroup of the athletic population that experience development of ED and practice negative weight loss behaviors. The sport of swimming has been described as “a thin build sport requiring low BMI for high performance, a speed focused sport requiring lighter than normal weight, or an aesthetic sport emphasizing thinness” (Howells & Grogan, 2012, p.100). Although much of the current research regarding eating disorders in athletes has examined a variety of sports, various studies have chosen to focus on the prevalence rates of disorders within the sport of swimming.

Anderson and Petrie (2012) assessed the rate of the prevalence of eating disorders within three sports (swimming, diving, and gymnastics). In addition to the prevalence rates, Anderson and Petrie were interested in how often the swimmers were participating in weight control behaviors. In comparison to prior research, they found and reported higher prevalence rates of clinical and subclinical eating disorders. Anderson and Petrie attributed the higher prevalence rates found in their study to pressure to succeed along with pressures unique to sports they examined. Reel and Gill (2001) examined the prevalence of weight concerns in a population of collegiate female swimmers. Of the swimmers studied most wished to lose weight and attributed this to sport specific pressures unique to swimming. As discussed by Reel and Gill, when athletes are unable to cope with and achieve desired weight loss they are put at higher risk for development of disordered eating practices or full blown eating disorders.

RISK FACTORS AND SPORT PRESSURES IN SWIMMING

Prior research has examined the effect that specific athletic environments have on the development on eating disorders and unhealthy weight loss practices in athletes. Little of this research has focused solely on the sport of swimming, with the meager research having determined that swimmers experience unique pressures that exist solely within the culture of swimming. These pressures include, but are not limited to, revealing uniforms, the perception that lower body weight and leanness will result in optimal performance in swimming, body comparisons among teammates, coaches criticisms of weight, and stereotypical ideal sport physiques (Anderson et al., 2012). The sport of swimming also focuses a great deal on individual instead of team performance, placing additional pressures on swimmers being that they are solely accountable for their success or failure.

Of the pressures experienced by swimmers, Ferrand et al. (2007) found that the pressure to lose weight was attributed to “teammates (57.5%), coaches (36.3%), themselves (24.2%), and parents (12.1%)” (Ferrand et al., 2007, p.226)

In the sport of swimming a specific body type is often associated with enhanced performance and success. Porter, Morrow, and Reel (2012) and Howells and Grogan (2012) described the pursuit of achieving a thin and lean muscular build with broad shoulders, large arms, and powerful thighs also referred to as a “swimmers body”. In addition to pressures they place upon themselves, swimmers also have reported feeling pressured by coaches to increase upper body muscle and lose weight in an attempt to make their body look like a “triangle” (Howells & Grogan, 2012). Having this specific body type is believed to be associated with optimum performance, while at the same time this masculine ideal of muscularity contrasts with society’s beliefs about what the female body should look like. In the swimming environment having a “swimmers body” was not found to deter body dissatisfaction, although when surrounded by non-athletes swimmers were more likely to be critical of their bodies. As discussed by Jones, Glintmeyer, and McKenzie (2005) the identity creation in sport, or seeing oneself as a well built, successful member of a swimming team, and relying on the approval of others, will be problematic and lead to issues for an athlete.

Benson and Taub (1993) investigated the practice of unhealthy weight loss behaviors and practices in female swimmers. Throughout the research Benson and Taub cited not only leanness for optimal performance in swimming, but also the fact that swimmers are vulnerable to ED and unhealthy weight loss practices due to tight and revealing uniforms. DeBruin et al. (2011) mentioned that female athletes participating in body-focused sports that involve greater body exposure (such as swimming) tend to be more critical about their bodies. In a study of female collegiate swimmers, Reel and Gill (2001) and Steinfeldt et al. (2011) reported that revealing team bathing suits made swimmers conscious of their bodily appearance, weight, and may create self-esteem issues due to the stress related to exposure of body shape in revealing attire. Reel and Gill also mentioned that in order to prevent drag, competition swimwear is often two sizes smaller than non-competition swimwear. The pressure to fit into competition swimwear may lead to the development of unhealthy weight loss practices.

THE FEMALE ATHLETE TRIAD

As identified by The American College of Sports Medicine, the Female Athlete Triad is the combination of eating disorders, amenorrhea, and osteoporosis, most commonly affecting athletes participating in sports that emphasize low body weight (Manore et al., 2007). Research examining the female athlete triad has grown throughout the past decade, but questions still remain regarding how prevalent this combination of disordered eating, menstrual dysfunction, and musculoskeletal issues is within female athletes. Manore, Kam, and Loucks described the female athlete triad as a “complex set of interrelationships between energy availability, menstrual status, and bone health, each of which occurs on a continuum between health and disease”(Manore et al., 2007, p. 2). In a study of the Female Athlete Triad, Patano (2006) found that although more than half of Division I college coaches have heard of the triad, less than half of those could correctly name all three components.

When athletes participate in disordered eating, the “low energy availability triggers the disruption of the hypthalomo-pituitary-gonadal axis, which leads to menstrual disturbances including amenorrhea" (Ducher et al., 2011, p.588). Amenorrhea in female athletes is hard to target due to idea that the loss of menstrual function is a by-product of sport and is seen as "normal", making the Female Athlete Triad sometimes hard diagnose. Within sport the loss of menses is often observed as an indicator of training at an elite intensity level. In reality the loss of a menses in sport is a warning sign that hints at the fact that the athlete is eating too little and not obtaining a proper amount of dietary energy intake for her physical activity level. When combined with decreased energy availability and amenorrhea, the third component, Osteoporosis is also problematic for athletes. The most serious health consequence for athletes in relation to low bone density caused by amenorrhea is musculoskeletal problems, most commonly increased risk of stress fractures (Manore et al., 2007).

In comparison to female coaches, male coaches did not perceive the lack of a menstrual cycle to be as harmful to health as female coaches. Additionally, in an evaluation of track and field coaches Plateau et al. (2014) determined that although half of the coaches considered menstrual dysfunction to be an indicator of disordered eating, male coaches found this difficult to talk about. In comparison to female coaches, male coaches found discussing amenorrhea with athletes to be uncomfortable and difficult. It is not uncommon for coaches to uncomfortable discussing their athletes' menstrual status, unaware of the harm they are placing athletes in by suggesting they maintain a specific low body fat percentage.

Athletes in sports that emphasize a thin, lean build for optimum performance are believed to be at higher risk for development of the Female Athlete Triad. Sherman and Thompson (2004) explained that athletes in sports that involve revealing attire, such as swimming, are at increased risk for developing the Female Athlete Triad due to experiencing the pressure to have a thin, lean body type and aptitude to diet in order to achieve this build. In addition to sport specific risk factors, certain aspects of the sporting environment also make detection of the Female Athlete Triad difficult. Practices such as over-exercising may have been misconstrued by coaches as a trait of a "good athlete" instead of a harmful practice (Thompson & Sherman, 1999) and the perception of an athlete being "healthy" due to good performance has also been found to mask detection of the Female Athlete Triad (Sherman & Thompson, 2004).

As no study existed examining the interrelationship of the female athlete triad within a large sample of athletes, Beals and Manore evaluated the prevalence of the female athlete triad within collegiate athletes participating in aesthetic, endurance, or team/anaerobic sport. They also evaluated the relationship between menstrual dysfunction and musculoskeletal injuries among those who suffered from disordered eating. Research produced results providing evidence that prevalence rates of anorexia, bulimia, and menstrual irregularity were similar across the three sport groups, with Osteoporosis rates found to be highest among athletes competing in aesthetic sports. Beals and Manore also reported that collegiate athletes practicing disordered eating experienced more amenorrhea and experienced more bone injuries.

Recently, medical professionals and sport psychology experts have reexamined the concept of the Female Athlete, determining that it is no longer just a triad that affects female athletes. In 2014 The IOC Medical Commission introduced a new comprehensive term for the Female Athlete Triad, renaming it Relative Energy Deficiency in Sport or RED-S. It has been determined that in addition to energy availability, menstrual dysfunction, and osteoporosis, RED-S affects “many aspects of physiological function, including metabolic rate, menstrual function, bone health, and immunity, protein synthesis and cardiovascular and psychological health” (Munday, 2014, p.1). To accommodate this new definition, the IOC developed the Sport Risk Assessment and Return to Play model to both classify and present recommendations for affected athletes.

COACHES’ KNOWLEDGE OF EATING DISORDERS AND HEALTHY VS. UNHEALTHY WEIGHT LOSS PRACTICES

Being that coaches hold such an important role in the lives of female athletes, it is important to have a sense of their knowledge and attitudes towards eating disorders and healthy vs. unhealthy weight loss behaviors. An understanding of coaches’ knowledge is important in order to determine whether they hold a perspective that they attribute to either the positive or the negative health and well-being of their student athletes. Heffner, Ogles, Gold, Marsden, and Johnson (2003) mentioned that in addition to their position in athletic settings, coaches hold the dual roles of teacher, counselor, and even “substitute parent” to their athletes. This places coaches in a position to hold a very influential role in the lives of their athletes among a variety of sports. In previous research, Thompson and Sherman (1993) suggested that coaches who place emphasis on weight loss for performance enhancement purposes may “indirectly encourage eating disordered behaviors and attitudes”, with athletes resorting to fast and dangerous methods of weight loss such as vomiting or fasting (Thompson & Sherman, 1993).

Through an investigation of coaches’ attitudes towards eating disorders Heffner et al. (2003) found that a majority of coaches both monitored and attempted to manage the weight of their athletes. Coaches participated in these behaviors despite being aware of athletes' prior struggles with both eating and weight related issues. Although Heffner et al. found no difference between male and female coaches pressuring athletes to lose weight, differences were found among divisions. Research produced proof that Division 1 coaches practiced more weight monitoring behaviors, in turn reporting a higher incidence of eating disorder symptoms and negative weight control behaviors among athletes.

