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Gasior, Bobbi, L. *Family Dynamics, Social Contexts and the Impact on the Potential Development of Eating Disorders or the Female Athlete Triad*

**Abstract**

This study explores the potentially detrimental impact that family dynamics, sport participation, and social contexts such as body image, self-confidence, and bullying may have on the potential development of eating disorders or the female athlete triad in collegiate female athletes. Research for this paper focused on the prevalence and relation of multiple facets affecting 526 collegiate athletes between the ages of 18-23, including purging techniques and negative social contexts, that may potentially lead to the two most widely known and recognized eating disorders of Anorexia Nervosa (AN) and Bulimia Nervosa (BN) along with the potential for athletes to develop the Female Athlete Triad, which is a combination of Eating Disorders Not Otherwise Specified, amenorrhea, and osteoporosis.

Many believe that athletes develop eating disorders because of the sports that she participates in and that the competitive drive of the athlete in her sport pushes her to extremes. This study supports that the sport alone cannot be viewed as the sole culprit in the development of an eating disorder or the triad. Also, the social context of bullying proved to be a minimal factor for the athletes, with a staggering amount of them not even being able to successfully define bullying.

*Keywords:* anorexia nervosa, bulimia nervosa, female athlete triad, bullying

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## **Chapter I: Introduction**

The 1912 Olympics featured women's competition for the first time in diving and swimming, creating a spike in the number of competitive female athletes. The addition of women's professional tennis in 1960 saw another increase in competitors and in 1972 the creation and implementation of the Education Assistance Act opened a door for girls and women to showcase their athletic abilities. According to West (1998) the passing of the Education Assistance Act has led to over a 600% increase in participation for female athletes at the high school and collegiate levels (p. 63). Unfortunately, this increase in participation has also led to the rise of eating disorders and occurrences of the female athlete triad, both of which can be debilitating to the individual and to teams.

### **Statement of Problem**

“Sport provides a unique environment that places one's body in the spotlight. Female athletes, in particular may find that not only is their performance evaluated, but that their bodies are judged as well” (Greenleaf, 2007, p. 261). When female athletes begin their athletic careers in their chosen sports the focus of instruction is on skill development, learning the rules and laws of the sport, learning how to use and maintain the equipment associated with the sport (such as set up of the uneven bars in gymnastics, putting up and taking down the net for volleyball, etc.), and sportsmanship. Skills that are not developed in female athletes include those that help her cope with the physical, nutritional, and mental tolls that sports can have on her which may affect her view of her body image or lower self-confidence if she is not meeting her own expectations or those of others. It may also be due to the lack of training of coaches at all levels and the lack of knowledge of coaches at the collegiate level regarding eating disorders or the female athlete triad. “A survey of 2,800 coaches of female athletes, conducted by the National Collegiate Athletic Association, found that two-thirds of female coaches and 80 percent of male coaches did



not understand that that the disruption of regular menstrual cycles – called amenorrhea – is a sign of an eating disorder” (Strout, 2007, p. 3). Signs may be subtle in some athletes, but if the athlete, her family, teammates, and coaches are all truly fulfilling their roles of doing what is best for the athlete, then signs, no matter how subtle, should be overlooked.

### **Purpose of Study**

The purpose of this study is to determine the impact that sport participation may have on the potential development of an eating disorder or the female athlete triad in collegiate female athletes. Another purpose of this study is to determine impact that family dynamics may have on the athlete and whether or not the potential for developing an eating disorder or the triad. And the final purpose of this study is to identify the impact that social contexts, such as body image and bullying, may have on the athlete potentially developing an eating disorder or the female athlete triad.

### **Assumptions of the Study**

It is assumed that all athletes that participated in this study were multi-sport athletes through either school or club sports at the junior high or high school level. It is also assumed that all athletes that gave consent and agreed to participate in this study were honest when answering each question of the survey and not participating in sports for the first time at the collegiate level.

### **Definition of Terms**

**Anorexia Nervosa.** Anorexia nervosa is 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 is far below normal for their age and height (Mayo Clinic Online, 2012).

**Bulimia Nervosa.** A serious, potentially life-threatening eating disorder. People with bulimia may secretly binge — eating large amounts of food — and then purge, trying to get rid of the extra calories in an unhealthy way (Mayo Clinic Online, 2012).

**Bullying.** Bullying is intentional aggressive behavior. It can take the form of physical or verbal harassment and involves an imbalance of power (a group of children can gang up on a victim or someone who is physically bigger or more aggressive can intimidate someone else, for instance) (Lee, 2012).

**Female Athlete Triad.** An interrelated combination of disorders that can occur in girls and women who are physically active (Rust, 2002, p. 301).

### **Limitations of the Study**

The first limitation of this study is the population of participants. While honesty was requested and expected the discussion and admittance of personal information, such as this study delved into, can be hard for many individuals to disclose and share with others.

The next limitation of this study is the survey itself. This survey was developed specifically for this study and it was used for the first time. While the survey performed as expected, improvements and changes may be made prior to further use to drive deeper into the coach/athlete relationship, number of times a week an athlete purges, and ranking of the severity of the bullying she endured or committed. Also, with changes coming to the diagnostic criteria for eating disorders in May of 2013, questions will need to be altered to better reflect the new diagnostic criteria.

An area left out of this study, and deemed to be a limitation because of its exclusion, is the role that mass media plays in the lives of athletes. With technology being so readily available and in the hands of many of our young athletes telling her what she look like, what she

should wear and how she should act, for example, may have a large impact on how she views her ability to live up to social standards out of her control. Research needs to be done in this area as well to determine the role and impact, if any it truly has on athletes and the potential development of eating disorders or the triad.

### **Methodology**

Sport type and risk will be the first area reviewed in this study to discriminate the differences in major components of the sports and speculated risks that may accompany participation in certain sports. Detailed information on anorexia, bulimia, and the female athlete triad, risks, warning signs, and medical complications will follow. A review of research conducted through other studies will delineate the discovered, or lack of support, that family dynamics and social contexts, including body image, self-confidence/esteem, and bullying may have on the development of eating disorders or the triad in athletes. Methodology for identifying potential participants and the means in which they were contacted will precede the results of the study. Finally, conclusions that can be drawn, either those that potentially support or conflict with previous results from other studies, will be discussed and recommendations for further in-depth research will be suggested.

## **Chapter II: Literature Review**

“As the number of female college students participate in athletics has grown dramatically in the last few decades, sports medicine health care providers have become more aware of the unique health concerns of athletic women” (Reinking & Alexander, 2005, p. 47). Amongst these concerns are whether or not an athlete is meeting her nutritional requirements, is coping with an injury, and even her mental health and behavioral responses to stressors in her life. “This increased participation by women in collegiate sports has brought increased awareness of the unique physiological and behavioral responses of women to athletic activity” (Reinking et al., 2005, p. 47). The development of an eating disorder or the triad can be influenced by one or many factors, and the sport itself may have little or nothing to do with the prevalence of warning signs or a diagnosis. An understanding of risks from sports, family and the social environment, including bullying, is necessary to understand the impact that any factor can potentially have on the development of eating disorders or the female athlete triad.

### **Sport Types and Risk Factors**

Over the course of the past 30 to 40 years the participation rate of females in sports at all levels, from beginner to elite athlete, has increased significantly for multiple reasons and participation in sports carry positive benefits. According to Thein-Nissenbaum and Carr (2011), the participation in sports and physical activity in general assists in improving the athletes’ body-image and overall health. So, how is it that sports have been become factors and risks for female athletes in developing eating disorders and other health issues? That is where the understanding of the different sport types/categories and the risk factors that those sports may carry is key to understanding the potential development the female athlete triad or an eating disorder such as anorexia or bulimia. This study focuses on more than just aesthetic and lean sports; sport

categories used in this paper will be discussed to assist in understanding the risks that may accompany a given sport and understanding how those sports are deemed to be a high risk endeavor for the athlete.

