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Relationship Between Disordered Eating Risk & Body Image Dissatisfaction of Spirit Squad Members

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To the Dean of the Graduate School:

We are submitting a thesis written by Sarah Abdul Albandar entitled Relationship Between Disordered Eating Risk & Body Image Dissatisfaction of Spirit Squad Members. We recommend acceptance in partial fulfillment of the requirements for the degree of Master of Science in Human Nutrition.

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RELATIONSHIP BETWEEN DISORDERED EATING RISK & BODY IMAGE DISSATISFACTION OF SPIRIT SQUAD MEMBERS

A Thesis Presented to the Faculty

Of the

College of Arts & Sciences In Partial Fulfillment

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By

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Abstract

Background: Investigations into body image and disordered eating habits among aesthetic sports has shown that these athletes face pressures to be thin and to be a certain body type for their sport.

Research aim/question(s): This study sought to determine if disordered eating habits and body dissatisfaction were prevalent within this population, whether or not there is a relationship between body image and disordered eating, and to determine the current research gap on body image and disordered eating among cheerleaders and dancers.

Materials and Methods: Participants were 23 females including cheerleaders and dancers on the Spirit Squad as well as dance students from the dance department. Participants responded to personal demographic questions and completed the validated body image questionnaire (BIQ) and validated disordered eating questionnaire (FAST) via an online Qualtrics survey in the spring 2020 semester.

Results: A total of 60% of participants were found to be at risk for disordered eating and eating disorders. Participants were found to be at moderate risk for body image dissatisfaction with an average BIQ score of 2.1. Body dissatisfaction had a positive linear relationship with disordered eating ($r=0.5$). A slight positive linear correlation exists between BMI and body dissatisfaction ($r=0.218$). Almost no linear relationship exists between BMI and disordered eating ($r=0.167$). There is no relationship between class and disordered eating ($p=1$).

Conclusion: Previous research has shown prevalence rates of body image dissatisfaction and disordered eating behaviors in aesthetic sports. The results of this study address the research gap by reporting an association between body image concerns and disordered eating and/or eating disorder pathology in a population of collegiate cheerleaders and dancers.

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Chapter 1: Introduction

Collegiate cheerleaders and dancers fall under the category of aesthetic sports, which refers to sports emphasizing the body's physical appearance. Involvement in aesthetic activities can cause a higher drive for thinness, self-objectification, body shame, and disordered eating behaviors.[1,2] Participating in aesthetic sports such as cheerleading and dance can be very stressful due to the competitive nature of these sports, the fact that success is based on subjective evaluation of performance, and that an emphasis is placed on physique and perfectionism. Thus, aesthetically focused sports may enhance an individual's drive for thinness to adhere to body ideals, which further places emphasis on bodily appearance. This is compounded by the fact that career success in cheerleading and dance is highly influenced by the desire to achieve the perfect body shape.[3] The emphasis on aesthetic qualities in this population has been identified to put these athletes at risk for developing disordered eating habits or an eating disorder.[4,5] Additionally, participation in aesthetic sports can lead to feelings of shame and guilt when certain body ideals are unattainable.[6]

Although the prevalence of disordered eating and eating disorders varies among athletes, prevalence rates may be the highest among these athletes, given the emphasis on appearance within these sports. Previous research has estimated that 25% of elite female athletes in aesthetic sports, weight-based sports, and endurance sports were diagnosed with clinical eating disorders compared with 9% of the general population.[4] Additional research findings confirm this noting that athletes, especially female athletes involved in sports

based on a particular body type are at higher risk of engaging in disordered eating habits compared to non-aesthetic sports.[7] Similarly, it was found that athletes who participate in competitions in leanness sports have a greater risk of disordered eating when compared to the general public.[4] These findings suggest athletes in aesthetic based sports compared to non-aesthetic based sports are at higher risk for disordered eating behaviors and clinical eating disorders.

Over time, aesthetic-based sports, particularly cheerleading and dance have become increasingly competitive with greater physical demands and an emphasis on skillset to carry out tumbling, stunting, and various choreographed routines.[8] This can lead to a comparison of teammates and members of other teams because these sports are so highly competitive. Given the high pressure associated with these sports, many athletes may resort to negative thinking regarding their body image, further perpetuating the risk of engaging in disordered eating patterns. These athletes face additional pressures to match desired body ideals due to the mass media coverage and performances on live television.[8] These include college games as well as major tournaments, such as March Madness, which averages 19.6 million views according to a 2019 report.[8] With mass media coverage, competitions, and relying on aesthetic qualities for performance, cheerleading, and dance have become high-risk activities for body image dissatisfaction and patterns of disordered eating. Researchers found that both body dissatisfaction and disordered eating prevalence rates were among the highest in cheerleaders given the appearance demands of this aesthetic sport.[8] This suggests that body image dissatisfaction may be influenced by

frequent media coverage, demanding performances and training schedules, as well as evaluations by judges, coaches, and peers of their physique.

While the focus of this paper is on cheerleaders and dancers, it is important to note that other sports including gymnastics, figure skating, diving, and running, also fall under the category of aesthetic sports due to the emphasis placed on appearance and weight requirements. Due to the current research gap of disordered eating habits and body image concerns of cheerleaders and dancers, the other aesthetic sports mentioned will be included to examine this relationship of body image and disordered eating in the following literature review and discussion.

Chapter 2: Literature Review

Disordered Eating

Disordered eating (DE) refers to abnormal eating patterns that can include behaviors that are very similar to eating disorders (ED) such as prolonged fasting, use of laxatives, restrained eating, eliminating a major food group, and using diet pills.[9] Unlike eating disorders, disordered eating does not qualify for a clinical diagnosis of anorexia nervosa, bulimia nervosa, or binge eating disorder.[9] However, if disordered eating habits continue to develop, it can negatively impact an individual's health and may progress into a clinical eating disorder. Disordered eating is of concern due to the high prevalence rates. For instance, over 50% of adolescent females reported engaging or having engaged in fasting, using diet pills and laxatives, binging, and purging, and in another study, 91% of college females reported restricting food and/or dieting to lose weight.[10,11]

It is important to note that subclinical disordered eating may be a phase, whereas clinical eating disorders are not. However, it is still important to recognize that disordered eating can be just as dangerous, especially when progression can lead to a clinical diagnosis of an eating disorder. This is supported by research findings showing that subclinical disordered eating can have serious consequences for both physical and mental health and can increase the risk of anorexia and bulimia.[12] Therefore, identifying the problem at the disordered eating phase may help prevent athletes from developing eating disorders later on.

When disordered eating habits become eating disorders, athletes who engage in these behaviors can experience a multitude of health complications

affecting every organ system in the body.[13] The cardiovascular system is affected because it has to break down its tissue to use it for energy.[13] Since the heart is a muscle, it is affected by being broken down resulting in drops in pulse and blood pressure.[13] When these levels become dangerously low, the risk for heart failure increases.[13] This is even more worrisome in athletes who typically have low heart rates anyways due to being physically active. As a result of the common low heart rate of conditioned athletes, physicians often miss this key symptom of eating disorders. Furthermore, binging and purging can hurt the gastrointestinal system. Binge eating can result in a ruptured stomach, can damage the lining of the esophagus, and can lead to infection of the intestines.[13] Other behaviors such as laxative abuse can result in the body starting to rely on laxatives to have a bowel movement.[13] Excessive dieting can also have neurological effects, with the brain being starved of energy.[13] This can cause further obsessions of food, difficulty concentrating, dizziness, and fainting. Other physical health consequences involve the endocrine system. There is a decrease in sex hormones, which results in menstruation becoming irregular or failing.[13]

Further health consequences particularly of concern to athletes are the development of the Female Athlete Triad (FAT). The Female Athlete Triad includes three major components: (1) low energy availability with or without disordered eating, (2) menstrual dysfunction, and (3) low bone density.[14] This condition impacts athletes by reducing performance due to increased fatigue. Additionally, athletes are placed at higher risk for injury and fractures due to weak bones resulting from nutrient deficiencies. Furthermore, when athletes do not meet

energy needs, the body enters a state of low energy availability (EA), which contributes to the negative consequences of body composition, health, and sports performance.[14] Low energy availability is suspected to be the underlying cause of the Female Athlete Triad and the more recently defined term Relative Energy Deficiency in Sport (RED-S).[14] For several years, the Female Athlete Triad was used to explain disordered eating habits that resulted in amenorrhea and/or osteoporosis in female athletes. However, the Female Athlete Triad only addresses three health components. Therefore, in 2014 the International Olympic Committee (IOC) defined a new syndrome, RED-S, expanding the former Triad definition to account for the multitude of negative health consequences stemming from low EA.[15] The IOC defines RED-S as a syndrome characterized by impairments in physiological function including, but not limited to, the body's ability to create protein, metabolism and metabolic rate, menstrual function, bone health, immunity, and cardiovascular health caused by relative energy deficiency.[15]