As discussed previously in this literature review a risk factor for the development of ED is sport specific body types that are correlated with performance success. Sherman and Thompson (2001) and Plateau et al. (2014) evaluated a similar construct referred to as "sport body stereotypes" that were found to affect coaches' perceptions and ability to identify eating disorders in athletes. A "sport body stereotype" was defined as a "particular body size or shape that is characteristic of a particular sport" (Sherman & Thompson, 2001, p.29), with specific sports holding a stereotype that thinness will lead to greatest potential for success. When success occurs coaches' in these sports may have a difficult time distinguishing between the reasons behind it. Sherman and Thompson, and Plateau et al. determined that coaches find it difficult to conclude whether athletes are suffering from an ED when performance does not decrease or the athlete is not visibly underweight (Sherman & Thompson, 2014). It was also suggested that coaches may hold a specific perception that individuals with eating disorders are very thin, when this is not always the case. This inaccurate view makes detection of eating disorders even more difficult for coaches.

The type of coaching style that a coach practiced was found to be correlated with the development of eating disorders and unhealthy weight loss practices. Biesecker and

Martz (1999) determined that coaches who displayed concern over the relationship between weight and performance produced more depression and anxiety in their athletes. It has been suggested that eating disorder correlates are closely associated with a controlling, performance-oriented coaching style (Heffner et al., 2003). As previous research has shown, many coaches lack the recognition that eating disorders are a serious problem in sport. Nowicka et al. (2013) chose to delve deeper into this idea through interviews with coaches. Through interviews of eighteen elite coaches, Nowicka et al. found that “coaches lack appreciation of the severity of ED, sufficient knowledge of symptoms, and skills for early intervention; in particular, the coaches’ reduced capacity for early intervention is exacerbated by the lack of necessary infrastructural support within the athletic environment” (Nowicka et al., 2013, p.352).

Unfortunately, in regards to eating disorders coaches are often viewed as having a negative, or precipitating role in the development of ED in athletes. Sherman, Thompson, Dehass, and Wilfret (2005) recognized that coaches can have a negative effect, but they are also capable of having a positive influence in athletes suffering from these disorders. Sherman et al. suggested that coaches have the opportunity to use their “power and influence” for good in identifying and treating athletes that are symptomatic (Sherman et al., 2005). In order to use their power in a positive manner, it is important that coaches acquire knowledge and genuine understanding of eating disorders and unhealthy weight loss practices, as well as report issues to the proper specialists. Through completion of a questionnaire, Sherman et al. found that very few coaches indicated that they have coached an athlete that could have been identified as affected or symptomatic. Sherman et al. were troubled by the fact that of those who did indicate knowing an athlete was symptomatic, more than one quarter of coaches did not report it. Of those who did report symptomatic athletes, referral was not done through specialists, instead being kept within the athletic department (Sherman et al., 2005). As these findings suggest, when given the right training and tools, coaches can indeed have a positive impact on lowering eating disorder rates in the sport of swimming.

A sport management team, including coaches, athletic trainers, and health care professionals, are normally involved in identifying and helping athletes that are suffering from eating disorders and unhealthy weight loss practices. Although the other members of this team are important, coaches are often considered the most vital part of the sport management team. Coaches typically spend the most time with the athletes and are a vital, powerful and influential part of an athlete's life. Through a study of track and field coaches Plateau et al. (2014) determined to successfully identify disordered eating, coaches needed to be able to detect methods of identification, facilitators and barriers to recognizing symptoms in their athletes. It is not believed that coaches cause the development of eating disorders, but they are capable of making them better or worse, and it has been cited that the head coach "holds the key to the athlete's recovery" (Sherman & Thompson, 2001, p.30). Being a part of the treatment team also alleviates the levels of skepticism that a coach may have about eating disorder treatment.

PARTICIPATION IN SPORT: PROTECTIVE OR DESTRUCTIVE

Thus far research regarding whether athletes are at higher or lower risk for the development of ED in comparison to their non-athlete counterparts has provided conflicting results. While some professionals see participation in sport as capable of increasing levels of self-esteem, making it a protective factor against the development of

ED and unhealthy weight loss practices, others see athletics as being a negative influence. Athletic identity, athletes' perceptions of themselves and the extent to which they identify as an athlete have been considered a "double-edged sword" by Brewer, Van Raalte, and Linder (1993). When an athlete depends too heavily on his or her athletic identity, negative performances may result in feedback that sends an athlete into a crisis, in this leading practice of disordered eating or ED (Jones et al., 2005).

Identification of eating disorders and unhealthy weight loss practices in sport is complicated, making it possible for an athlete to go undetected. Research by Thompson and Sherman (1999) has evaluated personality traits that are characteristic of what is referred to as a "good athlete", which can aid and produce successful athletic performance. Coincidentally these "good athlete" traits correspond or are related to characteristics held by individuals suffering from Anorexia Nervosa. Thompson and Sherman found that Traits of a "good athlete" included the following: mental toughness, commitment to training, pursuit of excellence, coachability, unselfishness, and performance despite pain, and these overlapped with traits of an anorexic individuals which included: asceticism, excessive exercise, perfectionism, overcompliance, selflessness, and denial of discomfort. It was suggested that some of these traits are positive, may be helpful and are exactly what coaches look for in athletes. On the contrary, these same traits can be used negatively to hide disorders or misperceived by athletic staff making detection difficult (Thompson & Sherman, 1999).

DiPasquale and Petrie (2013) compared eating disorder symptomology rates between athletes and non-athletes. Results produced evidence that no athletes were found to be symptomatic, but nearly 6% of non-athletes were (DiPasquale & Petrie, 2013).

Contrary to these findings, more often than not studies have produced evidence that athletes were more likely to be symptomatic and therefore placed at higher risk for the development of ED. Through a study of collegiate athletes, Greenleaf, Petrie, Carter, and Reel (2009) found a high percentage of athletes displaying subclinical eating disorder symptoms. In a comparison of elite athletes and non-athletes Byrne and McLean (2002) found the prevalence of ED to be significantly higher among athletes. The higher prevalence rates could be explained by understanding the relationship of pressure to have a specific body type in athletics and sociocultural pressures. Byrne and McLean explained that sport can provide both protective factors that reduce levels of ED, but also aggravating factors that can lead to ED. With research providing such discrepancies and conflicting results, future research is needed to acquire a better understanding of sports being protective or destructive against ED development.

GAPS IN RESEARCH AND NEED FOR CURRENT STUDY

Within the past few decades' researchers' and professionals' interest in eating disorders in sport has greatly increased. While a great deal of knowledge already exists, few studies have sought to examine both coaches' knowledge and attitudes towards eating disorders and unhealthy weight loss practices along with the sport pressures leading to these disorders. Past research has examined a variety of collegiate sports, but few have focused specifically on the sport of swimming. As cited in the literature review above, female swimmers are at risk for experiencing the same psychosocial factors as other athletes participating in a variety of other sports. These factors have been found to positively correlate and lead to the practice of unhealthy weight loss behaviors and ultimately eating disorders. When these psychosocial factors are then combined with sport specific pressures found within the culture of swimming, female swimmers may be at higher risk compared to individuals in other sports.

Although existing research has continued to emphasize the need for an implementation of better eating disorder education programs, there has been a lack of research examining how much coaches really know. Research has also provided conflicting results as to whether there are gender or divisional differences in coaches' knowledge and beliefs when it comes to ED, unhealthy weight loss practices, and the Female Athlete Triad. Through a study of NCAA college coaches' ability to identify and manage athletes with disordered eating, Sherman et al. (2005) found that some coaches either have not identified any affected athletes, or have admitted to failing to report athletes whom they are aware of being affected by ED. With the exception of the work of Sherman et al., who found that coaches did not view amenorrhea as a serious health problem, past research has also failed to investigate coaches' knowledge of the Female Athlete Triad. In regards to the sport of swimming, a more extensive understanding of coaches' current knowledge of ED, unhealthy weight loss practices, and the Female Athlete Triad is needed in order to develop these educational programs.

CHAPTER 3

METHODOLOGY

The purpose of this study was to examine collegiate swimming coaches' knowledge and attitudes towards eating disorders and unhealthy weight loss practices within their athletes. Coaches' perceptions of sport specific pressures in swimming that can lead to the development of eating disorders and practices of unhealthy weight loss were also examined. The methodology is presented in the following sections: Research Design, Participants, Instrumentation, Procedures, Data Analysis, and Bias Statement.

RESEARCH DESIGN

A quantitative research approach was used in this study. With permission from the Dr. Roberta Sherman, participants completed a modified version of *The 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athletes* developed by Sherman et al. (2005). The questionnaire was modified by adding items to investigate both sport specific pressures in swimming and coaches' knowledge of the Female Athlete Triad. Dr. Roberta Sherman approved modifications, and my modified version of the questionnaire can be found in appendix A.

PARTICIPANTS

Participants in the study were head or assistant coaches of Division I, II, or III women's swimming teams at NCAA member institutions. It was requested that only one coach, the head or the assistant, complete the questionnaire. I created a mailing list from publically available websites that included 449 Division I, II, and III coaches, who were then contacted via email with a link to the survey.

INSTRUMENTATION

Participants participated by completing the questionnaire and returned the questionnaire to me. The questionnaire was a modified version of the 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athlete (Sherman et al., 2005). The original questionnaire was utilized in a study by Sherman et al. in 2005 in an examination of how coaches identify and manage athletes with eating disorders. Sherman et al. piloted the measure with high school coaches in order to determine the readability of both the instructions as well as the items. There is no additional validity or reliability information with the exception of Sherman et al.'s 2005 study. I modified Sherman et al.'s version of the 2005 questionnaire by adding questions in an attempt to investigate coaches' knowledge of sport specific pressures in swimming that lead to the development of Eating Disorders and unhealthy weight loss practices. Questions were also added to determine coaches' knowledge of the Female Athlete Triad. Additions to the original 2003 questionnaire were reviewed and approved by Dr. Roberta Sherman.

The questionnaire included items to assess: demographics of coaches, attitudes and beliefs about negative eating-related behaviors in their swimmers, knowledge of the Female Athlete Triad and sport specific pressures in swimming, and coaches' ability to identify and manage eating disordered athletes.

PROCEDURES

After committee and IRB approval, I distributed the revised questionnaire through email. Coaches were contacted through a mailing list developed by me from publically available websites, and sent an email which included a link to the Qualtrics survey website.

The study yielded 82 responses for a response rate of 18.2%. All participants provided consent before completing the questionnaire online.