Aesthetic sports are those where an athlete's body and her performance technique is a main focus area of attention and may also require the individual to wear attire that may be revealing or tight fitting. These sports often are judged sports as well. "Restricted eating among aesthetic sport athletes may in part be a response to a lack of control over performance outcome primarily controlled by judges" (Monsma & Malina, 2002, p. 449). Sports within this category include but are not limited to: gymnastics, figure skating, dance, ballet, diving, and cheerleading.

Appearance sports are those where aesthetics, such as performance judging, may not be a factor, but the uniforms may be tight and/or revealing allowing teammates, coaches, spectators and parents to unintentionally judge and make comments about the athlete's body type. Sports included in this category, but are not limited to: volleyball, track and field, cross country, skiing, water polo, and swimming.

Lean sports are those where a low body weight is desirable to enhance appearance, performance, speed, or endurance. "Lean sports emphasize low body fat and encourage the belief that low body fat will improve performance" (Greenleaf, 2007, p. 261). Sports included in this category include, but are not limited to: gymnastics, dance, figure skating, cross country, track and field, distance running, and cycling.

Judged or scored sports are those where the athlete is judged on her ability to perform a routine set by a specific set of requirements governed by the judging body of the event. "Judged sports involve the subjective evaluation of athletes by experts" (Greenleaf, 2007, p. 261). Sports

included in this category include but are not limited to: gymnastics, figure skating, dance, and aerobics.

Weight sports are those where an athlete must maintain a specific weight or make a specific weight to compete. These sports can be particularly difficult for an athlete because her weight may be restricted to a level that is not healthy for her to maintain for an extended period of time. The pressure to engage in purging to meet weight expectations may be higher for these athletes because if they do not “make weight” they will not be allowed to compete. According to Seebohar (2011), sports included in this category, but are not limited to: wrestling, rowing/crew, boxing, some martial arts, and horse racing.

Team and technical sports are the final category and include sports where the previously mentioned category characteristics are not focal points of the sport. Ball sports are team sports where focus is rarely on an individual, but the overall performance of the team. This does not mean that athletes are not lean, train for endurance or that their personal physiques are not judged by spectators. Technical sports are those where an athlete may be a part of a team, but where she performs as an individual, such as golf. Athletes in this category may range widely in height, weight and overall appearance; their common links are that they are on the same team and may be wearing the same uniform. According to Seebohar (2011) sports included in this category include, but are not limited to: basketball, soccer, football, hockey, volleyball, golf, bowling, softball, and baseball. Many rate team and technical sports as being the “safest” for athletes to participate in as the focus is on the success of the team and not the weight or the appearance of the athlete in her uniform.

It may have been noticed that some sports, such as gymnastics, figure skating, and dance appear in multiple categories such as aesthetic, lean, and judged sports. These sports are

typically viewed as being of a higher risk because of their nature which focuses on the physical appearance of the athlete in addition to performance and attire. “The environment and atmosphere of aesthetic, lean, and judged sports may contribute to increased body and weight concerns” (Greenleaf, 2007, p. 261). Another factor leading to the increased pressure of these is sports is that, while the individual may belong to a “team” such as gymnastics for example, she also performs as an individual that competes against her teammates, creating a diverse and dynamic set of external and internal variables. “Previous research has identified several sources of weight pressure in judged and aesthetic sports, including attire or team uniforms, judges, teammates, and coaches, as well as self-pressure” (Greenleaf, 2007, p. 261). With all of the factors in sports such as these it is understandable how an athlete can focus on everything except victory, putting her physical appearance and weight on her mental checklist of why she “fails”.

### **Eating Disorders vs. Disordered Eating**

“An estimated one million or more Americans suffer from some type of eating disorder. Eating disorders are more than a food problem and are linked to psychological problems” (Cormier, 2011, p. 232). The most common eating disorders are anorexia nervosa (this will be referred to as AN for the remainder of the study) or more commonly referred to simply as anorexia and bulimia nervosa (this will be referred to as BN for the remainder of the study), more commonly referred to simply as bulimia. It is also important to realize that an individual may not meet the diagnostic criteria for an eating diagnosis of either anorexia or bulimia, but still possess an unrealistic body image or continue to display negative eating or purging behaviors. Disordered eating consists of four classes: anorexia nervosa, bulimia nervosa, binge eating disorder and eating disorders not otherwise specified (EDNOS). The differences, signs, symptoms and complications of these disorders follow in the remainder of this chapter.

Anorexia is the most common, and the most dangerous eating disorder. “The life expectancy of a woman who has had anorexia since the age of 15 is predicted to be 25 years less than a person in the normal population” (Horowitz, 2009, p. 13). Life expectancy drops due to the multiple years of abuse and malnutrition that the body experiences and for many individuals because she is either never diagnosed or, even with treatment, is never truly cured of the disorder. Mortality rates of AN, when compared to other psychiatric disorders, are amongst the highest. “The most common causes of death among patients struggling with the disorder are the effects of starvation and suicide” (Walsh, 2005, p. 55). Starvation is a primary issue of AN, suicide may be attempted due to issues residing within the individuals’ co-morbidity if one exists.

Signs and symptoms of AN may not be easily recognized at first, and in some cases may not be seen at all. One sign that parents, teammates, and coaches need to be particularly weary of athletes who have the constant need to be on, or to try a new diet. “Dieting provides a sense of meaning and purpose – a distraction from pain, loneliness, and insecurity” (Medina, 2003, p. 38). Dieting can also provide a means of control for the athlete who feels as if she has no control in other areas of her life, i.e., family, sports, relationships. It is especially troublesome if the athlete develops a diet that is “special” just to her at a young age, mainly because she does not have the education required to develop an effective nutritional plan, let alone the training to properly implement the plan. Most individuals do not receive this training until college, if it is their chosen major or career path or an area of interest to the individual. Other signs and symptoms that may begin to show are physical and may occur long after the athlete first developed the disorder. “These problems are start with loss of hair and teeth and can move rapidly to discolored skin, chronically swollen glands, kidney dysfunction, liver trouble, heart



disturbances, hyper active behavior, and hypotension (low blood pressure)” (Sacker & Zimmer, 1987, p. 10). Amenorrhea, which is another sign of AN, will be discussed in greater length in this chapter in the section on the female athlete triad as it is a major component within the scope of the triad.

Often times the eating disorder is the co-morbidity to a more serious problem that left untreated may continue to fuel the drive to maintain the eating disorder, such as obsessive compulsive behavior. “Well over half of women with anorexia nervosa report a lifetime presence of an anxiety disorder – most commonly, overanxious disorder, obsessive compulsive disorder, or social phobia” (Evans, Foa, Gur, Hendin, O’Brien, Seligman, & Walsh, 2005, p. 309). Treating the co-morbidity may be part of the athlete’s plan of recovery in some cases because it is left untreated the co-morbidity may continue to impact the athlete’s behavior in negative ways that are detrimental to recovery.

“Bulimia nervosa is a multifaceted disorder with psychologic, physiologic, developmental and cultural components” (Medina, 2003, p. 11). Bulimia consists of two subtypes. Type 1 typically consists of binging on high caloric or fatty foods then purging either through vomiting, the misuse of laxatives, enemas, or diuretics. The second subtype consists of individuals that use non-purging techniques such as fasting or excessive exercise to eliminate unwanted weight.