The International Olympic Committee (IOC) outlines 10 health consequences and 10 performance consequences of RED-S. Potential health consequences include impairments in the following: gastrointestinal, immunological, menstrual function, bone health, endocrine, metabolic, hematological, psychological, cardiovascular, and growth and development.[15] Performance-related consequences include the following: decreased muscle strength, decreased endurance performance, increased injury risk, decreased training response, impaired judgment, decreased coordination, decreased concentration, irritability, depression, and decreased glycogen stores.[15]

In a recent study on EA, researchers wanted to examine the association of low EA with RED-S to determine whether or not the effects of low energy availability is associated with health and performance consequences mentioned in the IOC consensus statement. Nutrition assessments were administered via an online survey to 1000 female athletes aged 15-30 at Boston Children's Sports Medicine clinic.[14] Pertaining to health consequences, it was found that female athletes with low energy availability were more likely to suffer from metabolic, cardiovascular, and psychological issues; more likely to report a history of hematological issues, and more likely to have gastrointestinal issues.[14] For performance consequences, it was found that those with low energy availability were more likely to have a longer time for recovery, more likely to report feeling uncoordinated, more likely to report lack of focus, more likely to feel a decrease in endurance, and more likely to report feelings of irritability and depression.[14] These research findings support that athletes with low EA can encounter many of the health and performance consequences listed in the IOC consensus statement regarding RED-S.

Studies have also reported that low EA is more prevalent in female athletes, particularly in athletes involved in aesthetic sports.[14] In a study on body composition and RED-S, researchers sought to determine the relationship between energy intake, body composition, and estimated energy balance in a sample of 19 female professional cheerleaders. Among this sample of cheerleaders, participants reported an average negative energy balance of 720 calories and spent more time in a state of negative energy balance.[3] Additionally,

carbohydrate intake was significantly below recommended levels while protein and fat intake met recommended levels.[3] Higher fat intake was found to be associated with higher energy intake, which was significantly associated with a lower body fat percentage.[3] Findings from this study help to raise awareness about the prevalence of low EA in aesthetic based sports, contributing to disordered eating habits and potential future eating disorders among this population.

In addition to physical health consequences, mental health consequences stemming from disordered eating behaviors and eating disorders are of concern. Research findings reported psychiatric conditions such as major depression and anxiety disorders among those with anorexia.[16] Additionally, common mental health disorders associated with bulimia include major depression, substance abuse disorders, and personality disorders.[16] Moreover, approximately 80% of individuals with anorexia or bulimia are diagnosed with another psychiatric disorder at some point in their life.[16] One of the main factors of mental illness is the capability of the illness to limit the life activities of individuals suffering from the condition.[16] Extensive research demonstrates how eating disorders fit this criterion. For instance, individuals with anorexia and bulimia reported rating their quality of life as low, their social communication skills were found to be poor, and social networks were limited.[16]

Furthermore, lack of self-worth and low self-esteem are common symptoms in eating disorder pathology.[17] These two factors are related to the concept of negative self-talk. Negative self-talk is when one engages in

obsessive thoughts regarding their body shape or size and often compares them to thin cultural ideals portrayed in the media.[17] These ideals can affect mood state, which was found to partially contribute to levels of body dissatisfaction, which in turn relates to the onset of eating disorders.[17] Researchers Petrie & Greenleaf developed a model to better understand disordered eating pressures in athletes, which includes eight different risk factors, within which the negative affect was included.[17]

Negative affect is another term for negative self-talk and includes difficulties in emotion, depression, and mood states.[18] This study was a meta-analysis utilizing several research articles to look at each of the risk factors outlined in the disordered eating model. Findings include that certain mental health factors in athletes such as negative emotions and mood, including depression and anxiety were correlated with disordered eating and eating disorder development.[17] Additionally, athletes who had a lower rate of disordered eating were better at regulating emotions.[17] Similarly, another study confirmed that increased symptoms of both depression and anxiety were positively correlated with increased disordered eating symptomology.[17] Furthermore, emotions such as shame and guilt were found to be higher in athletes with eating disorders.[17] Given the complexity of ED & DE as well as the consequences they bring (both mental and physical), it is imperative to better study and understands all factors related to disordered eating to prevent progression into eating disorders.

Other risk factors identified in the model by Petrie & Greenleaf include sports-related pressures.[19] Sports pressures refer to participation in sport, type of sport: lean versus non-lean, competition level, and level of influence by the coach.[17] The mere participation in sport was found to increase the risk of eating disorders compared to non-athlete controls.[17] In a study examining athletes and eating behaviors, athletes were found to have had higher eating disorder behaviors than non-athletes.[7] This was confirmed by another study finding the same result, particularly with female aesthetic athletes having more eating disorder pathology when compared to control groups (non-athletes).[19] Additionally, sport type does seem to affect the likelihood of eating disorder pathology particularly with lean-based or aesthetic types of sports. For this meta-analysis, lean sports were defined as sports that rely on a thin body type to be successful, whereas non-lean sports are those that do not rely on thinness for better performance. Studies found that participation in aesthetic sports compared to non-aesthetic sports contributed to eating disorders directly or indirectly through increased body dissatisfaction or from pressures to maintain a thin ideal.[17] These findings confirm previous research that aesthetic sports are at higher risk for ED/DE development and body image dissatisfaction.

Additionally, athletes in other sport types such as weight-based sports, which are sports that base competition status on weight, presented with higher eating disorder symptoms than athletes participating in other sports.[17] This finding suggests that level of competition may be predictive in disordered eating and eating disorder behaviors. This was further confirmed by research findings that

disordered eating symptoms are greater among elite athletes compared to athletes at the recreational level.[20] Concerning competition, it was found that disordered eating levels varied depending on the point in the season such as competing at competition season versus the off-season, with higher levels identified when athletes were in the competition stage.[20] It is important to note that aesthetic based sports including cheerleading and dance undergo competitions at the collegiate level, which could be another factor putting them at risk for ED and DE development. Lastly, the impact of coaches' and teammates' statements was studied to determine the potent impact on pathophysiology. Comments from coaches and teammates as well as the pressure from athletes to perform well were positively associated with DE symptoms in three studies.[20–22] These findings suggest athletes' behaviors are influenced by those they respect, such as coaches and teammates.

In a separate study, sports performance and perceived sports norms were identified as risk factors. In this study, a runner reported needing to achieve a certain weight in efforts to increase performance and run faster.[22] A separate study reported that disordered eating habits in athletes resulted from the pressure to perform well.[22,23] This is often due to the previously mentioned misconception that lower body weight will result in improved performance. These groups of athletes are at risk for eating disorders especially athletes participating in weight-sensitive sports, which carry the highest risk.[22,24] Another study involving a meta-analysis of 34 studies confirmed this finding that eating disorder risk is the most prevalent in weight-sensitive sports.[25]

Individual studies also show high risk and increased disordered eating symptomology in aesthetic sports.[19] To further support these findings, Krentz & Warschburger's 2011 study found that aesthetic athletes were motivated to lose weight to enhance sports performance.[19] These findings suggest the danger in associating weight loss with performance and emphasize the need for education regarding these topics. To add on, athletes reported feelings of achievement as a motivating factor.[22,26] Athletes who had a desire to be thin for their particular sport: dance, gymnastics, or cheerleading felt that losing more weight was tied to feelings of achievement.[22] These feelings of achievement may be tied back to pressure to please coaches who encourage weight loss for performance, suggesting the need to address these misconceptions for both athletes and coaches.

Further research has identified a separate category of factors such as psychological factors that contribute to disordered eating habits. Psychological factors studied include self-worth, body image, and perfectionism. A recent study found that the most common psychological factor associated with disordered eating was low self-worth noted by every athlete in this particular study.[22] Participants also reported negative body image, which resulted in comparing their body to peers; however, most who reported body image concerns were never overweight according to self-reported body mass index (BMI).[22]

Other psychological factors included the level of perfectionism and control.[27] Athletes reported regulating food intake to feel control, which led to an increase in the behavior.[22] In another study looking at perfectionism specifically in dancers, it was found that perfectionism was one of the factors significantly

influencing eating disorder symptoms.[27] Dancers typically spend long hours practicing in front of mirrors to perfect routines, which can place them at risk for scrutinizing their bodies and comparing themselves to other teammates. Together, these factors create an ideal environment for disordered eating and body dissatisfaction.