DATA ANALYSIS

The questionnaire was available on Qualtrics and results could be dropped into Excel. SPSS was be used in analyzing the data and included cross comparisons between both gender and Divisional coaching level. Separate sample t-tests and Chi-square tests were used to determine coaches' attitudes towards eating/dieting behavior. Coaches' gender and NCAA division in relation to responses and coaches' perceptions of eating disorders and unhealthy weight loss behaviors will be evaluated by using a chi-square analysis.

BIAS STATEMENT

This study looked at collegiate swimming coaches' knowledge and perceptions of eating disorders and unhealthy weight loss behaviors in their female athletes. As a former collegiate swimmer, I have certain knowledge suggesting that an evaluation of coaches' perceptions regarding these potentially deadly disorders is needed in order to protect female athletes from developing these issues in the future. Once the extent of coaches' knowledge and perceptions of eating orders and unhealthy weight loss behaviors is understood, additional programs can be implemented to deal with and prevent any potential issues. My personal knowledge and experiences in the culture of collegiate swimming may bias my ability to objectively observe any qualitative research obtained during this study.

I am a former collegiate swimmer who has been witness to teammates suffering from eating disorders and the negative effects of unhealthy weight loss behaviors.

Personally, I have witnessed and experienced the strong influence that coaches' have over their athletes' behaviors and how their perceptions about weight may lead to unhealthy weight loss practices in their female swimmers. My past experiences have also made me aware of the sport specific pressures in swimming that may lead to the development of eating disorders. These pressures include revealing uniforms, the perception that lower body weight and leanness will result in optimal performance in swimming, body comparisons among teammates, coaches criticisms of weight, and stereotypical ideal sport physiques that female swimmers experience that place them at higher risk. Previous studies have evaluated coaches' knowledge and perceptions of eating disorders within female collegiate athletes participating in a variety of sports, but few looked directly into the sport of swimming. My past experiences have made me aware of my personal coaches' perceptions of weight loss behaviors and eating disorders, although this knowledge will certainly vary from coach to coach.

Being that I hold such a bias, it was be important that I remained objective while evaluating collegiate swimming coaches' knowledge and perceptions during this study. It is my hopes to make the coaches' feel comfortable in sharing their current knowledge of eating disorders and unhealthy weight loss practices within their female swimmers. Through this study I hope to expand on the current available research that has examined coaches' perceptions of eating disorders throughout a variety of sports, while focusing on what places swimmers at higher risk. I expect to uncover that coaches play a very important role in the development or prevention of eating disorders and unhealthy weight loss behaviors in their female swimmers. Coaches' perceptions of sport specific pressures in swimming that can lead to the development of eating disorders and practice of unhealthy weight loss were also examined and evaluated.

CHAPTER 4

RESULTS AND DISCUSSION

The purpose of the study was to examine collegiate swimming coaches' knowledge and attitudes towards eating disorders and unhealthy weight loss practices within their athletes. Coaches' perceptions of sport specific pressures in swimming that can lead to the development of eating disorders and practice of unhealthy weight loss were examined. The following sections will outline the results of this study addressing coaches' knowledge and attitudes of eating disorders and unhealthy weight loss behaviors, how prevalent coaches believe eating disorders are in collegiate swimming, and whether sport specific pressures lead to the development of ED in college swimmers. Further analyses were conducted to more fully understand the results. In addition to addressing the descriptive research questions, t-tests and Chi-Squared tests were used to compare statistical differences between gender and NCAA Division responses to various questionnaire items.

DEMOGRAPHIC INFORMATION

Demographics are summarized in Table 1 below. In total, 82 NCAA collegiate swimming coaches participated in this study by completing the questionnaire. Of the 82 coaches who completed the questionnaire, 57 were male and 25 were female, with ages ranging from 25 to 65 (M=44.4, SD=11.19). Of the coaches, 81 (99%) considered themselves White/Caucasian, and 1 (1%) reported being Hispanic or Latino. Participants included 79 (98%) head coaches, and 2 (2%) assistant coaches from 22 Division I (27%), 13 Division II (16%), and 47 (57%) Division III NCAA institutions. Coaching experience varied from four years to forty seven years (M=21.64, SD=10.70), with 80

(99%) participants coaching women's swimming, 56 (69%) men's swimming, and 9 (11%) diving.

Table 1. Participant Demographic Information

Gender		
	Male	57 (70%)
	Female	25 (30%)
Ethnicity (%)		
	Caucasian/White	81 (99%)
	Hispanic/Latino	1 (1%)
Age (years)		
	Min	25
	Max	65
	M	44.4
	SD	11.19
Years Spent Coaching		
	Min	4
	Max	47
	M	21.64
	SD	10.70
NCAA Division (%)		
	Division I	22 (27%)
	Division II	13 (16%)
	Division III	47 (57%)
Current Position (%)		
	Head Coach	79 (98%)
	Assistant Coach	2(2%)
Currently Coaching (%)		
	Women's Swimming	80 (99%)
	Men's Swimming	56 (69%)
	Diving	9 (11%)

COAHES' KNOWLEDGE AND UNDERSTANDING OF EATING DISORDERS AND UNHEALHY WEIGHT LOSS

Regarding coaches' training and education of ED and unhealthy weight loss practices, 88% of coaches reported that their knowledge came from materials that they had read themselves, 61% from attending lectures, and 55% from talking with eating disorder experts. Of the coaches participating in the study, only 4% of coaches reported that they had not received any education or training on ED and disordered eating.

Coaches reported that 94% had referred an athlete to a mental health professional, 89% had an athlete use the services of a dietician, 55% had referred an athlete to a general therapist, and only 48% had an athlete use the services of an eating disorder therapist. Despite the belief that eating disorders affect female athletes more than their male teammates, a t-test provided evidence that male coaches (*M* = 2.42, *SD* = .999) more strongly disagreed with the statement that "male swimmers experience these issues as often as female swimmers" when compared to female coaches (*M* = 2.96, *SD* = 1.136) $t(80) = -2.156$, $p < 0.05$. T-test results can be seen in Table 2 below.

Table 2

Group Statistics

Q1		N	Mean	Std. Deviation	Std. Error Mean
Q36_2	Male	57	2.42	.999	.132
	Female	25	2.96	1.136	.227

Independent Sample Test

	t-test for Equality of Means		t-test for Equality of Means				
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval Lower	95% Confidence Interval Upper
Q36_2 Equal variances assumed	-2.156	80	.034	-.539	.250	-1.036	-0.42

To assess beliefs about the seriousness of eating/dieting behaviors in female swimmers, coaches were asked to rate the seriousness of 12 eating behaviors using a 4-point Likert scale (1= "not at all serious" to 4= "very serious"). Coaches rated the behaviors in relation to their consequences on both health and performance of an athlete. Results can be seen in Table 3 below.

Table 3. Coaches' Ratings of the Seriousness of Eating/Dieting Behaviors for the Female Swimmer's Health and Performance

Behaviors	Health	*SD*	Performance	*SD*
Binge-eating	3.18	.76	3.20	.70
Skipping one meal a day	2.52	.74	2.89	.73
Skipping two meals a day	3.51	.61	3.73	.52
Fasting for an entire day	3.52	.71	3.80	.51
Self-induced vomiting	3.93	.34	3.90	.30
Laxative abuse	3.83	.44	3.81	.51
Diuretic/water pill abuse	3.78	.45	3.78	.48
Weighing oneself multiple times a day	3.28	.82	3.06	.92
Excessive exercise	3.34	.76	3.44	.73
Under eating	3.41	.72	3.56	.63
Eating fast food occasionally	1.87	.80	3.26	.88
Eating fast food frequently	2.94	.78	3.18	.69
Note: Mean scores reflect ratings on a 4-point scale (1 = "not at all serious" to 4 = "very serious").				

In regards to an athlete's health, mean scores indicated that coaches considered self-induced vomiting (*M* = 3.93), laxative abuse (*M* = 3.83), and diuretic/water pill abuse (*M* = 3.78) to have the most serious consequences on an athlete's health. Coaches believed that self-induced vomiting (*M* = 3.90), laxative abuse (*M* = 3.81), fasting for an entire day (*M* = 3.80), diuretic/water pill abuse (*M* = 3.78) and skipping two meals a day (*M* = 3.73) had the most serious consequences on an athlete's performance. Independent sample t-tests were used to determine if there were any gender differences between coaches' responses to behaviors that had both the greatest consequences for athlete health and performance. Of the 12 eating behaviors assessed, the only significant difference between gender responses found was in regards to the seriousness of "binge-eating (eating large volumes of food)" effects on performance. Female coaches (M = 3.46, SD = .588) compared to male coaches (M = 3.09, SD = .721) considered binge-eating to have greater performance consequences for the female athlete $t(78) = -2.211$, $p<.05$. A full table of the t-Test can be found on Table 4 below.

Table 4

Group Statistics

Q1		N	Mean	Std. Deviation	Std. Error Mean
Q10_1	Male	56	3.09	.721	.096
	Female	24	3.46	.568	.120

Independent Sample Test

	t-test for Equality of Means		t-test for Equality of Means				
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval Lower	95% Confidence Interval Upper
Q10_1 Equal variances assumed	-2.211	78	.030	-.369	.167	-.701	-0.37

The questionnaire included questions to assess how coaches determine if any of their athletes has an ED or practices disordered eating, and what they do if they find that an athlete does. Coaches reported that athletic trainers (85%), head coaches (72%), and Mental health professionals (72%) most commonly determine if an athlete is eating disordered. Chi-square analysis concluded that there were both gender and divisional differences in coaches' responses. Analysis supported the notion that more female coaches χ^2 (1,N = 80) = 5.124, p = .024 believed that student-athletes determined eating disorder status in comparison to their male coaching counterparts. Division III coaches believed that head coaches more often determined if an athlete was affected by an ED χ^2 (2, N = 80) = 5.986, p = .050), additionally Division I and Division III coaches were more likely to use other medical staff to determine if an athlete had an eating disorder χ^2 (2, N = 80) = 6.398, p = .041. Coaches' used eating disorder symptoms (88%), decreased athletic performance (78%) and psychological/emotional problems (73%) as criteria for determining if female swimmers were engaging in disordered eating, with the most frequent criteria used being eating disorder symptoms (55%). A full table of the Chi-Squared tests can be found on Tables 5, 6, and 7 below.