Signs and symptoms of BN include fatigue, bloating, dental sensitivity to cold or hot food, abdominal pain, mouth sores, heartburn, and enlarged salivary glands giving the individual “chipmunk cheeks”. According to Sacker et al. (1987) this condition is caused because the salivary glands start to take on a more immediate role in the digestive process once the bulimic individual puts food in her mouth by attempting to predigest and absorb as many nutrients

possible before the source is purged. Additional signs of bulimia include damage and discoloration to the individuals' fingernails and possibly small cuts to the index and middle finger of the individuals' hand. This occurs due to the nails coming into contact with stomach acid through repeat purging and the individual cutting her fingers on her teeth. As more doctors are looking for this sign, and bulimics are becoming aware of it, more and more individuals are turning to inanimate objects, such as toothbrushes, combs, and even makeup applicators to induce vomiting. More serious medical complications are covered later in this chapter.

According to Medina (2003) many psychiatric co-morbidities also occur with BN and may include: mood disorders such as bipolar disorder or major depression, substance abuse issues such as alcohol abuse, anxiety disorders such as panic disorder, obsessive-compulsive disorder or post-traumatic stress disorder, or personality disorders such as antisocial personality disorder or narcissistic personality disorder. Knowing if any psychiatric condition co-exists with BN is extremely important to provide a successful course of treatment for these patients.

“Eating disorders are associated with serious medical complications and can be fatal” (Walsh, 2005, p. 52). Malnutrition is a major, adverse condition in both AN and BN. “Malnutrition can lead to life-threatening deterioration in the functioning of heart and cardiovascular system” (Walsh, 2005, p. 53). The heart is the most important muscle regardless of who you are, or what you do. If an athlete has been abusing and neglecting her body for years it does not matter how skinny she is, how well she looks in her uniform, or how well she played during the game, those things cannot repair the damage that she has done to her heart. Insufficient nutrition, caused by restriction or bingeing/purging can lead to an electrolyte imbalance. “A reduced level of potassium in the blood (hypokalemia) is the most common electrolyte disturbance found in patients who vomit, use laxatives, or take diuretics. If the

potassium level falls low enough, life-threatening disturbances of heart rhythm can result” (Walsh & Cameron, 2005, p. 55). Other complications include dehydration, which is common during a binge/purge episode, and in some cases the retention of water which is most common when the individual abruptly ceases a binge/purge episode.

Another complication, which is severe and can be deadly, is gastric rupture of the esophagus and is mostly associated with bulimia. “There is only so much stress and irritation that the esophagus can endure before it actually bursts apart, or ruptures” (Sacker et al., 1987, p. 36). There are few warning signs, if any, prior to this happening to an individual. Some people may experience a sore throat or severe heartburn, but it is important to note that neither of those issues alone may indicate that a rupture may occur.

An additional complication which may occur is hyponatremia, or low sodium levels. This may be caused after an individual has consumed mass quantities of water to gain that “full” feeling. “Individuals who drink excessive amounts of water, either to defray hunger or to falsely elevate body weight before a medical visit, risk low sodium levels (hyponatremia) as well as seizures, coma, and death caused by “water intoxication” (Walsh, 2005, p. 53). While these are not all of the complications and conditions that an individual may experience, they definitely outline the severity of the issues that one may experience if she is battling an eating disorder.

Disordered eating, as mentioned previously in this chapter, consists of four categories: anorexia nervosa, bulimia nervosa, binge eating disorder and eating disorders not otherwise specified (EDNOS). According to Pereira and Alvarenga (2007) disordered eating may be defined as a set of disturbing eating behaviors which may include purging, bingeing, caloric restriction and other negative behaviors that an individual may use to control or lose weight and these behaviors may occur on a less frequent basis or are less severe than that required to meet

the diagnostic criteria for a full diagnosis of AN or BN. While the behaviors may appear less frequently or to a lesser extent it is significant to note that they may also occur on a more regular basis and combined, the irregular eating patterns of disordered eating can be just as dangerous, if not more so, as being diagnosed with either AN or BN.

Disordered eating is a pattern of irregular eating, and in some cases purging. Irregular eating patterns do not necessarily equate to an eating disorder or disordered eating, but if observed on a more and more frequent basis there may be cause for concern and the individual may be slipping into the “I can stop this whenever I want to” trap. “Although nonnormative eating patterns may not be considered mental disorders, they may be important in terms of their impact on body weight and health” (Pereria et al., 2007, p. 142). Signs and symptoms of disordered eating may mimic those of AN and BN and may present at just as a high and drastic frequency. Also, depending on the severity and frequency of the behaviors, they may result in the same health complications as AN and BN.

### **The Female Athlete Triad**

Elite level athletes may feel more pressure to succeed and those that participate in sport categories previously mentioned where the focus is on lean body mass or those that wear attire or uniforms that are more revealing may feel as if they need to control their body weight more may be at a higher risk for developing the female athlete triad. “Female athletes at the elite level, those involved in appearance or endurance sports, and those with a low body weight are particularly susceptible to developing the triad” (Thompson, 2007, p. 129). The triad consists of three interrelated components: disordered eating, amenorrhea, and osteoporosis. Because disordered eating covers a larger spectrum of abnormal eating behaviors and patterns than eating disorders it is used a component of the triad. The spectrum allows for athletes, who many not

meet the diagnostic criteria for either AN or BN, to potentially receive a diagnosis of EDNOS or the triad and receive the help that she needs to overcome the issues she is facing on or off the court. Disordered eating and its pitfalls were discussed in the previous section and disordered eating may lead to the second component of the triad, amenorrhea.

The second component of the triad, amenorrhea, is the cessation of the menstrual cycle. “Menstrual dysfunction is more prevalent among female athletes than it is among non-athletes and is especially common among women who participate in sports where a thin build may improve performance” (Thompson, 2007, p. 129). There are two classifications for amenorrhea. An athlete may be amenorrheic if she has not started menstruating by the age of 16, which is primary amenorrhea, or if she has missed 3 to 6 consecutive menstrual cycles, which is secondary amenorrhea. However, according to West (1998) it is important to note that prevalence of amenorrhea can vary because of the variability of the definition. Different studies may use different time lengths, such as focusing only on those that have missed at least four consecutive cycles, which leaves out those individuals that may be at three months.

Hypothalamic amenorrhea, or exercise induced amenorrhea, is a result of hormonal imbalances caused not by low body weight or body fat alone according to some researchers, but by stressors and energy drain. “Energy drain is a combination of excessive psychological and physical training and inadequate caloric intake” (Rust, 2002, p. 302). That is why, once an athlete scales back training, or even takes some time off, menstrual cycles may resume and regulate themselves. “The amenorrheic athlete exhibits decreased levels of the gonadotropic hormones (FSH and LH) and the reproductive hormones (estrogen and progesterone)” (West, 1998, p. 66). However, even if the athlete resumes menstruating the damage may already be significant enough to affect bone density levels. Estrogen is essential in women because it is

needed for proper bone development and assists in prohibiting the loss of bone density which may lead to the third component of the female athlete triad, osteoporosis.

Osteoporosis is not an uncommon issue, many individuals hear about it on an almost daily basis because of the population that it affects. “Osteoporosis affects 25 million individuals in the US alone and causes 1.5 million fractures each year” (West, 1998, p. 66). According to Rust (2002) female athletes that have a lower bone-mineral density (BMD) and those that are amenorrheic are more likely to experience stress fractures than their male counterparts. Stress fractures can often lead to missed competition, or worse, the end of a season for an athlete creating unnecessary feelings of angst and failure. Sitting on the sidelines can also eliminate a method of weight control for an individual.