Furthermore, studies including ballet dancers found that classical ballet students were at high risk for developing ED and this was tied back to a drive for perfectionism.[27] Perfectionism has also been linked to low self-esteem, affecting dancers. Additionally, researchers have identified that perfectionism can make dancers more prone to thin-ideal internalization.[27] Women who are described as perfectionists are also more likely to be competitive, which can promote unhealthy dieting behaviors in hopes to be the best at their sport.[27]

A lot of these behaviors may be related to what is emphasized at practice and rehearsals from coaches and/or fellow teammates.[28] For this reason, reports of learning experiences from dance classes regarding thinness ideals were also studied. The degree to which a dancer is exposed to learning about thinness can influence eating disorder development. Comments about thinness were measured by evaluating comments from teachers and peers regarding the benefits of dieting, comparing body type with peers, learning about dieting, and observing restriction through teachers or peers.[27] Researchers concluded that these experiences regarding thinness are more important in the prediction of disordered eating symptoms than mere time spent in dance classes.[27] Moreover, the study found that dancers who had experiences in a thin-learning environment

also had higher rates of perfectionism, suggesting that individuals with perfectionist qualities may have developed these characteristics from these learning environments.[27] This is significant because of the well-established link between perfectionism and disordered eating. These results indicate that time spent in dance class and/or the dance environment itself is not the problem. Rather, the presence of learning experiences regarding thin ideals and peer influences appear to be the major risk factors.[27]

In addition, other studies have concluded similar results. For instance, researchers identified that congratulating or celebrating weight loss can hinder eating disorder recovery efforts.[26] This particular study found promotion of new weight loss and reinforcement of new weight/shape from family and friends reinforced athletes to continue these behaviors because they were perceived as better by family and peers when they were thinner.[26] Athletes also reported having peers that had eating disorders, which further contributed to engaging in these behaviors.[26] These findings indicate the importance of the role of coaches, teammates, family, and friends in potentially perpetuating body image concerns leading to the development of disordered eating habits.

Body Image

Female athletes especially those involved in aesthetic sports face pressures from societal and cultural expectations regarding the thin-ideal as well as sport-specific pressures to change weight, body, and appearance.[28] These factors place them at risk for developing negative body image, or body image dissatisfaction.[28] Body image is defined as the perceptions, thoughts, and

emotions that individuals have regarding their bodies.[29] Body image is multi-factorial involving cognitive, behavioral, and emotional components.[29] Thus, a true understanding of body image goes behind physical attributes, since body image develops as a picture of our bodies that we create in the mind.[29]

The term negative body image or body image dissatisfaction involves negative feelings about one's body shape.[28] This often involves a discrepancy between actual physical characteristics a person possesses and that same individual's ideal characteristics or physical attributes they wish to possess. Prior research has shown that female dancers are at risk of developing body image concerns. Studies have found that dancers tend to have more preoccupations with weight, eating habits, and body image.[29] They have also been found to possess perfectionist characteristics, which has previously been established as a risk factor for disordered eating habits.[29] Given these findings, these groups are at higher risk of developing disordered eating habits due to the body image concerns that they face.

Negative body image has also been found to be a risk factor for depression, anxiety, and clinical eating disorders.[29] Further evidence has demonstrated that body image dissatisfaction can even lead to the worsening of eating disorders.[29] For this reason, interventions have been created that specifically target the promotion of healthy body image to help improve disordered eating symptoms. In a study looking at the relationship of body image to disordered eating in dancers, researchers found that dancers who have low body image are at risk for developing eating disorders due to the culture of dance

practice.[29] Additionally, BMI was also found to be a predictor of disordered eating habits.[29] It was found that BMI had a positive and statistically significant correlation with eating disorders, meaning the higher the BMI, the greater number of symptoms experienced.[29] These findings can help to address misconceptions associated with eating disorder behaviors and weight such as the thought that one must be underweight to have an eating disorder.

Interestingly, other findings show similar results concerning higher BMI. A study conducted on adolescent girls found that those at risk for eating disorders had higher BMI than adolescent girls who were not in high-risk groups.[28,29] Similarly, other studies have identified a connection with weight and body image concerns in groups of dancers.[29,30] In a study on college dancers, researchers found that dancers had a low body fat percentage, but still care more about their overall appearance.[30] The dancers perceived themselves to be overweight and engaged in disordered eating patterns. The females in this study also perceived their current figure as heavier than their ideal figure.[30] These findings help to explain how the two factors of body image and disordered eating are related and how BMI is involved.

Body dissatisfaction and disordered eating can also be tied back to uniform choice in cheerleaders and dancers. In prior research, athletes were identified as experiencing pressure to be thin due to having to wear revealing uniforms and criticism from coaches and teammates.[22] Similarly, another study found that 53% of collegiate cheerleaders stated that revealing team uniforms contributed to weight pressures.[8] This suggests that revealing uniforms can play

a role in perpetuating insecurity regarding perceived imperfections. As a result, these athletes can become more concerned with their physical appearances and deal with an increasing amount of pressure. It is also reasonable to conclude that body image satisfaction may be dependent on the uniform type.

With cheerleaders, there are several different uniforms such as midriff and full-length. Cheerleaders may experience more dissatisfaction in midriff uniforms compared to full-length uniforms. In a study regarding clothing type and body image dissatisfaction among cheerleaders, researchers found that cheerleaders desired to be smaller than their actual body type for each of the uniform types (daily clothing, midriff uniform, full uniform), with the largest differences in the midriff uniform.[8] This finding supports that the more revealing the uniform, the greater the level of body dissatisfaction encountered. The role of uniforms in collegiate cheerleaders is significant because uniforms have become increasingly revealing over the years.

Additionally, the added pressure of televised media coverage at games may cultivate pressures to make their body perfect for the camera. Interestingly, this study investigating cheerleaders and uniform type also found specific eating disorder habits present in the collegiate cheerleader population.[8] Habits identified include misuse of laxatives, diuretic use, binging, vomiting, and using diet pills.[8] Out of a total of 136 cheerleaders, almost half (61 cheerleaders) reported engaging in the eating disorder behaviors mentioned.[8] While this study did not specifically examine the link between body image and disordered eating, it is

interesting to see that all of the participants had negative body image and nearly half also engaged in disordered eating behaviors.[8]

The current study also examined the role of weight expectations and how a cheerleaders position on the squad (flyer, base, or back spot) can influence weight demands. These positions vary requiring the flyer to be the lightest and the base and/or back spot to be stronger, having more muscle mass to be able to carry out the functions of stunting. Flyers were found to be at the highest risk of body image dissatisfaction due to weighing less and possible selection bias.[8] Flyers are typically chosen by the coaches based on weight and skillset. However, more emphasis is often placed on weight. Therefore, flyers can be more at risk to lose weight in unhealthy ways to earn a spot or retain their spot as a flyer. These findings suggest that team position can trigger disordered eating habits and body image dissatisfaction among this population.

Different studies have been done on aesthetic sports to evaluate the prevalence of body image disorders. Much of the research on body image concerns are focused specifically on dancers. Research has shown that dancers, particularly elite dancers tend to have greater weight preoccupations. They also tend to score higher on tests evaluating for body image and disordered eating such as the Eating Attitudes Test, the Body Image Assessment, and the Multidimensional Body Self-Relations Questionnaire.[31] These findings may be since dancers are expected to perform well in terms of choreography as well as present well in terms of appearance.

Prevalence rates may also be explained by body ideals preferred by professional dancers. For instance, George Balanchine is a ballet master and encouraged his followers to have a straight body and long limbs.[31] This ideal can exclude other body shapes and sizes from participating in dance. It can also lead to unhealthy eating behaviors to change bodily appearance to match ideals. This has also been shown to affect dancers at the professional level by driving them towards excessive concerns regarding body image in fear of losing their careers.[31] One of the risk factors identified in a study examining the role of body dissatisfaction in dancers, found that professional dancers were at risk as well as factors such as training levels and preoccupation with weight.[31] This study found that level of dance status affected preoccupation with weight, indicating professional dancers were affected the most.[31] Additionally, greater overweight preoccupation scores were positively correlated with anxiety and dieting behaviors.[31] They were also found to experience fat anxiety, eating restrain, and weight control behaviors.[31] These findings show the prevalence of weight preoccupation among dancers and negative feelings regarding weight gain among dancers.

In addition to the thin-ideal, there is a relatively new term known as the athletic ideal, characterized by a toned abdomen, firm lower body, and muscular upper body.[32] Recent studies investigating the athletic ideal found this ideal was not associated with body dissatisfaction but was related to dieting behaviors, symptoms of bulimia, and compulsive exercise.[32] Furthermore, body dissatisfaction did not influence relationships between athletic-ideal internalization

and any of the disordered eating and exercise behaviors.[32] However, this was in contrast to previous studies demonstrating a relationship between athletic-ideal internalization and body image dissatisfaction. Therefore, these findings suggest that athletic-ideals can influence disordered eating pathology and may perpetuate body image concerns in athletic groups.