Table 5

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q1* Q18_1	80	100.0%	0	100.0%	80	100.0%

Cross Tabulation

			Q18_1		Total
			Yes	No	
Q1	Male	Count	23	32	55
		% within Q1	41.8%	58.2%	100.0%
	Female	Count	4	21	25
		% within Q1	16.0%	84.0%	100.0%
Total		Count	27	53	80
		% within Q1	33.8%	66.3%	100.0%

Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.124	1	.024
Continuity Correction	4.034	1	.045
Likelihood Ratio	5.548	1	.019
Linear-by-Linear Association	85.060	1	.024
N of Valid Cases	80		

Table 6

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q5 * Q18_2	80	100.0%	0	100.0%	80	100.0%

			Q 18_2		Total
			0	1	
Q5*Q18_2	Division I	Count % within Q5	10 47.6%	11 52.4%	21 100.0%
	Division II	Count % within Q5	2 15.4%	11 84.6%	12 100.0%
	Division III	Count % within Q5	10 21.7%	36 78.3%	46 100.0%
Total		Count % within Q5	22 27.5%	58 72.5%	80 100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.986	2	.050
Likelihood Ratio	5.710	2	.058
Linear-by-Linear Association	3.955	1	.047
N of Valid Cases	80		

Table 7

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q5 * Q24_7	80	100.0%	0	100.0%	80	100.0%

			Q 24_7		
			0	1	
Q5* Q24_7	Division I	Count % within Q5	8 38.1%	13 61.9%	21 100.0%
	Division II	Count % within Q5	10 76.9%	3 23.1%	13 100.0%
	Division III	Count % within Q5	18 39.1%	28 60.9%	46 100.0%
Total		Count % within Q5	36 45.0%	44 55.0%	80 100.0%

Table 7 cont.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.398	2	.041
Likelihood Ratio	6.569	2	.037
Linear-by-Linear Association	.105	1	.746
N of Valid Cases	80		

After determining that an athlete is eating disordered coaches typically "refer to sports medicine personnel" (73%) or "refer to a general counselor of psychologist" (59%), and of these most frequently were found to "refer to a sports medicine personnel" (55%). During and following treatment for an eating disorder coaches reported that Athletic trainers (84%), Mental Health professionals (77%), and head coaches (70%) determined whether an athlete continued to train and compete. Gender and divisional differences were found regarding this question, with chi-square analysis showing that female coaches left this decision up to a mental health professional χ^2 (1, N = 80) = 4.010, p = .045 and more DIII coaches believed a head coach made this decision χ^2 (2, N = 80) = 2.202, p = .017. DIII coaches also reported that they typically participated in "other" actions after identifying an eating disordered athlete χ^2(2, N = 80) = 6.844, p = .032. When asked to choose one, coaches believed that this decision should be left up to an athletic trainer (35%). A full table of the Chi-Squared tests can be found on Tables 8, 9, and 10 below.

Table 8

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q1* Q24_6	80	100.0%	0	100.0%	80	100.0%

Table 8 cont.

Cross Tabulation

			Q24_6		
			Yes	No	Total
Q1	Male	Count % within Q1	12 21.8%	43 78.2%	55 100.0%
	Female	Count % within Q1	1 4.0%	24 96.0%	25 100.0%
Total		Count % within Q1	13 16.3%	67 83.8%	80 100.0%

Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.10	1	.045
Continuity Correction	2.807	1	.094
Likelihood Ratio	4.904	1	.027
Linear-by-Linear Association	3.959	1	.047
N of Valid Cases	80		

Table 9

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q5 * Q24_2	80	100.0%	0	100.0%	80	100.0%

			Q 24_2		
			0	1	Total
Q5	Division I	Count % within Q5	10 47.6%	11 52.4%	21 100.0%
	Division II	Count % within Q5	6 46.2%	7 53.8%	12 100.0%
	Division III	Count % within Q5	8 17.4%	38 82.6%	46 100.0%
Total		Count % within Q5	24 30.0%	56 70.0%	80 100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.202	2	.017
Likelihood Ratio	8.222	2	.016
Linear-by-Linear Association	7.170	1	.007
N of Valid Cases	80		

Table 10

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q5 * Q22_9	80	100.0%	0	100.0%	80	100.0%

			Q 22_9		Total
			0	1	
Q5	Division I	Count % within Q5	21 100.0%	0 0.0%	21 100.0%
	Division II	Count % within Q5	19 69.2%	4 30.8%	13 100.0%
	Division III	Count % within Q5	35 76.1%	11 23.9%	46 100.0%
Total		Count % within Q5	65 81.3%	15 18.8%	80 100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.884	2	.032
Likelihood Ratio	10.557	2	.005
Linear-by-Linear Association	4.364	1	.037
N of Valid Cases	80		

COACHES' KNOWLEDGE AND UNDERSTANDING OF THE FEMALE ATHLETE TRIAD

Regarding knowledge of the Female Athlete Triad, 52% of coaches reported that they were not aware of what the Female Athlete Triad was or what it consisted of. Of the coaches who completed the questionnaire, 43 (52%) were able to name at least one component of the Female Athlete Triad. When asked if they believed any of their female swimmers suffered from the Female Athlete Triad, 51% of coaches reported no, leaving 48% believing that they had. Despite the fact that 48% of coaches believed that amenorrhea was not normal and required a medical referral, only 21% of coaches were aware of whether their athletes had missed their menstrual cycle for more than three consecutive months. In regards to amenorrhea, 59% of coaches reported having talked to an athlete about amenorrhea, with 60% of coaches having referred an athlete for a medical evaluation due to it. Chi-squared analysis of gender responses displayed significant differences in male vs. female responses regarding the knowledge of the Female Athlete Triad. Analysis of results displayed that Female coaches were more aware of what the Female Athlete Triad consisted of χ^2 (1, N = 77) = 8.505, p = .004. with more male coaches reporting that they believed their female swimmers suffered from the triad χ^2 (1, N = 67) = 6.037, p = .014). A full table of the Chi-Squared tests can be found on Tables 11 & 12 below.

Table 11

Cross Tabulation

			Q 12		
			Yes	No	Total
Q1	Male	Count % within Q1	19 36.5%	33 63.5%	52 100.0%
	Female	Count % within Q1	18 72.0%	7 28.0%	25 100.0%
Total		Count % within Q1	37 48.1%	40 51.9%	77 100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.505	1	.004
Continuity Correction	7.144	1	.008
Likelihood Ratio	8.709	1	.003
Linear-by-Linear Association	8.395	1	.004
N of Valid Cases	77		

Table 12

Cross Tabulation

			Q 17		
			Yes	No	Total
Q1	Male	Count % within Q1	26 60.5%	17 39.5%	43 100.0%
	Female	Count % within Q1	7 29.2%	17 70.8%	24 100.0%
Total		Count % within Q1	33 49.3%	34 50.7%	67 100.0%

Table 12 cont.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.037	1	.014
Continuity Correction	4.850	1	.028
Likelihood Ratio	6.179	1	.013
Linear-by-Linear Association	5.947	1	.015
N of Valid Cases	67		

SPORT SPECIFIC PRESSURES IN SWIMMING AND THE DEVELOPMENT OF ED

When asked whether they believe that swimmers experience specific pressures that place them at higher risk for ED, 51% of coaches replied no, and 49 % replied yes. To assess coaches' attitudes towards weight and sport pressures in swimming coaches were asked to rate seven statements using a 5-point Likert scale (1=”strongly disagree” to 5= “strongly agree”). Of responses, coaches' agreed most with “I would refer one of my athletes to a dietician” (*M* = 4.06), and “Eating Disorders and unhealthy weight loss practices are a problem for male swimmers” (*M* = 3.46). Coaches disagreed the most with the statements “I require my swimmers to maintain a specific weight” (*M* = 1.40), and “I encourage my swimmers to lose weight” (*M* = 2.09).

DISCUSSION

The primary objective of this study was to develop a better understanding of collegiate swimming coaches knowledge and attitudes towards eating disorders and unhealthy weight loss practices in their female athletes. Results were compared to the findings of Sherman et al. (2005), who evaluated coaches' knowledge of disordered eating across 23 NCAA sports. In addition to coaches' knowledge, their ability and experience in identifying eating disordered athletes was also evaluated.

Overall findings suggest that NCAA Division I, II, and III collegiate swimming coaches are indeed aware of the fact that athletes do participate in unhealthy weight loss practices and suffer from eating disorders. Coaches appeared to recognize that eating disorders in collegiate swimming are prevalent and of concern, but displayed a capability to help these athletes through proper referrals. Although not all may have experience in coaching athletes who are eating disordered, many coaches are knowledgeable about this topic and have been provided with opportunities to increase their knowledge. Coaches who participated in this study were divided on whether swimmers experience sport specific pressures that put them at higher risk for or lead to eating disorders. The answer to this question will require more research, but provides insight that some coaches recognize the effect of certain sport specific pressures in swimming.

One of the most promising findings of this study was that very few coaches reported that they had received no training or education of disordered eating practices or eating disorders in athletes. This conclusion was similar to results of Sherman et al. (2005), as they too found that very few coaches received no training on this subject. Both this study and results of Sherman et al. display promising improvement in education of coaches in comparison to findings by Turk et al. (1999). Turk et al. found only 44.5% of coaches had reported attending an educational program about ED, with 38.4% of coaches not aware of educational material made available by the athletic department.

Coaches reported that their education and experience regarding this serious issue in athletes most often came from reading materials, attending lectures, and talking with eating disorder experts. Despite the fact that nearly all coaches have reported having some sort of education, there was still a small percentage of coaches that did not. This finding suggests that not all athletic programs implement eating disorder training or education requirements for their coaches, which they need to do in the future. As of 1989 the NCAA provided athletic departments with literature on eating disorders along with two educational videos (Turk et al., 2009), although the responsibility for educating coaches should fall on the institutions athletic department as well. Increasing knowledge and awareness of this serious issue among athletes is important in both identifying and managing eating disordered swimmers, as well as for reducing prevalence rates in the future.