Calcium intake is a large part of meeting daily nutritional needs to support bone growth and overall health. To prematurely combat the affects that low BMD may have on skeletal development or the risk of developing a stress fracture an athlete may turn to calcium supplements to gain the daily allotment of her dietary need, without having to take in excess calories to do so. “Nutrition education is needed for these athletes to provide information on food choices from the milk, cheese, and yogurt group, which will keep calcium consumption at an adequate level and not promote weight gain they feel could hinder athletic performance” (Thompson, 2007, p. 134). For athletes that are amenorrheic their daily intake of calcium must be higher than the recommended allowance to prevent brittle bones and stress fractures. According to Thompson (2007) an amenorrheic athlete must take in at least 1,500 milligrams per day to maintain minimal bone health whereas an athlete experiencing normal menstrual periods must only achieve 1,000 milligrams per day.

When an individual neglects nutritional and overall health needs, one can also see how disordered eating plays a role along with amenorrhea in the development of premature osteoporosis. These three components can disrupt not only the athletic career of an athlete, but of her overall mental and physical well-being. Prevention programs that include nutritional education, stress management, and teaching that there is no “ideal weight” to compete is paramount. “An effective prevention program should involve the athlete, the coaches, and the athlete’s parents” (Rust, 2002, p. 302). Female athletes in particular need to learn to eat prior to, during and after training, not to train or follow a cycle that she forces herself through in order to eat. Also, she needs to learn that there is no ideal weight for the sport, just an ideal weight for her where she is able to reach her optimal level of performance and maintain said performance in a health conscious manner.

### **The Role of Family Support in Sports and Health: Dynamic or Detrimental**

While athletes can come in all shapes and sizes, so can families. With higher divorce rates and the number of single parents in the United States, family types have changed dramatically over the past 30 years. However, there is still debate over the roles that families may have in the development of eating disorders, if they play any role at all. According to Walsh and Cameron (2005), while there is often dysfunction in the child’s life due to family circumstances, it is hard to determine if those issues are contributing to the development of the eating disorder or if the child is experiencing the manifestation of distress that should be credited to another factor in that child’s life.

Families range in all types with two parent homes being thought of as the most stable home to raise a child. Because there appears to be a cultural swing away from this family model type and fewer parents of children are getting married or staying together this may be an area of

concern as the separation and lack of stability of the family may lead to issues and insecurities in the child. According to the United States Census Bureau's 2010 report by Timothy Grall (2011) 13.7 million parents had custody of 22 million children under the age of 21 and 28.3 percent of those parents had incomes that were lower than the poverty level. Many studies that have been conducted typically review the standard two-parent home with very few finding any significance in families that were blended (i.e., presence of a step-parent) or those where a parent leaves the family. However, in research conducted by Le Grange, Lock, Loeb and Nicholls (2010), it was found that in the year prior to the development or onset of BN in some patients that her family had undergone a change in family structure and the rate of onset was significantly higher than those subjects who did not experience a change in family structure. However, there is no support to state that the change in family structure was the sole contributor as other issues such as high parent expectations and infrequent communication with the parents was occurring. Combined the issues may have played a role, but individually none were significant enough to be the sole contributor to the development of the eating disorder.

Economics is an area that has been uncertain for many families over the course of the past ten years in the United States. Home foreclosures have been at an all-time high as has unemployment. Many things have changed over the years and many families cannot afford to, nor necessarily desire to have only one parent working that holds employment to support the family while the other raises the children and maintains the home. "In most households nowadays, both parents work, often for very long hours, in order to support their family" (Walsh et. al., 2005, p. 107). And on the flip side of the coin there are single parents working long hours trying to make ends meet to support his or her family which may add pressure on children in the family if they are also required to maintain employment. Regardless of family structure, parents



of all types are now dominated by the need to financially support their children, which leaves less time for emotional and physical support which many adolescent girls may cling to in the early teen years and beyond in some cases. While there have been some studies that have taken the socioeconomic status of families into consideration, few of them seem to present firm agreement on the impact that the socioeconomic status of the family has on the child. In a study conducted by Mustafa, Alaatin, Unal, Gul, Didem, and Filiz (2009), subjects with families that belonged to the upper class had a higher prevalence of confirmed cases of eating disorders than those in the middle class and the middle class had more confirmed cases than the lower class. A study conducted by Chen and Jackson (2008), supported the findings by Mustafa et al., however, a study conducted by Hay (1998) found no significant differences in the socioeconomic status of subjects. It should also be noted that all three of these studies were conducted in foreign countries, Turkey, China and Australian respectively.

The relationship between the adolescent and the parent can be a very good one, while at the same time be a very stressful and volatile relationship. Adolescence can be just as difficult for parents because sometimes they may want the child to cling when she wants to pull away or they want her to fledge out on her own when she wants to hold onto that bond. Either scenario can cause a rift in the ability of either party to communicate effectively with each other. For the youth that wants freedom, but is balking at the opportunity Sandbek (1993) explains,

As a girl reaches adolescence, her attempts to define her identity and independence apart from her family cause her to feel guilty and ungrateful. This internal struggle between independence and dependence violates her internal image of herself as a “good girl”. (p. 33).

Because girls tend to internalize their thoughts and feelings to avoid making others feel bad, this causes emotional pain and confusion that may lead to larger issues. It may make her feel as if she is losing control of her environment and that there is a weakening of relationships with her parental figures when that is certainly not the case.

Another factor in that is occasionally studied is the education level of the parents in those that have been diagnosed with an eating disorder. In a study that took parental education into account, Mustafa et al. (2009) states that communication is an area that can be affected by the education level of parents and those that have obtained a higher level of education are expected to have better relationships and communication with their children. This may be an unrealistic assumption as many parents with higher education maintain employment and as mentioned prior, may not be around as often because they are working to financially support the family.

Many parents and family members may question how their daughter or sister developed an eating disorder because they were unfamiliar with the warning signs and behaviors that can precede the diagnosis of an eating disorder. Sacker and Zimmer (1987) state, "It happens because the disorder helps that individual person achieve a goal" (p. 14). The goal may be to be skinnier, more attractive, faster, or simply to feel as if she has control over some aspect of her life, such as adolescence which brings on numerous changes, both physically and emotionally, that she cannot control. Behavior of the adolescent may be affected by factors outside of the family also, such as those of the social nature or athletic performance nature, and those may have a larger impact on the potential development of an eating disorder than issues that reside within the family. According to Walsh et al. (2005) not only are there unique challenges for parents to face as their teenager is diagnosed and fighting to overcome her eating disorder, there are other adults in her life that play an active role and can help in the battle, such as a teacher or an athletic

coach. These individuals can also assist in identifying adverse behaviors that may help in spotting the warning signs of eating disorders and they can also help in treatment stage of supporting the family if the situation progresses to a full blown eating disorder.

### **The Social Game: Body Image, Self Confidence and Bullying**

The importance of having and knowing what a healthy body image is comprised of, the importance of having healthy self-esteem, and the ability to cope with bullying are becoming paramount in the social networks of our youth, high school, and collegiate athletes. Social experiences can have a profound impact on the ability of an athlete to successfully critique her own body, performance, and her ability to safely navigate the social jungle that is filled with unrealistic cultural images of what a body should look like, how one should act, and the implication of peer interaction in all of these areas. New and old culture norms place a significant importance on being thin at any price, usually at however much the newest diet fad or the latest and greatest way to detox to lose ridiculous amounts of weight in only a week costs. According to Michael Levine (2009) our culture has become obsessed with the image of “fat” equating to bad, ugly, and irresponsible whereas “thin” equates to good, beautiful, and in control. Because youth, high school, and collegiate athletes are exposed to more sensationalization of body image due to mass media and peer critiques, while receiving less support on how to determine what is real and what is fake, they may start to develop unrealistic ideas of ideal weight and may start to gravitate towards lower self-esteem.