As previously mentioned, body dissatisfaction is understood to predict eating disorder onset. Researchers Petrie & Greenleaf have proposed a model including body image as a risk factor. In a review of studies regarding body image by this model, researchers found that athletes and non-athletes did not differ in ratings for body image dissatisfaction, but concluded that body image dissatisfaction was still a significant risk factor for disordered eating.[17] Another study found that athletes reported increased body dissatisfaction and eating disorder behaviors due to exposure to media promoting thin ideals.[17] Additionally, it was found that dancers with confirmed disordered eating symptoms showed higher scores for body image issues, specifically with large discrepancies between current and ideal weight.[17] These findings suggest that body image concerns can be tied back to weight status. Another set of studies measuring body satisfaction through drawing scales or silhouettes found that athletes in aesthetic based sports reported higher levels of negative body image, with elite-level athletes choosing the smallest body shape as their ideal.[33]

Previous studies have shown that type of dance can influence the level of body dissatisfaction. The highest percentage of dancers with body dissatisfaction practiced classical ballet, followed by flamenco dance.[34] In contrast, lower rates of

body dissatisfaction were found in contemporary dancers.[34] Understanding dance genre in relation to body image can help to better identify which groups are most at risk and could benefit from intervention.

The influence of teachers was among the other factors mentioned. As previously discussed, dance teachers and or coaches can have the potential to provoke disordered eating habits when focus is placed on controlling weight. The same can be said about provoking body image concerns. Studies have found that many dancers feel pressured by teachers and choreographers to lose weight and modify their figures.[34] Additionally, there seems to be a lack of nutritional education among dance teachers leading to teachers promoting certain diets without having the appropriate knowledge to do so. This may instill body image concerns in dancers who then believe that to dance well, they must eat only healthy foods and lose weight.[34] To examine the effect of the teacher on these students is vital especially because many athletes such as dancers start at very young ages and have the potential of carrying out these harmful thoughts and behaviors into adolescence and adulthood. Additionally, young dancers may look up to their teachers and see them as role models. Once certain behaviors or dieting practices are modeled, young dancers may easily be influenced and follow suit.

Teachers can also have an impact in terms of delegating time spent in front of the mirror. While being in front of a mirror is a necessity for dance practice, it can also force dancers to scrutinize their bodies, compare their bodies to teammates, and pick apart flaws.[34] Teachers may also influence uniforms that are worn, which brings about the issue that dancers have a lack of control regarding

how they dress their body and how certain uniforms may make them feel. Further research has been done in this area arguing that teachers should avoid any negative comments directing towards dancer bodies, avoid negative comments about certain foods, and practice empathy.[34]

The effect coaches have on influencing female body image was also studied in a group of female athletes (non-dancers) including athletes from the following sports: swimming, soccer, softball, diving, track/field, gymnastics, tennis, cheerleading, basketball, and volleyball. The athlete-coach relationship is a key interpersonal relationship and coaches have a significant level of influence on the self-perception of athletes.[35] Coaches can impact athletes through their sports performance as well as confidence levels.[35] The coach's role also influences how athletes manage weight, engage in dieting behaviors, and perceive body image.[35] Currently, the NCAA does not have any rules to regulate how much coaches are involved with health, nutrition, and dieting communication of their athletes.[34] This is problematic considering that prior research has shown coaches do have the power to negatively affect athlete health behaviors.[35]

Coaches may not intentionally cause athletes to engage in disordered eating behaviors, but can indirectly and unintentionally affect dieting behaviors within this group based on how they discuss body image, sports nutrition, and performance needs with their athletes. For instance, the use of body fat composition tests, weighing athletes, and suggesting weight loss through extra workouts are not uncommon for coaches.[35] Not surprisingly, these can influence athletes to have distorted body image perceptions. While there is limited research

regarding the interpersonal relationships of the coach and how that impacts athletes, there are different theories used to better understand these relationships.

One such theory is that of the Communication Theory of Identity (CTI), which explains how female athletes perceive communication regarding these topics from their coaches.[35-37] CTI recognizes different components of identity including personal, relational, enacted, and communal.[35-37] The personal layer refers to an individual's image regarding themself include feelings and beliefs about personal identity and can often be influenced by societal values.[35,37] This can be related to female athletes as their ideas regarding how they view their health and personal body image. Relational identity refers to how individuals see themselves in comparison to others, and this can be thought of as communication and relationships with coaches and/or teammates.[35,37] The enacted layer is about how behavior through communication can be a way to express identity.[35,37] For the athlete, this would mean how an athlete expresses their body image and choices regarding health. The last layer, the communal layer, refers to social identities in a group.[35,37] For athletes, this would be how they communicate with other team members about the coaches messages surrounding body image and choices regarding health.[35,37]

In a study investigating the communication between coaches and athletes using the layers in this theory, researchers found that female athletes viewed themselves as different from others, particularly more muscular, and placed more emphasis on weight.[35] Also, athletes felt that coach communication on health and nutrition topics had a significant impact on how the athletes perceived their sports

performance and athletic achievements/abilities.[35] However, they also felt that they did not receive any real guidance from the coaches surrounding these issues.[35] For instance, an athlete may have been told to “eat healthy” with no real definition of what constitutes healthy eating. Furthermore, the way coaches communicated about body image and healthy habits did impact athletes' behavior surrounding diet and exercise.[35] Lastly, athletes did not discuss what the coaches communicated about body image with other teammates, which suggests a lack of communal identity surrounding this issue.[35] Additional findings based on responses from athletes indicated that some coaches placed more emphasis on losing weight rather than being healthy.[35] Other coaches used weight as a deciding factor for team position choosing athletes who weighed less. Athletes also reported doing additional workouts outside of practice to lose weight and look thinner.[35] This led to overthinking and obsessive thoughts about coaching comments regarding these topics.

These findings are significant for understanding how concerns over body image develop in athletes. A lot of research only focuses on sociocultural pressures portrayed in the media as the thin ideal. However, this study helps bring awareness to the role that coaches have in influencing and perpetuating concerns about body image. Coaches may not be aware of how their communication styles heavily impact their athletes, so this research can be used to educate coaches. It is difficult to control the thin narrative pushed by the media, however, there is the potential to make a direct impact by looking at interpersonal relationships and evaluation of coach communications with their respective athletes.

Summary

Disordered eating and body image concerns are prevalent among female athletes, particularly those involved in aesthetic sports. Understanding the various risk factors can help direct research efforts on how to address these common issues. However, there is a lack of research regarding the relationship between disordered eating and body image in both dancers and cheerleaders at the collegiate level. Therefore, the purpose of this study was to fill the current research gap of lack of research in disordered eating and body image dissatisfaction among student dancers and a group of collegiate cheerleaders and dancers, collectively known as the Spirit Squad.

Chapter 3: Methodology

Participants

Data was collected from 23 female collegiate cheerleaders and dancers during the spring 2020 semester via an internet-based survey. The sample also included students from the dance department. A total of two validated questionnaires: Female Athlete Screening Tool (FAST) and the Body-Image Ideals Questionnaire (BIQ) were used in the survey and included questions for the assessment of disordered eating as well as body image concerns. Additionally, the survey assessed demographic information, including age, year in school, type of sport they were involved in, height, and weight. Lastly, participants were asked to report if they had ever been clinically diagnosed with an eating disorder and if so, when the diagnosis occurred.

Procedure

This study was approved by the Winthrop University Institutional Review Board (IRB), reference number: IRB20125. Following Institutional Review Board approval, emails were sent out to the coach of the Winthrop Spirit Squad as well as the department chair for the dance department. Faculty members were informed that the purpose of the study was to learn more about the nutritional/eating habits of cheerleaders and dancers and that the study participants would remain anonymous. Faculty were provided a link that was to be distributed to students in order to complete the survey. Study participants were instructed to read the informed consent and indicate whether they agreed

prior to taking the online survey. Participants were invited to continue the study if they met the following inclusion criteria: (1) 18 years or older, (2) female, (3) cheerleader or (4) dancer, and (5) attends college at Winthrop University.

Instrumentation

The survey consisted of a personal demographic questionnaire, Female Athlete Screening Tool (FAST), Body-Image Ideals Questionnaire (BIQ), and a series of open-ended questions. The first section of the survey was the personal demographic questionnaire (see Appendix A). Self-reported demographic data was collected. With self-reported height and weight, each participant's body mass index (BMI) was calculated. By obtaining BMI, participants were sorted into groups of classifications such as "underweight", "normal", and "overweight." The underweight classification of BMI refers to anything less than 18.5.[38] A normal or healthy BMI range is between 18.5 and 24.9.[38] An overweight BMI range is between 25 to 29.9.[38] BMI was also used to assess if a relationship exists between BMI scores and body image scores as well as disordered eating scores.