Although less than half of participants reported that they had referred an athlete to a professional eating disorder therapist, almost all had previously referred an athlete to a mental health professional or dietician in the past. The question still remains as to who holds the power and responsibility of recognizing if an athlete is practicing negative weight loss behaviors or participating in disordered eating. Results from this study found that when determining whether an athlete was eating disordered or had an eating disorder, head coaches typically relied on themselves, athletic trainers, and mental health professionals to make this decision, but not one person in particular.

This, then, raises the question of whether a protocol should be put in place that gives this responsibility to one specific person. Additionally, if a protocol such as this would be put into place, which member of the sport management team should have the most power in making a decision regarding an athlete's health and wellbeing? As suggested by the findings of Plateau et al. (2014), in comparison to the rest of the sports management team coaches spend the most time with the athletes providing them the most power and influence over detection of eating disorders and unhealthy weight loss practices. If coaches are left with the responsibility of detecting disordered eating in their athletes it will be necessary to develop methods of identification, along with the ability to distinguish facilitators and barriers to recognizing symptoms.

Coaches were capable of identifying what behaviors have the most serious consequences for both health and performance of athletes, although some responses were questionable. Regarding health and performance, coaches believed self-induced vomiting, laxative abuse, and diuretic/water pill abuse had the most serious consequences for athletes. These findings were similar to that of the same evaluation by Sherman et al. (2005) who determined that coaches rated the same three behaviors to be the most serious. Male and female coaches rated the behaviors similarly, with the exception of binge eating, which female coaches believed had greater performance consequences for an athlete. These behaviors are unarguably the most detrimental and harmful to an athlete's performance and health, but would be considered dangerous for the average non-athlete as well.

With this in mind one of the most troubling findings of this study was that not all coaches rated these three behaviors as putting athletes at risk for "very serious" performance and health consequences. When assessing the seriousness of health consequences associated with self-induced vomiting, 4% of respondents rated this behavior to have only "somewhat serious" or just "serious" costs to the health of an athlete. Only 80% of coaches believed that diuretic/water pill abuse was "very serious," and 86% believed laxative abuse to have negative health consequences. The question this raises is why did not ALL of the coaches rate self-induced vomiting, laxative abuse, and diuretic abuse, all of which are symptoms of bulimia, as very serious to an athlete's health?

The medical complications associated with the practice of these behaviors, all which are symptoms of Anorexia, Bulimia, and EDNOS, have been found to affect every organ system in the human body, ranging from dental and skin problems to cardiac arrhythmias in the heart. Effects can range from mild skin callusing that is reversible, to severe electrolyte imbalances and ultimately death. Recent research has provided evidence of the mortality rates associated with these eating disorders, with bulimia ranging from 1.57 to 1.93 percent (Brown & Mehler, 2013), 4 percent for Anorexia, and 5.2 percent for EDNOS (Crow et al., 2009). Does the fact that some coaches do not consider these behaviors to be very serious display an innocent lack of knowledge or just ignorance on their behalf?

Of the coaches who completed The 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athletes: Revised, a majority of the responses came from male swimming coaches who coached dual programs (both men's and women's). This allowed for an interesting evaluation, especially in regards to knowledge of the Female Athlete Triad, which is a sensitive topic in athletics. Past research has found that male coaches do not perceive menstrual dysfunction to be as serious of an issue in comparison to female coaches, which was no different in this study. When compared to female participants, this study found that male coaches were less aware of what the female athlete triad consisted of, but reported that they believed they coached swimmers who suffered from the triad. This finding was conflicting as it would be hard to diagnose an athlete as suffering from the female athlete triad if you are unaware of its components.

As discussed in previous research, the findings regarding the lack of knowledge of the Female Athlete Triad in male coaches raises questions as to why. Do male coaches lack sensitivity towards this topic as they have no way of relating to the experience of menstrual dysfunction, or do they not feel completely comfortable approaching a female swimmer to discuss amenorrhea? Both a deficiency in sensitivity and comfort towards the topic are likely to blame for male coaches continuing lack of knowledge towards the Female Athlete Triad and its components. Research by Plateau et al. (2014) supports this suggestion as they determined male coaches found discussing amenorrhea with female athletes to be uncomfortable and difficult. Although they will never be able to truly relate to what a female athlete with amenorrhea experiences and may never feel completely comfortable discussing the topic, changes have to be made in order to avoid undetected cases. Male coaches need to increase their knowledge of the triad and learn how to approach athletes, whether they feel comfortable doing so or not.

The question of whether sport specific pressures in swimming put athletes at higher risk for or lead to the development of eating disorders could not be confidently answered by this study. As previous research has suggested, sport specific weight, size, and appearance pressures exist and can have a negative effect on athletes. In a sport such as swimming, it is a common belief and misconception that athletes who have a slim and muscular "swimmer's body" will experience greatest success in the pool. Porter, Morrow, and Reel (2012) and Howells and Grogan (2012) described the pursuit of achieving a thin and lean muscular build with broad shoulders, large arms, and powerful thighs also referred to as a "swimmers body", with athletes turning to negative behaviors to achieve this ideal. In addition to seeking the body-ideal, attire that is required to participate in swimming is often tight and revealing, leaving the potential for swimmers to feel self-conscious about their bodies.

While collectively coaches could not agree that swimmers are at higher risk for the practice of unhealthy weight loss or development of an eating disorder due to tight and revealing attire, they did not disagree either. This study did provide evidence that coaches did not encourage nor require their athletes to lose weight, which contrasted the findings of Heffner et al. (2003) that found a majority of coaches both monitored and attempted to manage the weight of their athletes. Coaches did agree with the statement that increased weight gain would lead to a decrease in athletic performance. Unfortunately, as weight and body composition often do play a role in the success of an athlete, the NCAA has put guidelines in place for coaches to follow in order to approach weight loss or gain in the most sensitive way possible. Additional research will have to be done in order to answer the question of whether sport specific pressures in swimming lead to eating disorders.

Similar to previous research, this study continues to reiterate the need and importance of implementing eating disorder knowledge and educational programs for coaches. Despite this study only examining swimming coaches knowledge, the results can be translated and generalized to assume that eating disorders are also a problem in other sports. The NCAA has acknowledged that body weight and composition can affect athletic performance, setting guidelines for coaches with athletes wanting to lose weight. The NCAA suggests to avoid disordered eating, decisions about weight loss should be based upon: discouraging frequent weigh ins, addressing weight loss during base or transition phases, implementing individualized and realistic weight loss plans, and involving medical/nutritional personnel, coaches, and athletes in the development of weight loss goals (Klossner, 2013, p. 50). As suggested by Sherman et al. (2005), the NCAA also offers programs through the Health and Safety Speakers grant program, which can be utilized to improve knowledge regarding this serious issue plaguing athletes. As prevalence rates through all sports continue to rise, and with the important role that coaches play in athletes' lives, improving knowledge and education is the most vital key to change.

IMPLICATIONS FOR FUTURE RESEARCH

I had a difficult time achieving a high participant response rate due to sending out the questionnaire during the NCAA swimming championship season. I received a good number of responses, although a larger participant pool might allow for a more even response rate per NCAA division.

I also suggest adding additional questions to The 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athletes: Revised (Sherman et al., 2005) to further evaluate prevalence rates and sport specific pressures that swimmers may be experiencing. The current questionnaire includes questions to evaluate these areas, though delving deeper into these areas will allow for a better understanding of the seriousness of unhealthy weight loss practices and eating disorders in swimmers.

I suggest further evaluating male coaches' knowledge and attitudes of eating disorders in female swimmers. Results of the current study suggest that male coaches have less knowledge of these issues, in particular of the Female Athlete Triad. Further research is needed in order to evaluate why these gender differences exist, and what can be done to increase their knowledge.

Finally I suggest that future research reiterate the importance of implementing eating disorder knowledge and educational programs in NCAA athletic departments and programs. Despite the fact that few coaches in this study reported having no knowledge of this serious issue, more concrete requirements for coaches will ensure that all coaches are knowledgeable.

IMPLICATIONS FOR PRACTITIONERS

I recommend that practitioners encourage honesty when responding to a self-reporting measure such as The 2003 NCAA Questionnaire for Collegiate Coaches of Female-Student Athletes-Revised (Sherman et al., 2005). Practitioners should make participants aware that participation in the study is completely voluntary and results will be kept anonymous.

I recommend that practitioners working with collegiate coaches should not assume that they do or do not have knowledge regarding eating disorders and unhealthy weight loss practices. Practitioners should focus on informing and teaching coaches methods for safe weight loss to prevent athletes from developing ED or disordered eating behaviors. Coaches should be encouraged to raise awareness of both the seriousness and prevalence of eating disorders in sport.

CHAPTER 5

SUMMARY

The purpose of the study was to examine collegiate swimming coaches' knowledge and attitudes towards eating disorders and unhealthy weight loss practices within their athletes. Additionally, coaches' perceptions of sport specific pressures in swimming that can lead to the development of eating disorders and practice of unhealthy weight loss were examined. As a wealth of knowledge regarding eating disorders in sport already exists, this study focused solely on NCAA collegiate swimming coaches in an attempt to uncover any new information.

A modified version of the 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athlete developed and utilized by Sherman, Thompson, Dehass, and Wilfret in 2005 was used in this study. Eighty-two Division I, II, or III coaches of a potential 449 responded to the survey, a return rate of 18.2%. Demographically, the respondents were primarily white male and female coaches, with a mean age of 44 and average of 21 years experience in coaching.

Overall findings suggest that NCAA Division I, II, and III collegiate swimming coaches are indeed aware of the fact that athletes do participate in unhealthy weight loss practices and suffer from eating disorders. Coaches appeared to recognize that eating disorders in collegiate swimming are prevalent and of concern, but displayed a capability to help these athletes through proper referrals. Although not all may have experience in coaching athletes who are eating disordered, many coaches are knowledgeable about this topic and have been provided with opportunities to increase their knowledge. Coaches who participated in this study were divided on whether swimmers experience sport specific pressures that put them at higher risk for or lead to eating disorders. The answer to this question will require more research, but provides insight that some coaches recognize the effect of certain sport specific pressures in swimming.