Young girls and boys start learning to hate body fat very early in life. Even before the onset of adolescence, they already learn the message of “desirable slim bodies” from various sources; the home, the school, the mass media, and their peers. (Medina, 2003, p. 32).

These unrealistic expectations and lack of knowledge of how to navigate cultural depictions of the “perfect 10” can quickly damage an athlete’s personal vision of her body image and her self-confidence, which can often have effects on each other. Also, in a culture where others are quick to judge and often times in hostile manners repeatedly overtime, individuals now need to be able to cope with the stressors that can be brought on by bullying. These unnecessary stressors can make an athlete feel as if she is losing control and can drive her to the wrong methods to regain that control.

The body image portrayed by an individual can mean the difference between victory or defeat for the athlete in specific cases and can unfortunately equate to that athlete basing her performance solely off of appearance. Gymnasts, for example, are actively critiqued by the leanness, thinness and proportion of their bodies. Athletes in aesthetic and weight sports are at a greater risk for developing distorted body images when it comes to weight by believing that thinness will give them a competitive edge. “The advantage in athletic performance of maintaining a healthy minimal level of body fat and the strong negative connotation of over fatness in our society combine to create strong pressures for thinness” (Rust, 2002, p. 301). Sports such as gymnastics, figure skating, and ballet contain components that judge the physical appearance of the athlete and most often those judgments are based off of the cultural identification of ideal weight and not on the actual medical model of ideal weight. Many individuals lack the knowledge and ability to correctly distinguish the differences in cultural ideal weight and medical ideal weight. In Hesse-Biber’s study (1996) she conducted a survey that asked college women to pick which body type they would prefer to be, the cultural model of ideal weight or the medical model of ideal weight, 77% of the women chose the cultural model whereas only 23% preferred the medical model. Cultural depictions of “ideal weight” have

altered the perception of individuals to relate to the body images that are deemed desirable and popular instead of directing athletes to healthy nutrition and weight management techniques to discover her individual ideal weight that will lead her to a healthy lifestyle and optimal performance.

Self-confidence is a characteristic that some individuals seem to come naturally, being able to find positives in athletic experiences and being able to effectively reflect on their individual successes or that of their teams. “Success experiences in adolescence are, of course, crucial in developing a sense of confidence and self-esteem” (Medina, 2003, p. 34). Others, however, struggle in this area and only focus on the negatives, or those attributes that prevent them from experiencing positive self-esteem or success. Self-esteem development starts much earlier than adolescence, however, and the impressions formed by youth in sports can be a determining factor in whether or not sport participation is a positive factor in the youths’ life. “Children begin to form impressions about their own self-worth based on the types of experiences they have and the nature of the feedback that get about their performance” (Tzetis, Votsis, & Kourtessis, 2008, p. 371). Effective critiquing by coaching staff of the performance of an athlete should always fall on improving the skill in question and not on the athlete as a whole. Tzetis et al (2008) suggest that self-confidence may increase in athletes as positive feedback is provided on correct execution of a skill being taught and that criticism of errors in execution and the manner in which they are corrected may cause a decrease in the level of self confidence in the athlete. Coaches need to be mindful of their approaches of skill instruction, feedback, and athlete reaction if they intend on maintaining a high level of self-confidence within their athletes.

Another area that supports the development and maintenance of positive self-esteem is our ability to successfully socially interact with others. “One other important aspect of

adolescence that must be mastered is the ability to form new and more mature relationships with one's own age group" (Medina, 2003, p. 36). For athletes this may mean meeting new teammates as one makes the transition between youth and middle school sports to high school athletics and once again as she transitions to the collegiate level. These transitions can cause feelings of anxiety and inadequacy as she compares herself to her new peers and strives to fit in socially. "Overweight girls show some of the psychological features associated with the development of eating disorders, including a link between concerns and self-esteem based on physical appearance" (Tozun et al., 2009, p. 9). In the individuals' desires to build new relationships and succeed socially, she may begin to experiment and consume alcohol along with smoking her first cigarette. While some studies suggest that both alcohol consumption and smoking may be risk factors in the development of eating disorders along with the transition into adolescence and young adulthood research conducted by Tozun et al. (2009) found no significant link in frequency of eating disorders between the three factors. However, this is an area of interest and more research needs to be conducted in this area to truly determine the impacts, socially and culturally, that may exist for different demographics.

The final area of the social game that remains to be explored is bullying. Bullying is the repetitious occurrence of malicious actions or attacks by one or more persons, either physical or psychological, against another individual who is unable to defend him or herself. For many teens and young adults this is an area of fear, depression, loneliness, humiliation, and they will never see victory in this arena. Some individuals seem to glide through adolescence and the teen years in something akin to *Ferris Bueller's Day Off* where popularity is painted on the water tower in a sub-burb of a large metropolitan area, while others picture their time spent in this individual purgatory akin to something that resembles William Golding's *The Lord of the Flies*

where the lead bully has it out to dominate the weak on the lone island that has become adolescence and young adulthood.

Dominance, often referred to as power relations, is likely to be limited to verbal assaults, including unflattering comments, put-downs, interruption of speech, and failure to acknowledge another's speech. Essentially, establishment of dominance is typically achieved through bullying. (Kolbert, Crothers, & Field, 2006, p. 82).

Sweeney (2005) points out that women are more likely to use social manipulation, which includes negative looks/glances and back-biting to the aforementioned list, more often than men. Dominance is typically viewed as a male oriented trait, but the harsh reality is that females are driven to dominate, be it through attractiveness, intelligence, or even athletics. "Bullying, commonly thought to be a problem for boys, is just as prevalent among girls" (Brinson, 2005, p. 169). Social acceptance, as previously noted, is extremely important to females to achieve within their own social circles, where a hierarchy is often established, and beyond her circle as her perceived popularity may grow. "Dominance hierarchies are considered to be evolutionarily advantageous, since they provide social stability" (Kolbert et al., 2006, p. 83). Therefore, bullying may be perceived as another means of gaining control for females in addition to controlling their diets and weight.

Dominance, however, is not always procured through verbal means. While bullying may start out on verbal terms used to attack a person psychologically, it can quickly escalate to physical violence. Edmondson and Zeman (2009) found that power, both psychologically and physically, was one of the major factors that kept female bullies engaged in the bully and bully-victim relationship. For many bullies losing that sense of power, that sense of control, results in feelings of anger, low self-esteem, and in some instances, depression, all factors or potential co-

morbidities of eating disorders. Edmondson et al. (2009) also note that the peak of the bully-victim behaviors demonstrated by females is at the middle school age range. That is also the age range for manifestation of eating disorders in many females, especially athletes, whom may be diagnosed shortly after the manifestation occurs, but for many others, not until they reach the collegiate level of competition.

Bullying is area that is widely researched in the academic arena, but is found to be lacking in the athletic world. While there is a great deal of conversation about the possible sources and reasons behind girls bullying other girls in sports, there are few studies that have actually focused on rates, reasons, or sources of bullying on athletic teams. One such study was conducted by Volk and Lagzdins (2009) that researched the prevalence of bullying experienced by 69 adolescent girls ages 12-15 and found that bullying was a more common occurrence at school, about two to three times higher of an occurrence, than it was during the sports that the girls participated in at after school clubs. People tend to think that bullying is non-existent on sports teams due to the camaraderie that is typically on display amongst teammates during competition and that is an unfortunate misconception because spectators are not able to see what happens in locker rooms, at school, or even on technological mediums such as texting and instant messaging, which have become a very large playground for female bullies. Unfortunately, with so few studies focusing specifically on female athletes and bullying, there are few available for review.