The next section of the survey included the Female Athlete Screening Tool, or simply the FAST (see Appendix C). This survey consists of a 33-item questionnaire that was developed specifically for female athletes that take approximately 15-20 minutes to complete. This assessment tool was validated in a collegiate population with subjects from both Divisions I and Division III National Collegiate Athletic Association schools.[39] FAST is an effective screening tool for disordered eating habits and abnormal exercise behaviors so that the risk of developing an eating disorder can be assessed and appropriate interventions

can occur. When scoring the FAST, items are measured and coded based on a 4-point Likert scale. Individuals that score between 79 to 94 are identified as at risk for subclinical disordered eating and anything greater than 94 is indicative of being at risk for a clinical eating disorder.[39,40] Individuals with a score greater than 94 should consult a medical professional.[39,40]

The next section of the survey assessed for body image using the Body-Image Ideals Questionnaire (BIQ) developed based on extensive research that body image satisfaction depends on two factors: an individual believes that the physical characteristics they possess match their physical ideals and the weight/importance of having those ideals.[33,41] The BIQ includes 11 physical characteristics: height, skin complexion, hair texture and thickness, facial features, muscle tone and definition, body proportions, weight, chest (or breast) size, physical strength, physical coordination, and overall physical appearance (see Appendix B).[41] The assessment contains 11 questions divided into two sections: part A and part B. In part A, participants rate themselves according to how much they match the physical trait being mentioned. In part B, they rate how important it is for them that they have or can attain the physical trait/ideal being mentioned.[41] This is also done on a 4-point response scale. The scoring of the 22-item BIQ results in a range of the total BIQ scores, which is -3 (for congruency across all physical traits) to +9 (for discrepancies across all physical traits).[33,41] Thus, higher scores reflect a greater discrepancy between physical and ideal, indicating higher body image dissatisfaction.[33,41]

Lastly, the survey included open-ended questions (see Appendix A), which were used to obtain general background information on the study participants. The questions pertaining to nutrition education topics were used to see if participants would ask about nutrition education for weight-loss and to provide information for future interventions.

Data Analysis

Once the survey was completed, data was entered into the following software: Microsoft Excel Version 16.42 Redmond, WA, Microsoft Word Version 16.42 Redmond, WA, and Minitab Version 19.2020.1.0 State College, PA. Demographic tables were created using Microsoft Word. A cross-tabulation table was constructed to display disordered eating risk by class, diving participants into underclassmen (freshman & sophomores), and upperclassmen (juniors & seniors). A separate table was used to examine the prevalence rates of disordered eating based on BMI classification. A Fisher's exact test was used to determine whether or not there is a relationship between class and disordered eating risk. A Pearson correlation test was used to determine if there was a linear relationship between BMI and disordered eating risk and to determine if a linear relationship exists between BMI and body image score. A linear regression analysis was performed in order to assess for a linear relationship between body image and disordered eating.

Chapter 4: Results

Demographics

A total of twenty-three female collegiate dancers and cheerleaders ranging in age from 18 to 24 participated in the study. Only 21 of the 23 participants provided complete responses by answering the last questionnaire, which was the BIQ and provided self-reported height and weight. Self-reported height, weight, and BMI values along with standard deviations can be found in Table 1. Additionally, a majority of participants were classified as being in the normal BMI category: 15 out of 21 or 71% and 4 out of 21 or 19% were classified as overweight. Only those who were in the normal or overweight category screened for disordered eating and/or eating disorder risk.

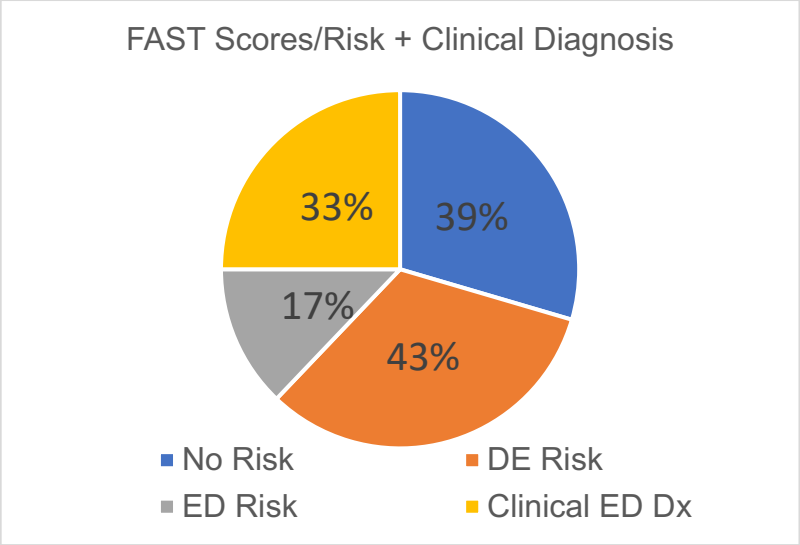
Table 1. Self-Reported Physical Measurements

	Total (n = 23)
Height (meters)	1.7 ± 0.1
Weight (kilograms)	64.1 ± 9.0
Body Mass Index (kg/m^2)	24.0 ± 3.6

Participants were grouped into disordered eating risk and clinical eating disorder risk based on the FAST scores. Additionally, a separate category was created in the chart representing the percentage of participants who have already been diagnosed with a clinical eating disorder (see Figure 1).

Out of 23 participants, a majority of participants (60%) were found to be at risk for disordered eating or eating disorders, with 33% of participants who reported that they have been previously diagnosed with a clinical eating disorder (see Figure 1). Of those participants, they were either diagnosed in high school or the previous year. A majority of participants (57%) were diagnosed during college.

Figure 1. Pie Chart of DE/ED Risk & Clinical Diagnosis.



Additionally, participants were asked what area of nutrition education they were interested in, with weight loss being one of the options. Thirteen respondents out of twenty-three (56.5%) answered that they were interested in learning about losing weight. In terms of body image, out of the 21 responses, individual body image scores ranged from 0 to 3.6. Participants were found to be at moderate risk for body image dissatisfaction with an average BIQ score of 2.1.

Relationships

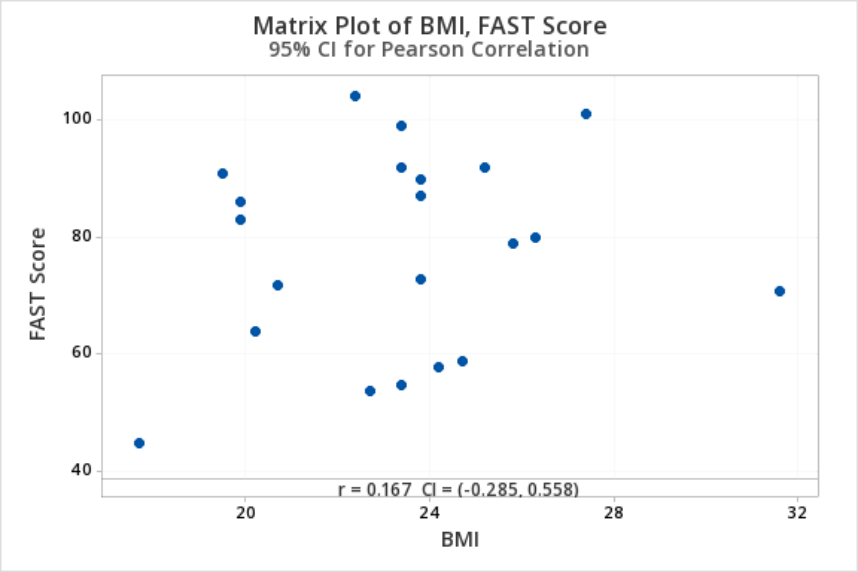
Fisher's exact test shown in Table 2 was used to determine whether or not there is a relationship between class and disordered eating and/or clinical eating disorder risk based on the FAST scores. Results indicate that no relationship exists between FAST score and class (p=1.0).

Table 2. Fisher's Exact Test for Class & FAST Score.

		Not at Risk	Risk	Total	P-Value
Under/Upper Classmen	Under	4	7	3	1.00
	Upper	10	16	6	1.00
Total		14	9	23	1.00

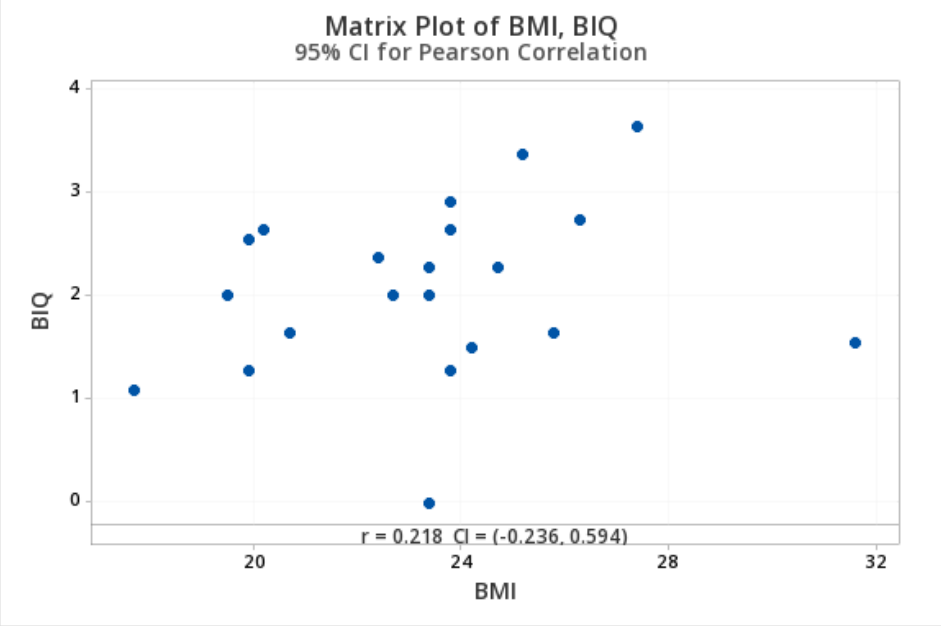
A Pearson correlation test was used to determine if a linear relationship exists between BMI and disordered eating or eating disorder risk based on the FAST score. Almost no linear relationship exists between BMI and disordered eating (r=0.167) (see Figure 2).