CONCLUSIONS

The following conclusions are based on the study

Research Question 1

What are coaches' knowledge and attitudes of eating disorders and unhealthy weight loss behaviors?

Coaches in this study were capable of identifying what behaviors have the most serious consequences for both health and performance of an athlete. Very few coaches reported having received no knowledge or education regarding eating disorders and unhealthy weight loss behaviors. Regarding the female athlete triad, this study found female coaches to have more knowledge on the subject. This finding suggests that male coaches need more education on the female athlete triad.

Research Question 2

How prevalent do coaches believe eating disorders are in collegiate swimmers?

NCAA Division I, II, and III collegiate swimming coaches are aware of the fact that athletes do participate in unhealthy weight loss practices and suffer from eating disorders. Coaches displayed the ability to recognize that eating disorders in collegiate swimming are prevalent and of concern, and exhibited the aptitude to help these athletes through proper referrals.

Research Question 3

What sport specific pressures do coaches think lead to the development of eating disorders in collegiate swimmers?

Coaches who participated in this study were divided on whether swimmers experience sport specific pressures that put them at higher risk for or lead to eating disorders. Coaches in this study reported that they did not place weight pressures on their athletes nor encourage them to lose weight in order to improve performance, as previous research suggested. Prior research had also cited revealing team attire as a strong sport specific pressure; although coaches in this study did not agree nor disagree that this would lead to disordered eating.

RECOMMENDATIONS FOR FUTURE RESEARCH

The following recommendations for future research are offered:

1. Conduct the study again earlier in the swimming season to allow more coaches the time and ability to respond.
2. Conduct the study again with a larger participant pool with more responses per NCAA Division.
3. Add additional questions to The 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athletes: Revised (Sherman et al., 2005) to evaluate prevalence and evaluate sport specific pressures in swimming.
4. Expand the research to further evaluate and increase male coaches' knowledge of eating disorders and unhealthy weight loss practices.
5. Encourage the implementation and importance of mandatory eating disorder knowledge and educational programs for NCAA coaches.

REFERENCES CITED

Anderson, C., & Petrie, T. A. (2012) Prevalence of disordered eating and pathogenic weight control behaviors among NCAA division I female collegiate gymnasts and swimmers. *Research Quarterly for Exercise and Sport, 83* (1), 120-124.

Anderson, C., Petrie, T., & Neumann, C. (2012) Effects of sport pressures on female collegiate athletes: A preliminary longitudinal investigation. *Sport, Exercise and Performance Psychology, 1* (2), 120-134.

Anderson, C. M., Petrie, T. A., & Neumann, C. S. (2011). Psychosocial correlates of bulimic symptoms among NCAA Division-1 female collegiate gymnasts and swimmers/divers. *Journal of Sport and Exercise Psychology*, *33*(4), 483-505.

Arthur-Cameselle, J. N., & Quatromoni, P. A. (2014). A qualitative analysis of female collegiate athletes' eating disorder recovery experiences. *The Sport Psychologist, 28*, 334-346.

Arthur-Cameselle, J. N., & Quatromoni, P. A. (2010). Factors related to the onset of eating disorders reported by female collegiate athletes. *The Sport Psychologist*, *25*(1), 1-17.

Beals, K., & Manore, M. (2002). Disorders of the female athlete triad among collegiate athletes. *International Journal of Sport Nutrition & Exercise Metabolism, 12* (3), 281-294.

Becker, C. B., McDaniel, L., Bull, S., Powell, M., & McIntyre, K. (2012). Can we reduce eating disorder risk factors in female college athletes? A randomized exploratory investigation of two per led interventions. *Body Image, 9*(1), 31-42.

Benson, R., & Taub, D. (1993) Using the PRECEDE model for causal analysis of bulimic tendencies among elite women swimmers. *Journal of Health Education, 24* (6), 360-368.

Berry, T., & Howe, B. Risk factors for disordered eating in female university athletes. *Journal of Sport Behavior, 23*(3), 207-218.

Biesecker, A. C., & Martz, D. M. (1999). Impact of coaching style on vulnerability for eating disorders: An analog study. *Eating Disorders: The Journal of Treatment and Prevention, 7,* 235-244.

Black, D. R., Larkin, L. J. S., Coster, D. C., Leverenz, L. J., & Abood, D. A. (2003). Physiologic screening test for eating disorders/disordered eating among female collegiate athletes. *Journal of Athletic Training*, *38*(4), 286-297.

Brannan, M., Petrie, T. A., Greenleaf, C., Reel, J., & Carter, J. (2009). The relationship between body dissatisfaction and bulimic symptoms in female collegiate athletes

Brewer, B., Van Raalte, J., & Linder, D. (1993). Athletic identity: Hercules' muscles or Achilles 'heel? *International Journal of Sport Psychology,* 24: 237-254.

Brown, C.A., & Mehler, P.S. (2013). Medical complications of self induced vomiting. *Eating Disorders: The Journal of Treatment and Prevention, 21*(4), 287-294.

Body Image and Disordered Eating. (2000, January 1). Retrieved November 19, 2014, from http://www.cdph.ca.gov/HealthInfo/healthyliving/childfamily/Documents/MO-NUPA-07BodyImageAndDisorderedEating.pdf

Bonci, C. M., Bonci, L. J., Granger, L. R., Johnson, C.L., Malina, R.M, Milne, L.W., Ryan, R.R., & Vanderbunt, E.M. (2008) National athletic trainer's association position statement: Preventing, detecting, and managing disordered eating in athletes. *Journal of Athletic Training, 43*(1), 80-108.

Byrne, S. & McLean, N., 2002. Elite athlete: effects of the pressure to be thin. *Journal of Science and Medicine in Sport, 5*(2), 80-94.

Crow, S.J., Peterson, C. B., Swanson, S.A., Raymond, N.C., Specker, S., Eckert, E.D., Mitchell, J.E. (2009). Increase mortality in bulimia nervosa and other eating disorders. *American Journal of Psychiatry, 166,* 1342-1346.

Davis, C., & Strachan, S. (2001). Elite female athletes with eating disorders: A study of psychopathological characteristics. *Journal of Sport & Exercise Psychology, 23*, 245-253.

deBruin, A. P., Oudejans, R. R. D., Bakker, F. C., & Woertman, L. (2011). Contextual body image and athletes' disordered eating: The contribution of athletic body image to disordered eating in high school performance women athletes. *European Eating Disorders Review, 19,* 201-215.

De Souza, M. A., Nattiv, A., Joy, E., Misra, M., Williams, N. I., Mallinson, R. J., Gibbs, J. C., Olmsted, M., Goolsby, M., & Matheson, G., Expert Panel. (2014). 2014 female athlete triad coalition consensus statement on treatment and return to play of the female athlete triad: 1st international conference held in San Francisco, California, May 2012 and 2nd international conference held in Indianapolis, Indiana, May 2013. *British Journal of Sports Medicine, 48*(4), 289-309.

DiBartolo, P., & Schaffer, C. (2002). A comparison of female college athletes and nonathletes: Eating disorder symptomatology and psychological well-being. *Journal of Sport & Exercise Psychology, 24*(1), 33-42.

Dickie, L., Surgenor, L. J., Wilson, M., & McDowall, J. (2012). The structure and reliability of the Clinical Perfectionism Questionnaire. *Personality and Individual Differences, 52,* 865-869.

Ducher, G., Turner, A. I., Kukuljan, S., Pantano, K. J., Carlson, J. L., Williams, N. I., & De Souza, M, J. (2011). Obstacles in the optimization of bone health outcomes in the female athlete triad. *Sports Medicine, 41*(7), 587-607.

Ekern, J. (2013, 08 21). *Eating disorder statistics and research. Retrieved from http://www.eatingdisorderhope.com/information/statistics-studies*

Engel, S. G., Johnson, C., Powers, P. S., Crosby, R. D., Wonderlich, S. A., Wittrock, D. A., & Mitchell, J. E. (2003). Predictors of disordered eating in a sample of elite Division I college athletes. *Eating Behaviors, 4*(4), 333-343.

Ferrand, C., Magnan, C., Rouveix, M., & Filaire, E. (2007). Disordered eating, perfectionism and body-esteem of elite synchronized swimmers. *European Journal of Sport Science, 7*(4), 223-230.

Frost, R.O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research, 14*, 449-468.

Gaines, S. A., & Burnett, T. S., (2014). Perceptions of eating behaviors, body image, and social pressures in female division II college athletes and non-athletes. *Journal of Sport Behavior (37)*4, 351-369.

Greenleaf, C., Petrie, T. A., Carter, J., & Reel, J. J. (2009). Female collegiate athletes: Prevalence of eating disorders and disordered eating behaviors. *Journal of American College Health*, *57*(5), 489-495.

Greenleaf, C. (2002). Athletic body image: Exploratory interviews with former female competitive athletes. *Women in Sport and Physical Activity Journal, 11,* 63-88.

Griffin, J., & Harris, M. (1996). Coaches' attitudes, knowledge, experiences, and recommendations regarding weight control. *The Sport Psychologist, 10*, 180-194.

Gotwals, J. K., Stoeber, J., Dunn, J. G. H., & Stoll, O. (2012). Are perfectionistic strivings in sport adaptive? A systematic review of confirmatory, contradictory, and mixed evidence. *Canadian Psychology, 53*(4), 263-279.

Haase, A. M. (2009). Physique anxiety and disordered eating correlates in female athletes: Differences in team and individual sports. *Journal of Clinical Sports Psychology*, *3*(3), 218-231.

Heffner, J., Ogles, B., Gold, E., Marsden, K., & Johnson, M. (2003). Nutrition and eating in female college athletes: A survey of coaches. *Eating Disorders,* (11), 209-220.

Hoogenboom, B., Morris, J., Morris, C., & Schaefer, K. (2009). Nutritional knowledge and eating behaviors of female collegiate swimmers. *North American Journal of Sports Physical Therapy 4*(3), 139-148.

Hopkins, R. A., & Lock, J. (2004). Athletics, perfectionism, and disordered eating. *Eating & Weight Disorders, 9*(2), 99-106.

Howells, K., & Grogran, S. (2012). Body image and the female swimmer: Muscularity but in moderation. *Qualitative Research in Sport, Exercise, and Health 4*(1), 98-116.