Sport participation, family dynamics, and social contexts can play a large role in an athletes' life and the repercussions can be devastating for some athletes. Many of the repercussions manifest during the adolescent years, which can be a very difficult time for many athletes. "The teen years can be difficult for both boys and girls. Looks are extremely important



for most teens, which focus mainly on body image. Often teens have unrealistic notions about the way their bodies should look” (Cormier, 2011, p. 232). Females in particular start to focus on remaining thin and maintaining what culture dictates to be an ideal weight. The issue with “ideal weight” is that it is different for everyone, but the complexities of what ideal weight consists of are rarely taught to young athletes, boys or girls. Often times, people may mistake sports as the sole culprit in the development of an eating disorder or the triad and fail to review the athletes’ family life or her social involvements outside of sports.

In conclusion, there are many factors that can have an impact on an athlete and whether or not she is at risk of developing an eating disorder or the female athlete triad. Family dynamics, including education level and employment of parents may be a factor for some athletes. In other cases it maybe stressors caused by social contexts, such as poor body image or bullying, that maybe impacting how an athlete responds to regain control. Regardless, no signs should be ignored and family, teammates, friends, and coaches need to be aware of the signs and symptoms of eating disorders or the female athlete triad to ensure that the athlete is receiving the support that she needs to lead a healthy lifestyle in and out of competition.

### **Chapter III: Methodology**

While sports participation is on the rise for females, so are the prevalence of eating disorders and the female athlete triad. Discovering and uncovering factors that may lead to these issues in athletes is imperative in building a better athletic community that focuses on nutritional support and education for athletes along with maintaining an emotionally and physically safe atmosphere for participants at all athletic levels and abilities. This section will review the means for identifying eligible participants for this study, the development and disbursement of the survey to participants, data collection procedures and analysis through the Qualtrics Survey tool, limitations of the data collected and the survey.

#### **Subject Selection and Description**

Athletes from three NCAA Division I and eight NCAA Division III colleges and universities in the states of Wisconsin and Minnesota competing in at least one varsity level sport were sought out to participate in this study. Athletes came from multiple demographic backgrounds with Caucasians having the highest participation rate at 96%. The 526 participants of this study ranged between the ages of 18-23 and covered all ranges of athletic ability available for selection in this study: low, average, high, and elite.

#### **Instrumentation**

The survey used in data collection for this research was created solely to meet the needs of this study and was developed using the on-line survey tool Qualtrics. Areas researched included demographic background including sports participated in, family dynamics, social contexts, and mental and physical health. Once an athlete started the survey she was given seven days to complete the questions and submit her answers. Once the seven days passed, if the survey was not completed the Qualtrics system closed access to the survey and added the results

to the statistics collected. These surveys were manually removed from the collection process by the researcher to eliminate the possibility of participants' affecting data by only completing a few questions and submitting their answers, thus submitting incomplete surveys. The links emailed to participants were also only allowed to be used once to prevent participants from completing the survey multiple times, once she completed and submitted her answers the link became inaccessible. Request for participation was emailed to athletes only once and no reminders were sent to solicit responses. It was decided that if athletes truly wanted to be a part of this study that one request would be sufficient to identify athletes that wanted to help and be a part of something meant to help improve the athletic community as a whole. Also, because the timing of the requests for participation were sent during April and near the end of the academic semester it was not the intent of the researcher to interrupt the preparation of athletes meeting their needs for their finals and graduation requirements.

### **Data Collection Procedures**

A 38 question survey was emailed out to 2,091 collegiate athletes participating at the varsity level in eleven universities and colleges in the Midwest region of the United States. Of the 2,091 requests for participation sent out, 545 were submitted through Qualtrics by athletes and of those 545 submissions 526 surveys were deemed complete. Participants were first required to read and give consent to participating to an on-line survey that was approved by the UW-Stout IRB committee by selecting "I give consent" after reading the description of the study, their rights as participants, and what the study meant to research. Once participants gave consent they were allowed to proceed to the 38 question survey.

**Data analysis.** 545 athletes out of 2,091 submitted surveys that were emailed to them with 526 of those surveys being deemed complete and eligible for analysis. The Qualtrics survey

tool allowed the data to be cross tabulated and provided statistics to show the percentage of participants that met certain criteria being investigated and the degrees of freedom in the data collected.

### **Limitations**

A procedural limitation in the selection of participants of this study was the lack of participation by coaching staffs. It is believed that had more coaches been available and willing to support participation of this study that more athletes would have been willing to participate. The participation of coaches may have given some of the athletes the confidence and security that they may have required to participate.

The survey itself may be viewed as a limitation to this study due to the fact that it is newly developed and was used for the first time during this study. Athletes that participated could have potentially not understood a question and even though they were given contact information to reach the researcher, she may have felt embarrassed to ask a question. The flow of questions and the order in which they were presented to the participants may have seemed confusing because the sections of the survey (i.e., family dynamics, social context, etc.) were not identified on the study and no explanations as to what the questions were meant to provide was given to the participants.

## **Chapter IV: Results**

The purpose of this study was to identify factors that may contribute to the potential development of an eating disorder or the Female Athlete Triad in collegiate athletes. Athletes were asked 38 questions regarding what sports she participated in, her family dynamics, personal health, and social contexts including body image. This chapter will discuss answers received for each question within their respective category along with significant data determined through cross tabulation of results within each category.

### **Consent to Participate and Demographic Information**

All participants were asked to supply demographic information used only for categorization purposes. Questions included in this section (questions 1 through 4) on the survey pertained consent to participate, age, race/ethnicity, and highest grade level obtained respectively. All participants (N=526) that completed the survey gave consent to participate (question 1).

The second question posed to participants asked for them to identify their age. Of the full participant population (N=526) 10% (n=54) of athletes were 18 years old, 27% (n=144) were 19 years old, 26% (n=137) were 20 years old, 20% (n=107) were 21 years old, 13% (n=68) were 22 years old, and 3% (n=16) were 23 years old.

Question 3 of the survey asked participants to identify their race or ethnicity. The largest population of participants were Caucasian (n=506, 96%), followed by African Americans (n=6, 1%), Hispanics (n=3, 1%), Asians (n=3, 1%), Other Race (n=3, 1%) Native Hawaiian or Pacific Islander (n=2, >1%), and 2 athletes (>1%) who chose not to reveal their race.

The final question of this section, question 4, asked athletes to reveal the current grade level that she was at in her education. College freshmen (n=156, 30%) and sophomores (n=137,

26%) had a significant rate of participation when compared to other education levels. They were followed in order by college juniors (n=118, 22%), seniors (n=88, 17%), and fifth year seniors (n=18, 3%). Only five athletes (1%) had already obtained a bachelor's degree and four athletes (1%) chose not to share their educational level.

### **Sport Participation and Type**

Sport type was determined from question 5 on the survey which asked all participants to identify which sports they played in either junior high school or high school. To determine sport type risk for athletes in this study data was broken down into four major sport types of aesthetic/judged, lean, weight, and team/technical sports, along with 3 classes for athletes that participated in sports that fell into two, three, or all four classes. Appearance was eliminated as a factor as each of the four main categories contained an appearance sport which would automatically qualify all athletes in this study for two classes. Also, each sport that was given as an option for selection in the survey was only counted in one category and was included in the main category that most people typically identify as a qualify factor of the sport to be in that category. Findings from the data collected support the theories that the individual sport has little impact as a determining factor in the potential development of an eating disorder.