Figure 2. Pearson Correlation Test of BMI to FAST Score.



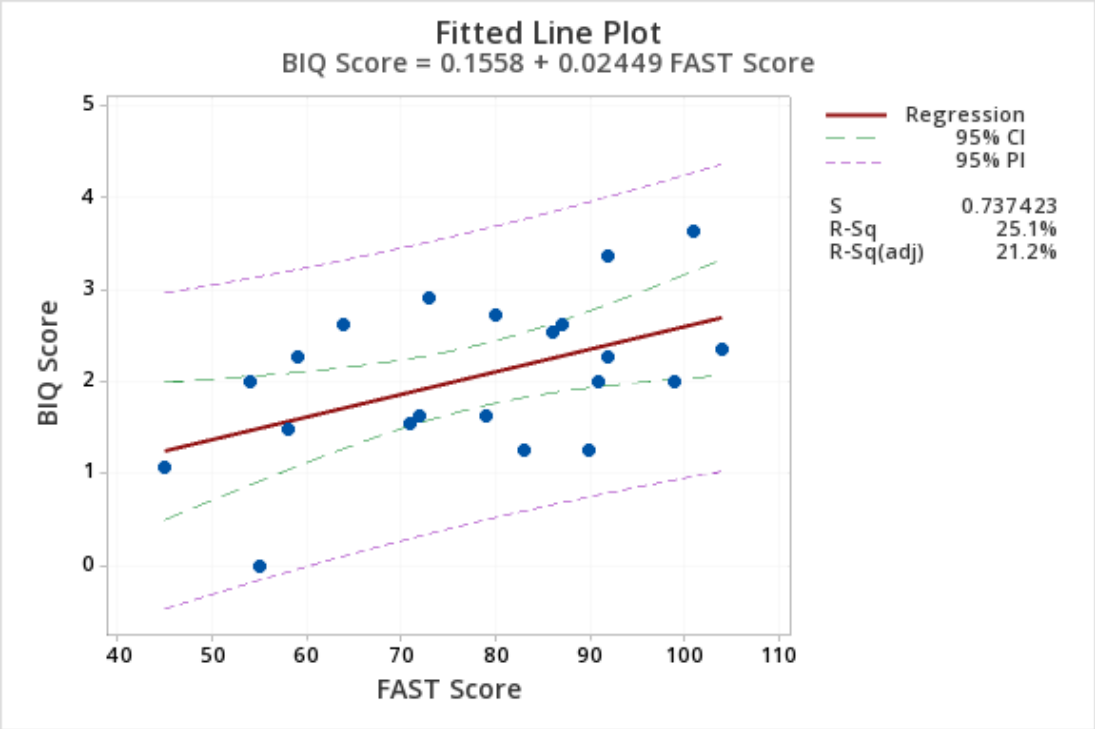
A Pearson correlation test was also used to determine if a linear relationship exists between BMI & Body Image (BIQ score). A slight positive linear correlation exists between BMI and body dissatisfaction or BIQ score (r=0.218) (see Figure 3).

Figure 3. Pearson Correlation Test for BMI to BIQ Score.



A linear regression model was constructed to determine if a linear relationship exists between body image (BIQ Score) and disordered eating and/or eating disorder risk (FAST Score). Body image dissatisfaction had a moderately positive linear relationship with disordered eating (r-value 0.5) (see Figure 4).

Figure 4. Linear Regression Model of BIQ to FAST.



Chapter 5: Discussion

This study sought to investigate a) the prevalence of disordered eating, eating disorders, and body image concerns in cheerleaders and dancers, and b) to investigate the relationship between disordered eating and body dissatisfaction. Previous research suggests that there would be a high level of disordered eating and body dissatisfaction. The results of our study indicate that disordered eating affected most athletes participating in the study with 60% of the athletes being placed at the subclinical disordered eating risk category and clinical eating disorder categories. Out of 60%, 43% were classified into the disordered eating risk category compared to 17% who were in the clinical eating disorder risk category, suggesting that this population engages more in disordered eating habits. Additionally, 33% of athletes were already clinically diagnosed with an eating disorder. These findings are significant due to the fact that a majority of participants screened for disordered eating or clinical eating risk, indicating that an intervention is needed in this population.

Furthermore, a majority of these participants (57%) were diagnosed during college, which could indicate that participation in sport may be related to eating disorder diagnosis. Also, a majority of participants (56.5%) answered that they wanted to know more about losing weight instead of other options such as weight maintenance, and/or weight gain. These findings help support that thin-ideal internalization is prevalent in women involved in aesthetic sports.

In terms of body image, the average score (M=2.1) indicates moderate body image dissatisfaction. A higher number on this scale (range is -3 to +9) is

indicative of a greater discrepancy between physical attributes and physical ideas, thus higher body dissatisfaction. While this score is not particularly low or high, it is still great enough to represent that body image is a concern for these participants and helps support previous findings of body image dissatisfaction among aesthetic sports.

In terms of the relationship between body image and disordered eating, there was a moderately positive (r=0.5) linear relationship among these variables, which is a statistically significant relationship. These findings are also of clinical significance because these results show that higher body image dissatisfaction scores result in higher disordered eating and/or eating disorder scores. Furthermore, after interpreting the linear regression line of this graph (BIQ Score = 0.1558 + 0.02499 FAST Score), this shows that the FAST score increases in relation to an increase in the BIQ score. For each additional point increase in the FAST score, the BIQ score increases by 0.02499.

In terms of demographics, the average BMI (M=23.6) was recorded for all participants. This BMI falls under the category of normal/average BMI indicating that most participants were of normal/healthy BMI, which is interesting considering the prevalence of disordered eating behaviors among participants. Findings regarding average BMI are of importance because it addresses the common misconception that one must be underweight in order to struggle from disordered eating and or eating disorders. Results also showed that only those in normal and overweight categories were at risk for disordered eating and eating disorders, meanwhile, participants from the underweight and obese category

were not. These findings again support the notion that BMI cannot be used as a predictor for disordered eating pathology. This can also be supported by the fact that there was almost no relationship among BMI and FAST score as well as BMI and body image score, indicating that BMI category has little effect on whether or not an individual has an eating disorder or has body image dissatisfaction.

Furthermore, there were no relationships between class and disordered eating risk. These findings suggest that there is not a particular age group or grade level that is more affected by eating disorders. Findings are unique since no prior research study has tested for potential relationships regarding age/class and disordered eating risk in a population of collegiate cheerleaders and dancers.

Strengths & Limitations

The strengths of this research include the use of validated surveys such as the FAST and the BIQ assessments. Additionally, the methods for data analysis conducted were appropriate in assessing relationships and reporting results from these relationships studied. Furthermore, the demographic questions helped study variables that were previously not studied such as age/class and risk of disordered eating among collegiate cheerleaders and dancers.

Limitations of this study include that the survey was distributed during the Coronavirus pandemic (COVID-19) as this survey was distributed and completed in the spring of 2020 when sports were canceled and student-athletes were no longer on campus. As a result, the study design had to become an online survey and can help explain the small sample size (N=23) and completion rate since 21

of 23 respondents completed all sections of the survey. Additionally, self-reported demographics were collected, which can lack reliability.

This survey could have also been strengthened by adjusting the way that the body image assessment was measured. The BIQ questionnaire has three questions that measure satisfaction with overall muscle tone, overall body proportion, and overall physical appearance. However, the rest of the questions focus on satisfaction with single body parts. Since some research studies have shown that body shape concerns and body image discrepancies are key in understanding overall body dissatisfaction, a survey that focuses more on these particular body constructs rather than individual body parts may be more helpful in assessing body image concerns.[42]

In addition, the FAST survey is not a diagnostic tool but a screening tool for disordered eating and eating disorder risk. Since some participants did not answer the question regarding previous diagnoses of an eating disorder, it cannot be concluded that all cheerleaders and/or dancers who were at risk of an eating disorder actually have an eating disorder. This reflects the screening properties of the FAST assessment tool and those at-risk individuals should seek a medical professional for clinical diagnosis and/or treatment.