Hudson, J. I., Hirpi, E., Pope Jr, H. G., & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the national comorbidity survey replication. *Biological Psychiatry, 61*(3), 348-358. Doi: 10.1016/j.biopsych.2006.03.040

Ingram, Y. (2006). Prevalence rates of eating disorder behaviors in NCAA female athletes and the use of a body image awareness program to affect this prevalence rate. (Doctoral Dissertation). Retrieved from ProQuest Information and Learning Company.

Johnson, C., Powers, P., & Dick, R. (1999). Athletes and eating disorders: The national collegiate athletic association study. *International Journal of Eating Disorders*, *26*(2), 179-188.

Jones, R.L., Glintmeyer, N., & McKenzie, A. (2005). Slim bodies, eating disorders and the coach-athlete relationship. *International Review for the Sociology of Sport, 40* (3), 377-391.

Kato, K., Jevas, S., & Culpepper, D. (2011). Body image disturbances in NCAA division I and III female athletes. *Sport Journal, 14*(1), 1-2.

Kirk, G., Singh, K., & Getz, H. (2001). Risk of eating disorders among female college athletes and non-athletes. *Journal of College Counseling, 4* (2), 122-133.

Klossner, D. (20134). Nutrition and athletic performance. In *2013-2014 NCAA Sports Medicine Handbook* (24th ed., p.50). Indianapolis, IN. The National Collegiate Athletics Association.

Kong, P., & Harris, L. M. (2015). The sporting body: Body image and eating disorder symptomatology among female athletes from leanness focused and nonleanness focused sports. *The Journal of Psychology, 149*(2), 141-160.

Krane, V., Stiles-Shipley, J.A., Waldron, J., & Michalenok, J. (2001). Relationships among body satisfaction, social physique anxiety, and eating behaviors in female athletes and exercisers. *Journal of Sport Behavior. 24*(3), 247-264.

Kroshus, E., Sherman, R.T., Thompson, R.A., Sossin, K., & Austin, S.B. (2014). Gender differences in high school coaches' knowledge, attitudes, and communication about the female athlete triad. *Eating Disorders, 22,* 193-208.

Lo, B., Hebert, C., & McClean, A. (2003). The female athlete triad no pain, no gain? *Clinical Pediatrics, 42*, 573-580.

Manore, M., Kam, L., & Loucks, A. (2007). The female athlete triad: Components, nutrition issues, and health consequences. *Journal of Sports Sciences, 25*(S1), S61-S71.

McLester, C. N., Hardin, R., & Hoppe, S. (2014) Susceptibility to eating disorders among collegiate female student-athletes. *Journal of Athletic Training*, 49(3), 406-410.

Melin, A., Klungland Torstveit, M., Burke, L., Marks, S., & Sundgot-Borgen, J. (2014). Disordered eating and eating disorders in aquatic sports. *International Journal of Sport Nutrition and Exercise Metabolism, 24,* 450-459.

Mencias, T., Noon, M., & Hoch, A. Z. (2012) Female athlete triad screening in National Collegiate Athletic Association division I athletes: Is the preparticipation evaluation form effective? *Clinical Journal of Sport Medicine, 22*(2), 122-125.

Munday, S. (2014, January 17). IOC Medical Commission to reveal new insights into the Female Athlete Triad. Retrieved April 1, 2015, from http://www.olympic.org/news/ioc-medical-commission-to-reveal-new-insights-into-the-female-athlete-triad/221481.

Nattiv, A., Loucks, A. B., Manore, M. M., Sanborn, C.F., Sundgot-Borgen, J., & Warren, M.P. (2007). American College of Sports Medicine position stand. The female athlete triad. *Medicine and Science in Sports and Exercise. 39*(10), 1867-1882.

NEDA, Types and symptoms of eating disorders. (2012, January 1). Retrieved November 12, 2014, from https://www.nationaleatingdisorders.org/types-symptoms-eating-disorders.

Nowicka, P., Eli, K., Ng, J., Apitzsch, E., & Sundgot-Borgen, J. (2013). Moving from knowledge to action: A qualitative study of elite coaches' capacity for early intervention in cases of eating disorders. *International Journal of Sports Science & Coaching, 8*(2), 343-355.

Patano, K. J. (2006). Current knowledge, perceptions and interventions used by collegiate coaches in the U.S. regarding the prevention and treatment of the female athlete triad. *North American Journal of Sports Physical Therapy, 1,* 195-207.

Petrie, T. A., Greenleaf, C., Reel, J. J., & Carter, J. E. (2009). An examination of psychosocial correlates of eating disorders among female collegiate athletes. *Research Quarterly for Exercise and Sport*, *80*(3), 621-632.

Petrie, T. A., & Greenleaf, C. (2007). Eating disorders in sport: From theory to research to intervention. In G. Tenenbaum & R. Eklund (Eds.), *Handbook of sport psychology* (pp. 352-378). Hoboken, NJ: John Wiley & Sons.

Picard, C. L. (1999). The level of competition as a factor for the development of eating disorders in female collegiate athletes . *Journal of Youth and Adolescence*, *28*(5), 583-594.

Plateau, C. R., McDermott, H. J., Arcelus, J., & Meyer, C. (2014). Identifying and preventing disordered eating among athletes: Perceptions of track and field coaches. *Psychology of Sport and Exercise, 15*(6)*, 721-728.*

Powers, P.S., & Johnson, C. (1996). Small victories: Prevention of eating disorders among athletes. *Eating Disorders: The Journal of Treatment & Prevention, 4*(4), 364-377.

Reel, J. J., Petrie, T. A., SooHoo, S., & Anderson, C. M. (2013). Weight pressures in sport: Examining the factor structure and incremental validity of the weight pressures in sport-females. *Eating Behaviors, 14*, 137-144.

Reel, J., SooHoo, S., Petrie, T., Greenleaf, C., & Carter. J. (2010). Slimming down for sport: Developing a weight pressures in sport measure for female athletes. *Journal of Clinical Sport Psychology, 4,* 99-111.

Reel, J.J., & Gill, D.L. (2001). Slim enough to swim? Weight pressures for competitive swimmers and coaching implications. *The Sport Journal*, *4*(2), Spring 2001. Posted online (www.thesportjournal.org) April 2001.

Reinking, M. F., & Alexander, L. E. (2005). Prevalence of disordered-eating behaviors in undergraduate female collegiate athletes and nonathletes. *Journal of Athletic Training*, *40*(1), 47-51.

Rockwell, M.S., Nickols-Richardson, S. M., & Thye, F.W. (2001). Nutrition knowledge, opinions, and practices of coaches and athletic trainers at a Division I university. *International Journal of Sport Nutrition and Exercise Metabolism, 11*, 174-185.

Roshus, E., Sherman, R., Thompson, R., Sossin, K., & Austin, S.B. (2014). Gender differences in high school coaches' knowledge, attitudes, and communication about the female athlete triad. *Eating Disorders, 22*, 193-208.

Salbach, H., Klinkowski, N., Pfeiffer, E., Lehmkuhl, U., & Korte, A. (2006). Body image and attitudinal aspects of eating disorders in rhythmic gymnasts. *Psychopathology*, *40*(6), 388-393. doi: 10.1159/000106469

Sanford-Martens, T. C., Davidson, M. M., Yakushko, O. F., Martens, M. P., Hinton, P., & Beck, N. (2005). Clinical and subclinical eating disorders: An examination of collegiate athletes. *Journal of Applied Sport Psychology*, (17), 79-86. doi: 10.1080/10413200590907586

Schwarz, H.C., Gairrett, R. L., Aruguete, M. S., & Gold, E. S. (2005). Eating attitudes, body dissatisfaction, and perfectionism in female college athletes. *North American Journal of Psychology, 7*(3), 345-352.

Selby, C., & Reel, J. (2011). A coach's guide to identifying and helping athletes with eating disorders. *Journal of Sport Psychology in Action, 2*, 100-112.

Shanmugam, V., & Davies, B. (2015). Clinical perfectionism and eating psychopathology in athletes: The role of gender. *Personality and Individual Differences, 74*, 99-105.

Shanmugam, V., Jowett, S., & Meyer, C. (2013). Eating psychopathology amongst athletes: The importance of relationships with parents, coaches, and teammates. *International Journal of Sport and Exercise Psychology, 11*(1), 24-38.

Sherman, R. T., Thompson, R.A., Dehass, D., & Wilfert, M. (2005). NCAA coaches survey: The role of the coach in identifying and managing athletes with disordered eating. *Eating Disorders, 13,* 447-466.

Sherman, R. T., & Thompson, R. A. (2004). The female athlete triad. *Journal of School Nursing, 20*, 197-202.

Sherman, R. T., & Thompson, R.A. (2001). Athletes and disordered eating: Four major issues for the professional psychologist. *Professional Psychology: Research and Practice, 32*, 27-33.

Smith, A., & Petrie, T. (2008). Reducing the risk of disordered eating among female athletes: A Test of Alternative Interventions. *Journal Of Applied Sport Psychology,* 20(4), 392-407. doi:10.1080/10413200802241832.

Steinfeldt, J. A., Zakrajsek, R., Carter, H., & Steinfeldt, M. C. (2011). Conformity to gender norms among female student-athletes: Implications for body image. *Psychology of Men & Masculinity, 12*(4), 401-416.

Sundgot-Borgen, J., & Torstveit, M.K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical Journal of Sport Medicine, 14,* 25-32.

Sundgot-Borgen, J. (1994). Risk and trigger factors for the development of eating disorders in female elite athletes. *Medicine and Science in Sports and Exercise*, *26*, 414-419.

The Renfrew Center Foundation for Eating Disorders, "Eating Disorders 101 Guide: A Summary of Issues, Statistics, and Resources," 2003.

Thompson, S. H., & Gabriel, M. (2004). Risk factors for the female athlete triad among female collegiate and noncollegiate athletes. *The Physical Educator*, *61*(4), 200-212.

Thompson, R. A., & Sherman, R. (2014). Reflections on athletes and eating disorders. *Psychology of Sport and Exercise, 15,* 729-734.