Table 1

*Athlete Participation Per Sport Type and Class*

<b>Sport or Class</b>	<b>Number of Participants</b>	<b>Percentage</b>
Aesthetic/Judged Only	19	4%
Lean Only	62	12%
Weight Only	13	2%
Team/Technical Only	126	24%
2 Class Athlete	218	41%
3 Class Athlete	84	16%
4 Class Athlete	4	1%

Table 1. Two-class athletes were the most common followed by those that participated in team or technical sports only. Only four athletes competed in at least one sport each in all four categories, aesthetic/judged, lean, weight, and team/technical sports.

### **Family Dynamics**

Questions regarding family dynamics were asked in questions six through 14 on the survey. The first question of this section (question 6) asked specifically for the dynamics of the family core (i.e., two parent home, blended, etc.).

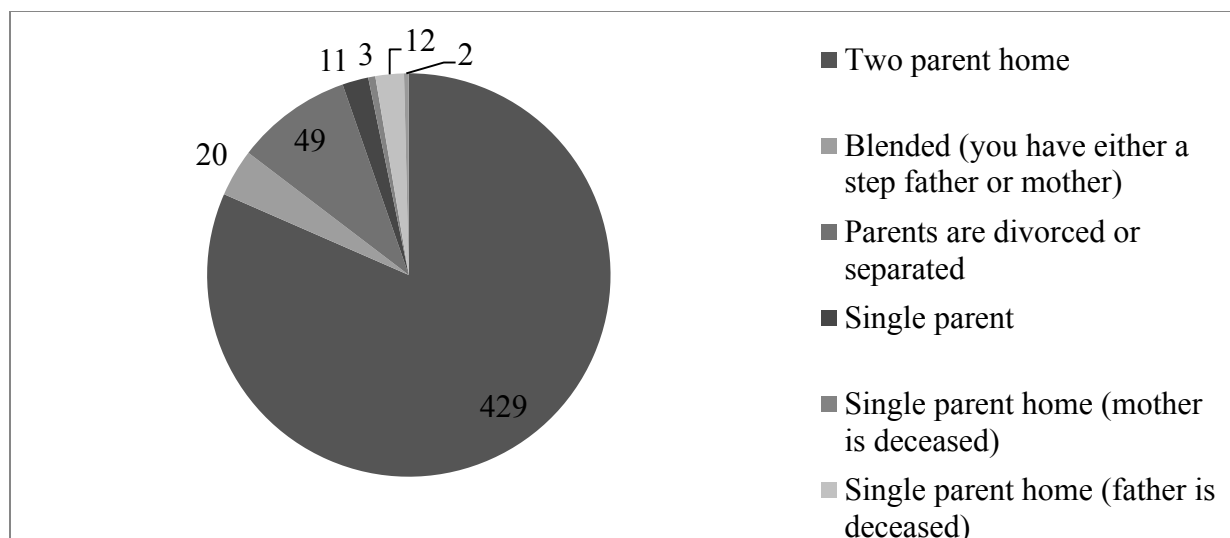


Figure 1. Family type

Figure 1. A two parent home was found to be most common amongst the participating athletes. Only two athletes chose they prefer not to answer option on the question and at less than one percent of the overall population it is not significant enough to be detrimental to the results of this question.

Table 2

*Number of Siblings*

Sibling Category	Number of Siblings	Percentage
Only Child	20	4%
1 Sibling	192	37%
2 Siblings	173	33%
3 Siblings	88	17%
4 Siblings	27	5%
5 Siblings	13	2%
6 or More Siblings	11	2%



Table 2. Question 7 asked athletes how many siblings were present in the home. Athletes reported that one sibling was most common (n=192, 37%) followed closely by two siblings (n=173, 33%). Only two athletes chose not the prefer not to answer option for this question for less than one percent of the population and it is not deemed detrimental to the information provided by this question regarding sibships. This question was significant as athletes from larger families (as discussed later in this chapter) were less likely to use purging techniques as a weight control method.

Only athletes with siblings (n=506) were required to answer question 8 regarding their birth order. Of this population 39% of athletes (n=197) are the youngest in their families with 33% of athletes (n=167) reporting to be the eldest of the family. Middle children completed the category with 28% (n=141) of the population. Only one athlete chose the prefer not to answer option for this question for less than one percent of the overall population and it is not determined to have adverse effects on the results of this question.

Table 3

*Education Level of Mother*

<b>Education Level</b>	<b>Population Total</b>	<b>Percentage of Population</b>
High School Diploma or GED	86	16%
Some College	64	12%
Associate's Degree	70	13%
Bachelor's Degree	189	36%
Graduate Degree	87	17%
Professional or Doctorate Degree	19	4%
Do Not Know or Prefer Not to Answer	11	2%

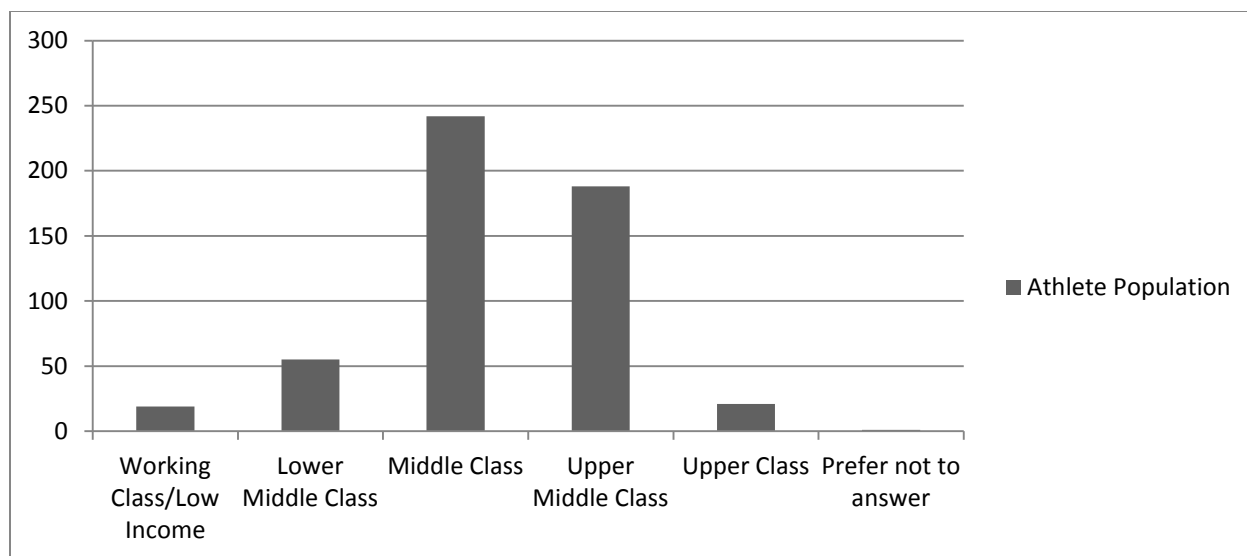
Table 3. Question 9 of the survey asked athletes to reveal the education level of their mothers. Bachelor degrees were the most common followed by a high school diploma or GED.

Table 4

*Education Level of Father*

<b>Education Level</b>	<b>Population Total</b>	<b>Percentage of Population</b>
High School Diploma or GED	95	18%
Some College	86	16%
Associate's Degree	41	8%
Bachelor's Degree	172	33%
Graduate Degree	85	16%
Professional or Doctorate Degree	31	6%
Do Not Know or Prefer Not to Answer	16	3%

Table 4. Question 10 of the survey asked athletes to reveal the education level of their fathers. Bachelor degrees were the most common followed by a high school diploma or GED.