Future Research

This study is unique in that it was the first study finding an association between body image dissatisfaction and disordered eating/eating disorder risk in a population of both collegiate dancers and cheerleaders, providing a foundation for future research. A majority of the previous literature focuses on addressing

risk factors, treatment efforts, prevalence rates, and body image in dancers and other aesthetic activities such as running, diving, and gymnastics. However, little research has been conducted that includes a population of cheerleaders and includes collegiate athletes instead of elite, recreational, and/or high school athletes.

This research also helps support that disordered eating and body image dissatisfaction are multi-factorial, requiring further investigation. As such, further research can look at the specific types of disordered eating behaviors and eating disorders that most commonly affect this population. For instance, the FAST assessment of this survey includes several questions that can be grouped into categories such as restrictive dieting, compulsive exercise, and thin-ideals. For dieting behaviors, questions such as “During training, I control my fat and calorie intake carefully” and “I do not eat foods that have more than 3 grams of fat” could be coded.[39] Measuring responses from this category may help show if these athletes are struggling more from restrictive dieting behaviors.

Another category could look at compulsive exercise assessed by the following questions in the FAST survey: “I participate in additional physical activity ≥ 20 minutes in length on days that I have practice or competition” and “During the season, I choose to exercise on my one day off from practice or competition” and so forth.[39] A separate category could focus specifically on the thin ideal utilizing questions such as “I think that being thin is associated with winning” or “I train intensely for my sport so I will not gain weight.”[39] Grouping

questions into categories could help identify which behavior(s) are the most problematic and can provide insight for treatment strategies.

Similarly, research can be directed to examine what specific eating disorders these athletes are suffering from. There are several eating disorders including classic anorexia nervosa, atypical anorexia, bulimia nervosa, binge eating disorder, and orthorexia. Understanding what clinical ED's these athletes most commonly struggle with can further help direct treatment strategies. Since there is a research gap among this population, further research could look at treatment strategies and specific factors that help promote or hinder recovery. Moreover, since body dissatisfaction is related to disordered eating, future research could examine treatment approaches involving body positive education.

Although the focus of this research was derived from the thin-ideal portrayed by the media and society, future research could look more into the athletic-ideal. Future research can help investigate the underlying mechanisms related to the development of athletic-ideal internalizations and how this leads to disordered eating behaviors. Research examining risk factors for the athletic-ideal would also be beneficial. Future studies could also examine other potential outcomes from the athletic ideal such as mental health consequences. Lastly, the research could investigate prevalence rates of the thin-ideal vs the athletic ideal in athletic populations and see if this occurs simultaneously.

Conclusion

Prevalence rates of disordered eating, eating disorders, and body image dissatisfaction remain a concern for cheerleaders and dancers. Of additional concern, is the proven relationship of body image dissatisfaction to disordered eating risk. With limited research regarding treatment strategies and risk factors within this specific population, it is difficult to make conclusive recommendations. However, this study can be used to direct further research towards interventions with a body positivity component in order to minimize DE/ED risk.

Appendix A: Qualtrics Survey

INFORMED CONSENT FORM

You are invited to take part in a research study whose purpose is to determine if there is a relationship between eating patterns and body image. This study is open to adults over the age of 18. Your decision to take part in this study is voluntary. You are free to choose whether or not you will take part in the study. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to answer an individual question, or you may skip any section of the survey. Simply click "Next" at the bottom of the survey page to move to the next question. Your participation will last about 15-20 minutes and you will be completing an anonymous online survey. This project is deemed as no more than minimal risk. The research team does not foresee or anticipate any risk greater than that encountered in your routine daily activities. While you may not receive any direct benefit for participating, we hope that this study will improve the current research gap regarding body image & eating patterns of cheerleaders & dancers. If you are interested in learning the results of the study, you may contact the researchers after December 15, 2020. Your cost to participate in the study is the time that you will dedicate to this activity. Researchers will make no attempt to link your survey responses to you. We may publish the results of this study, but will not include any information that would identify you. If you have questions about this research study, you may contact me via email at Sarah Al-Dandan, Graduate Student, Human Nutrition aldandans2@winthrop.edu or at 312 Dalton Hall, Winthrop University, Rock Hill, SC 29733 Telephone: 803/323-4022 You may also contact me through my faculty advisor Dr. Ashley Licata at licataa@winthrop.edu, 312 Dalton Hall, Winthrop University, Rock Hill, SC, 29733, Telephone: 803/323-4022. You may also contact: Grants and Sponsored Research Development Winthrop University Rock Hill, SC 29733Telephone: 803-323-2460 The Winthrop University Institutional Review Board has determined that this study is exempt from IRB oversight. By clicking on "Yes, I agree to participate," you agree that you have read this informed consent agreement, you understand what is involved, and you are consenting to participate in this research study. If you do not wish to participate, select "No, I do not wish to participate" to exit the survey.

- ○ Yes, I agree to participate (1)
- ○ No, I do not wish to participate (2)

Q1 Do you identify yourself as a cheerleader or dancer? Select one response.

- ○ Cheerleader (1)
- ○ Dancer (2)

Q2 What year are you in school?

- ○ Freshman (1)
- ○ Sophomore (2)
- ○ Junior (3)
- ○ Senior (4)
- ○ A graduate student (5)

Q3 What is your major?

_____

Q4 What is your career goal?

_____

Q5 How long have you been cheerleading? If you identify as a dancer, please answer with "N/A".

_____

Q6 How long have you been dancing? If you identify as a cheerleader, please answer with "N/A".

_____

Q7 What areas of nutrition education would you be interested in? Select all that apply.

- [ ] Grocery Shopping (1)
- [ ] Meal Prep (2)
- [ ] Eating on Campus (3)
- [ ] Weight Gain (4)
- [ ] Weight Loss (5)
- [ ] Weight Maintenance (6)
- [ ] Eating before practice/game/recital (7)
- [ ] Eating after practice/game/recital (8)
- [ ] Cooking Information (9)

Q8 Are there any OTHER areas of nutrition education that you would be interested in?

_____

Please answer the following questions to the best of your ability. For these questions, exercise refers to activity greater than or equal to 20 minutes, practice refers to scheduled time allotted by the coach to work as a team or individually in order to improve performance, and training refers to intense physical activity with the goal to improve fitness level to perform optimally.

Q1 I participate in additional physical activity ≥ 20 minutes in length on days that I have practice or competition.

- ○ Frequently (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Never (4)

Q2 If I cannot exercise, I find myself worrying that I will gain weight.

- ○ Frequently (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Never (4)

Q3 I believe that most female athletes have some form of disordered eating habits.

- ○ Strongly Agree (1)
- ○ Disagree (2)
- ○ Agree (3)
- ○ Strongly Disagree (4)

Q4 During training, I control my fat and calorie intake carefully.

- ○ Frequently (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Never (4)

Q5 I do not eat foods that have more than 3 grams of fat.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q6 My performance would improve if I lose weight.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q7 If I got on the scale tomorrow and gained 2 pounds, I would practice or exercise harder or longer than usual.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q8 I weigh myself _____.

- ○ Daily (1)
- ○ Weekly (2)
- ○ 2 or more times a week (3)
- ○ Monthly or less (4)

Q9 If I chose to exercise on the day of competition (game/meet), I exercise for _____.

- ○ Less than 30 minutes (1)
- ○ 30-45 minutes (2)
- ○ 45 minutes to 1 hour (3)
- ○ 2 or more hours (4)

Q10 If I know that I will be consuming alcoholic beverages, I will skip meals on that day or the following day.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q11 I feel guilty if I choose fried foods for a meal.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q12 If I were to be injured, I would still exercise even if I was instructed not to do so by my athletic trainer or physician.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q13 I take dietary or herbal supplements in order to increase my metabolism and/or to assist in burning fat.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q14 I am concerned about my percent body fat.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q15 Being an athlete, I am very conscious about consuming adequate calories and nutrients on a daily basis.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q16 I am worried that if I were to gain weight, my performance would decrease.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q17 I think that being thin is associated with winning.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q18 I train intensely for my sport so I will not gain weight.

- Frequently (1)
- Sometimes (2)
- Rarely (3)
- Never (4)

Q19 During season, I chose to exercise on my one day off from practice or competition.

- Frequently (1)
- Sometimes (2)
- Rarely (3)
- Never (4)

Q20 My friends tell me that I am thin but I feel fat.

- Frequently (1)
- Sometimes (2)
- Rarely (3)
- Never (4)

Q21 I feel uncomfortable eating around others.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q22 I limit the amount of carbohydrates that I eat.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q23 I try to lose weight to please others.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q24 If I were unable to compete in my sport, I would not feel good about myself.

- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q25 If I were injured and unable to exercise, I would restrict my calorie intake.

- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

Q26 In the past 2 years I have been unable to compete due to an injury.