Thompson, R.A., & Sherman, R.T. (1999). "Good athlete traits and characteristics of anorexia nervosa: Are they similar?. *Eating Disorders: The Journal of Treatment and Prevention*, 7, 181-190.

Thompson, R., & Sherman, R. T. (1999). Athletes, athletic performance, and eating disorders: A healthier alternative. *Journal of Social Issues, 55*(2), 317-337.

Torstveit, M. K., Rosenvinge, J. H., & Sundgot-Borgen, J. (2008). Prevalence of eating disorders and the predictive power of risk factor models in female elite athletes: A controlled study. *Scandinavian Journal of Medicine & Science in Sports, 18,* 108-118.

Turk, J., Prentice, W., Chappell, S., & Shields, E. (1999). Collegiate coaches' knowledge of eating disorders. *Journal of Athletic Training, 34*(1), 19-24.

Williams, P. L., Sargent, R. G., Valois, R. F., Wanzer Drane, J., Parra-Medina, D. M., & Durstine, L. J. (2003) Prevalence of subclinical eating disorders in collegiate female athletes. *Women in Sport & Activity Journal, 12*(2), 127-145.

Zucker, N. L., Womble, L. G., Williamson, D. A., & Perrin, L. A. (1999). Protective factors for eating disorders in female college athletes. *Eating Disorders*, *7*, 207-218.

APPENDIX

THE 2003 NCAA QUESTIONNAIRE FOR COLLEGIATE COACHES OF FEMALE STUDENT-ATHLETES: REVISED

APPENDIX

The 2003 NCAA Questionnaire for Collegiate Coaches of Female Student-Athletes: Revised

Do you agree to participate in this survey?

- Yes
- No

Q1 What is your gender?

- Male
- Female

Q2 What ethnicity best describes you?

- White
- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Asian/Pacific Islander
- Other

Q3 What is your age? Please enter age below

- Click to write Choice 1

Q4 How many years have you spent coaching? Please enter number of years spent coaching

- Click to write Choice 1

Q5 What NCAA Division do you coach?

- Division I
- Division II
- Division III

Q6 What is your current position?

- Head Coach
- Assistant Coach

Q7 Currently coaching: (Check all that apply)

- Women's Swimming
- Men's Swimming
- Diving

Q8 What training or education have you had regarding disordered eating/eating disorders? (Check all that apply)

- None
- Attended lectures

- ☐ Read materials
- ☐ NCAA website
- ☐ Talked with eating disorder experts
- ☐ Video tapes or television shows
- ☐ Other (describe)

Q9 Disordered eating behaviors can have **negative health** consequences for a female athlete. Using the scale in the table below, please rate your assessment of the seriousness of the behaviors (for health) below choosing the appropriate response.

			Not at all serious	Somewhat serious	Serious	Very Serious
Binge-eating (eating large volumes of food)			○	○	○	○
Skipping one meal a day			○	○	○	○
Skipping two meals a day			○	○	○	○
Fasting for an entire day			○	○	○	○
Self-induced vomiting			○	○	○	○
Laxative abuse (using more than directed)			○	○	○	○
Diuretic/water pill abuse (using more than directed)			○	○	○	○
Weighing oneself multiple times a day			○	○	○	○
Excessive exercise (more than required by sport)			○	○	○	○
Under eating (burning more calories than ingesting)			○	○	○	○
Eating fast food occasionally (a few times per week)			○	○	○	○
Eating fast food frequently (daily)			○	○	○	○

Q10 Disordered eating behaviors can have negative **performance** consequences for a female athlete. Using the scale in the table below, please rate your assessment of the seriousness of the behaviors (for performance) below by choosing the appropriate response.

			Not at all serious	Somewhat serious	Serious	Very serious
Binge-eating (eating large volumes of food)			○	○	○	○
Skipping one meal a day			○	○	○	○
Skipping two meals a day			○	○	○	○
Fasting for an entire day			○	○	○	○
Self-induced vomiting			○	○	○	○
Laxative abuse (using more than directed)			○	○	○	○
Diuretic/water pill abuse (using more than directed)			○	○	○	○
Weighing oneself multiple times a day			○	○	○	○

Excessive exercise (more than required by sport)			○	○	○	○
Under eating (burning more calories than ingesting)			○	○	○	○
Eating fast food occasionally (a few times per week)			○	○	○	○
Eating fast food frequently (daily)			○	○	○	○

Q11 Some female athletes experience amenorrhea (loss of menstrual cycle). Check the response that best reflects your thinking regarding amenorrhea? Amenorrhea is:

- ○ Normal for female athletes and is not serious
- ○ Normal for female athletes but needs to be assessed after six months
- ○ Not normal but usually not harmful to the athlete
- ○ Not normal and requires a medical referral

Q12 Are you aware of what the Female Athlete Triad is, and what it consists of?

- ○ Yes
- ○ No

Q13 List the components of the Female Athlete Triad below: Please check each box, and input your responses.

- ☐ Click to write Choice 1
- ☐ Click to write Choice 2
- ☐ Click to write Choice 3

Q14 Are you aware when your athletes have missed a menstrual cycle for more than 3 consecutive months?

- ○ Yes
- ○ No
- ○ I only coach male swimmers

Q15 Have you ever talked with an athlete about her amenorrhea (loss of menstrual cycle)?

- ○ Yes
- ○ No
- ○ I only coach male swimmers

Q16 Have you ever referred an athlete for a medical evaluation due to amenorrhea?

- ○ Yes
- ○ No
- ○ I only coach male swimmers

Q17 Do you believe any of your female swimmers suffer from the Female Athlete Triad?

- Yes
- No
- I only coach male swimmers

Q18 Who determines whether a female swimmer in your program is engaging in disordered eating or has an eating disorder? *Mark all that apply*

- Student-athlete
- Head coach
- Assistant coach
- Teammates
- Mental health professional
- Athletic trainer
- Other medical staff
- Other (describe)
- I only coach male swimmers

Q19 Who *most frequently* determines whether a female swimmer in your program is engaging in disordered eating or has an eating disorder?

- Student-athlete
- Head coach
- Assistant coach
- Teammates
- Mental health professional
- Athletic trainer
- Other medical staff
- Other (describe)
- I only coach male swimmers

Q20 As a coach, what criteria or information do **you** use to determine if a female swimmer in your program is engaging in disordered eating or has an eating disorder? *Mark all that apply.*

- Physical/medical problems (i.e., amenorrhea, stress fractures, etc.)
- Psychological/emotional problems (i.e., depression, anxiety, etc.)
- Eating disorder symptoms (i.e., induced vomiting, weight loss, restricted eating, etc.)
- Decrease in athletic performance
- Other (describe)
- I only coach male swimmers

Q21 As a coach, what criteria or information do **you** use most *frequently* to determine if a female swimmer in your program is engaging in disordered eating or has an eating disorder?

- Physical/medical problems (i.e., amenorrhea, stress fractures, etc.)
- Psychological/emotional problems (I.e., depression, anxiety, etc.)
- Eating disorder symptoms (i.e., induced vomiting, weight loss, restricted eating, etc.)
- Decrease in athletic performance
- Other (describe)
- I only coach male swimmers

Q22 What do you *typically* do when one of your female swimmers has been identified as engaging in disordered eating or has an eating disorder? Mark all that apply.

- Nothing
- Refer to a dietitian
- Refer to sports medicine personnel
- Refer to a general counselor or psychologist
- Withhold from training and Competition
- Refer to an eating disorder specialist
- Have them read relevant materials
- Contact parents
- Other (describe)
- I only coach male swimmers

Q23 What do you *most frequently* do when one of your female swimmers has been identified as engaging in disordered eating or has an eating disorder?

- Nothing
- Refer to a dietitian
- Refer to sports medicine personnel
- Refer to a general counselor or psychologist
- Withhold from training and competition
- Refer to an eating disorder specialist
- Have them read relevant materials
- Contact Parents
- Other (describe)
- I only coach male swimmers

Q24 When a student-athlete is in treatment for an eating disorder, *which people* input into the decision to train and compete while the student-athlete is **still** symptomatic? *Mark all that apply.*

- Student-athlete
- Head coach
- Assistant coach

- Teammates
- Mental health professional
- Athletic trainer
- Other Medical Staff
- Other (describe)

Q25 When a student-athlete is in treatment for an eating disorder, *what person has the most* input into the decision to train and compete while the student-athlete is **still** symptomatic? *Mark only one.*

- Student-athlete
- Head coach
- Assistant coach
- Teammates
- Mental health professional
- Athletic trainer
- Other medical staff
- Other (describe)

Q26 Have you ever referred an athlete (for any reason) to a mental health professional?

- Yes
- No

Q27 If yes, how helpful were those services? choose one, and explain.

- Poor
- Fair
- Good
- Excellent
- Explain

Q28 Have you ever referred an athlete to a general therapist (non-eating disorder specialist) for an eating problem?

- Yes
- No

Q29 If yes, how helpful were those services? choose one, and explain.

- Very Poor
- Poor
- Good
- Excellent
- Explain

Q30 Have you ever had an athlete use the services of an eating disorder therapist?

- Yes
- No

Q31 If yes, how helpful were those services? choose one, and explain.

- Very Poor
- Poor
- Good
- Excellent
- Explain

Q32 Have you ever had an athlete use the services of a dietitian/nutritionist?

- Yes
- No

Q33 If yes, how helpful were those services? choose one, and explain.

- Very Poor
- Poor
- Fair
- Excellent
- Explain

Q34 Do you believe that swimmers experience specific pressures placing them at higher risk for the development of Eating Disorders and Unhealthy weight loss behaviors?

- Yes
- No

Q35 On a scale from 1 (strongly disagree) to 5 (strongly agree), rate your responses to the following questions:

	Strongly disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I encourage my swimmers to lose weight.					
I would refer one of my athletes to a dietitian.					
Team suits make my swimmers self-conscious.					
Increased weight will lead to a decrease in athletic performance.					
I require my swimmers to maintain a specific weight.					

Q36 On a scale from 1 (strongly disagree) to 5 (strongly agree), rate your responses to the following questions:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Eating Disorders and Unhealthy weight loss practices are a problem for male swimmers.	○	○	○	○	○
Male Swimmers experience these issues as often as female swimmers.	○	○	○	○	○