- No significant injuries (1)
- 1-3 times (2)
- 4-6 times (3)
- 7 or more times (4)

Q27 During practice I have trouble concentrating due to feelings of guilt about what I have eaten that day.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Q28 I feel that I have a lot of good qualities.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q29 At times I feel that I am no good at all.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q30 I strive for perfection in all aspects of my life.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q31 I avoid eating meat in order to stay thin.

- ○ Strongly Agree (1)
- ○ Agree (2)
- ○ Disagree (3)
- ○ Strongly Disagree (4)

Q32 I am happy with my present weight.

- ○ Yes (1)
- ○ No (2)

Q33 I have done things to keep my weight down that I believe are unhealthy.

- ○ Frequently (1)
- ○ Sometimes (2)
- ○ Rarely (3)
- ○ Never (4)

Instructions. Please read carefully: Each item on this questionnaire deals with a different physical characteristic. For each characteristic, think about how you would describe yourself as you actually are. Then think about how you wish you were. The difference between the two reveals how close you come to your personal ideal. In some instances, your looks may closely match your ideal. In other instances, they may differ considerably. On Part A of each item, rate how much you resemble your personal physical ideal by selecting a number from 0 to 3. Your physical ideals may differ in their importance to you, regardless of how close you come to them. You may feel strongly that some ideals embody the way you want to look or to be. In other areas, your ideals may be less important to you. On Part B of each item, rate how important your ideal is to you by selecting a number on the 0 to 3 scale.

Q1A My ideal height is:

- ○ Exactly as I am (0)
- ○ Almost as I am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q1B How important to you is your ideal height?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q2A My ideal skin complexion is:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q2B How important to you is your ideal skin complexion?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q3A My ideal hair texture and thickness are:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q3B How important to you are your ideal hair texture and thickness?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q4A My ideal facial features (eyes, nose, ears, facial shape) are:

- ○ Exactly As I am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q4B How important to you are your ideal facial features?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q5A My ideal muscle tone and definition is:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q5B How important to you is your ideal muscle tone and definition?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q6A My ideal body proportions are:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q6B How important to you are your ideal body proportions?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q7A My ideal weight is:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q7B How important to you is your ideal weight?

- Not Important (0)
- Somewhat Important (1)
- Moderately Important (2)
- Very Important (3)

Q8A My ideal chest size is:

- Exactly As I Am (0)
- Almost As I Am (1)
- Fairly Unlike Me (2)
- Very Unlike Me (3)

Q8B How important to you is your ideal chest size?

- Not Important (0)
- Somewhat Important (1)
- Moderately Important (2)
- Very Important (3)

Q9A My ideal physical strength is:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q9B How important to you is your ideal physical strength?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q10A My ideal physical coordination is:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q10B How important to you is your ideal physical coordination?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q11A My ideal overall physical appearance is:

- ○ Exactly As I Am (0)
- ○ Almost As I Am (1)
- ○ Fairly Unlike Me (2)
- ○ Very Unlike Me (3)

Q11B How important to you is your overall physical appearance?

- ○ Not Important (0)
- ○ Somewhat Important (1)
- ○ Moderately Important (2)
- ○ Very Important (3)

Q1 What is your weight?

_____

Q2 What is your height?

_____

Q3 How old are you?

_____

Q4 Have you ever been diagnosed with an eating disorder?

- ○ Yes (1)
- ○ No (2)

Q5 If you answered yes, when were you diagnosed with an eating disorder?

_____

Appendix B: Body-Image Ideals Questionnaire

THE BIQ

Instructions. Please read carefully:

Each item on this questionnaire deals with a different physical characteristic. For each characteristic, think about how you would describe yourself as you actually are. Then think about how you wish you were. The difference between the two reveals how close you come to your personal ideal. In some instances, your looks may closely match your ideal. In other instances, they may differ considerably. On **Part A** of each item, rate **how much** you resemble your personal physical ideal by circling a number from 0 to 3.

Your physical ideals may differ in their importance to you, regardless of how close you come to them. You may feel strongly that some ideals embody the way you want to look or to be. In other areas, your ideals may be less important to you. On **Part B** of each item, rate **how important** your ideal is to you by circling a number on the 0 to 3 scale.

1. A. My ideal **height** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal height?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

2. A. My ideal **skin complexion** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal skin complexion?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

3. A. My ideal **hair texture and thickness** are:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you are your ideal hair texture and thickness?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

4. A. My ideal **facial features** (eyes, nose, ears, facial shape) are:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you are your ideal facial features?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

5. A. My ideal **muscle tone and definition** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal muscle tone and definition?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

6. A. My ideal **body proportions** are:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you are your ideal body proportions?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

7. A. My ideal **weight** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal weight?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

8. A. My ideal **chest size** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal chest size?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

9. A. My ideal **physical strength** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal physical strength?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

10. A. My ideal **physical coordination** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal physical coordination?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

11. A. My ideal **overall physical appearance** is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your overall physical appearance?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

(BIQ Thomas F. Cash, Ph.D.)

Appendix C: Female Athlete Screening Tool (FAST).

Please answer as completely as possibly:

Key[a]:
- Exercise = Physical activity ≥ 20 minutes
- Practice = Scheduled time allotted by coach to work as a team or individually in order to improve performance.
- Training = Intense physical activity. The goal is to improve fitness level in order to perform optimally.

1. I participate in additional physical activity ≥ 20 minutes in length on days that I have practice or competition.
1)Frequently 2)Sometimes 3)Rarely 4)Never

2. If I cannot exercise, I find myself worrying that I will gain weight.
1)Frequently 2)Sometimes 3)Rarely 4)Never

3. I believe that most female athletes have some form of disordered eating habits.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

4. During training, I control my fat and calorie intake carefully.
1)Frequently 2)Sometimes 3)Rarely 4)Never

5. I do not eat foods that have more than 3 grams of fat.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

6. My performance would improve if I lost weight.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

7. If I got on the scale tomorrow and gained 2 pounds, I would practice or exercise harder or longer than usual.
1)Frequently 2)Sometimes 3)Rarely 4)Never

8. I weigh myself_____.
1)Daily 2)2 or more times a week
3)Weekly 4)Monthly or less

9. If I chose to exercise on the day of competition (game/meet), I exercise for
1)2 or more hours 2)45 minutes to 1 hour
3)30 to 45 minutes 4)Less than 30 minutes

10. If I know that I will be consuming alcoholic beverages, I will skip meals on that day or the following day.
1)Frequently 2)Sometimes 3)Rarely 4)Never

11. I feel guilty if I choose fried foods for a meal.
1)Frequently 2)Sometimes 3)Rarely 4)Never

12. If I were to be injured, I would still exercise even if I was instructed not to do so by my athletic trainer or physician.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

13. I take dietary or herbal supplements in order to increase my metabolism and/or to assist in burning fat.
1)Frequently 2)Sometimes 3)Rarely 4)Never

14. I am concerned about my percent body fat.
1)Frequently 2)Sometimes 3)Rarely 4)Never

15. Being an athlete, I am very conscious about consuming adequate calories and nutrients on a daily basis.
1)Frequently 2)Sometimes 3)Rarely 4)Never

16. I am worried that if I were to gain weight, my performance would decrease.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

17. I think that being thin is associated with winning.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

18. I train intensely for my sport so I will not gain weight.
1)Frequently 2)Sometimes 3)Rarely 4)Never

19. During season, I choose to exercise on my one day off from practice or competition.
1)Frequently 2)Sometimes 3)Rarely 4)Never

20. My friends tell me that I am thin but I feel fat.
1)Frequently 2)Sometimes 3)Rarely 4)Never

21. I feel uncomfortable eating around others.
1)Frequently 2)Sometimes 3)Rarely 4)Never

22. I limit the amount of carbohydrates that I eat.
1)Frequently 2)Sometimes 3)Rarely 4)Never

23. I try to lose weight to please others.
1)Frequently 2)Sometimes 3)Rarely 4)Never

24. If I were unable to compete in my sport, I would not feel good about myself.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

25. If I were injured and unable to exercise, I would restrict my calorie intake.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

26. In the past 2 years I have been unable to compete due to an injury
1)7 or more times 2)4 to 6 times
3)1 to 3 times 4)No significant injuries

27. During practice I have trouble concentrating due to feelings of guilt about what I have eaten that day.
1)Frequently 2)Sometimes 3)Rarely 4)Never

28. I feel that I have a lot of good qualities.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

29. At times I feel that I am no good at all.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

30. I strive for perfection in all aspects of my life.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

31. I avoid eating meat in order to stay thin.
1)Strongly Agree 2)Agree 3)Disagree 4)Strongly Disagree

32. I am happy with my present weight.
1)Yes 2)No

33. I have done things to keep my weight down that I believe are unhealthy.
1)Frequently 2)Sometimes 3)Rarely 4)Never

FIG. Female Athlete Assessment Tool (FAST)[b]

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