*Figure 2.* Rate your families socio-economic status

Figure 2. The athlete was asked to evaluate her family's socio-economic status in question 11 of the survey. Athletes reported being within the middle class most often followed by upper middle class.

Question 12 asked the athlete to select if her mother was currently employed. Of the overall athlete population (N=526) 86% (n=449) indicated that her mother was employed and 14% (n=72) indicated that her mother was not employed. Only five athletes chose the prefer not option for less than one percent of the overall population which is not statistically significant.

Question 13 asked the athlete to select if her father was currently employed. Of the overall athlete population (N=526) 90% (n=471) indicated that her father was employed and 8% (n=43) indicated that her mother was not employed. Only 2% (n=12) athletes chose the prefer not to answer option and it is not deemed statistically significant.

Question 14 asked athletes if they thought everyone in their family lived a healthy lifestyle. Of the athletes 64% (n=350) indicated that they thought everyone in their family lived

a healthy lifestyle, 32% (n=169) selected no, not everyone in her family was living a healthy lifestyle, and 1% (n=7) athletes chose the prefer not to answer option for the question which is not considered significantly detrimental to results for this question.

### **Social Contexts**

This section of the chapter will cover questions 15 through 23. The purpose of this set of questions was to determine the athletes' view on issues such as body image, confidence levels, and the prevalence of bullying in her life.

Table 5

#### *Athlete Rating of Athleticism*

<b>Response</b>	<b>Frequency (N=526)</b>	<b>Percentage</b>
Low	1	0%
Average	97	18%
High	399	76%
Very High	27	5%
Prefer Not to Answer	2	0%

Table 5. Question 15 asked the athlete to rate her individual level of athleticism. Overall, 76% (n=399) of athletes rated their athleticism as being high and 18% (n=97) rated their abilities at the average level. Only 5% (n=27) considered their abilities to be very high and less than 1% had either low athleticism or chose not to answer the question.

Question 16 asked athletes to rate their level of self-confidence. Of these athletes 45% (n=238) have what is considered average self-confidence and 44% (n=230) have a high level of

self-confidence. Athletes with unhealthy views of self-confidence, 8% (n=42) rated themselves as having low confidence levels, and 3% (n=15) rated themselves as having very high levels of confidence to the point of narcissism. Only one athlete chose the prefer not to answer option for this question for less than one percent of the population and it is not considered a significant statistic for this study.

Athletes were asked to rate their self-body image in question 17. Of the overall population of athletes (N=526) 64% (n=339) indicated that they were “just right and happy with the way they looked”, 14% (n=72) indicated that they were “fat and needed to lose weight to look better”, 9% (n=47) indicated that they were “over-weight and would like to lose weight to be healthier”, 5% (n=26) indicated that they were “a bit on the skinny side and gaining weight would not hurt”, 5% (n=27) indicated the opposite thought by selecting “I am skinny and gaining any weight is unacceptable”, and 3% (n=15) chose the prefer not to answer option.

Question 18 asked all athletes to define the term “bullying”. Only 56% (n=293) of athletes were able to correctly select the definition of bullying. The remaining 44% (n=233) of athletes selected one of two incorrect definitions provided or refused to answer the question.

Question 19 on the survey was not a question, but a statement providing all athletes with the correct definition of bullying and directing all athletes to use that definition while answering questions 20 through 23. The questions regarding bullying allowed athletes to select all answers that applied to their individual situations.

The first of four questions regarding bullying was question 20. It asked the athlete if she had ever been bullied by teammates. An overwhelming percentage of the population, 74% (n=388), claimed to never been bullied by teammates. Of the remaining athletes 3% (n=15) claimed that they were bullied because of weight issues, 4% (n=20) claimed they were bullied

because of their intellectual abilities, 2% (n=8) were bullied because of their socioeconomic status, 6% (n=32) claimed to be bullied because of their athletic ability, 21% (n=108) claimed to be bullied for a different reason, and five athletes chose the prefer not to answer option.

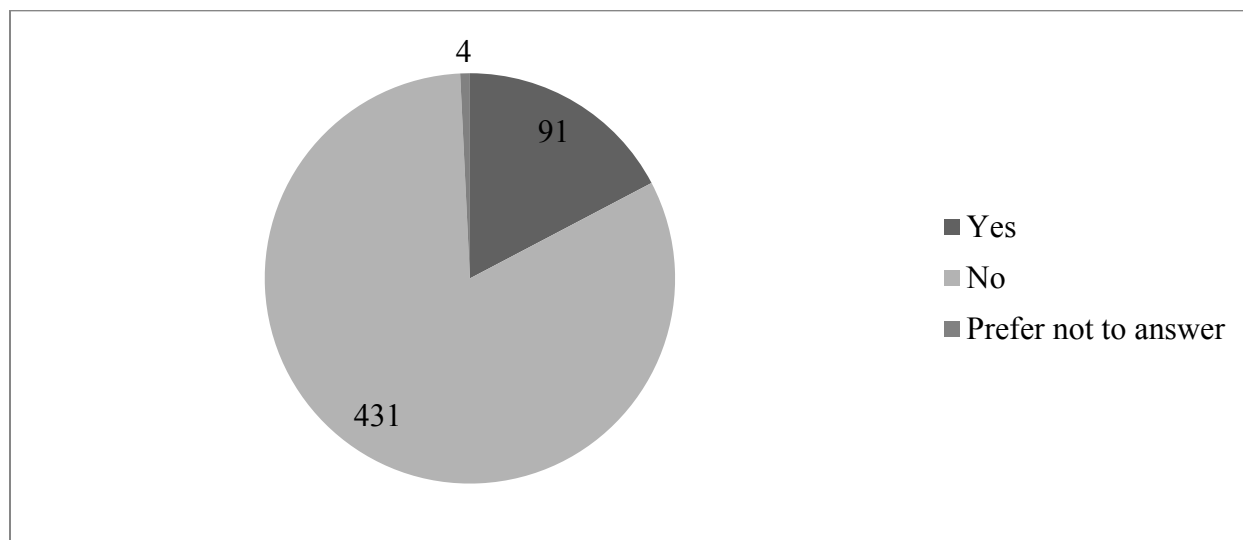
Question 21 asked the athlete to disclose if she had ever been bullied by non-athletes and 58% (n=303) claimed to not be the victim of a non-athlete. Of the remaining athletes, 31% (n=161) claimed to be bullied for “some other reason”, 9% (n=46) were bullied because of their athletic ability, 8% (n=44) were bullied about their intellectual abilities, 7% (n=38) were bullied about their weight, 4% (n=20) were bullied about their socio-economic status, and 4 athletes chose the prefer not to answer option.

Question 22 asked the athlete if she had ever bullied teammates and 86% (n=448) claimed to have never bullied a teammate. While, of the remaining athletes, 11% (n=59) claimed to have bullied teammates about “some other reason”, 3% (n=18) claimed to bully teammates about their athletic ability, 3% (n=16) claimed to bully others regarding their intellectual abilities, 1% (n=6) claimed to bully others about their weight, 1% (n=4) bullied others regarding socio-economic status, and the remaining five athletes chose the prefer not to answer option.

Question 23 asked the athlete if she had ever bullied non-athletes and 84% (n=441) claimed to have never bullied a teammate. While, of the remaining athletes, 13% (n=66) claimed to have bullied teammates about “some other reason”, 4% (n=19) claimed to bully teammates about their athletic ability, 3% (n=15) claimed to bully others regarding their intellectual abilities, 2% (n=11) claimed to bully others about their weight, 1% (n=6) bullied others regarding socio-economic status, and the remaining eight athletes chose the prefer not to answer option.

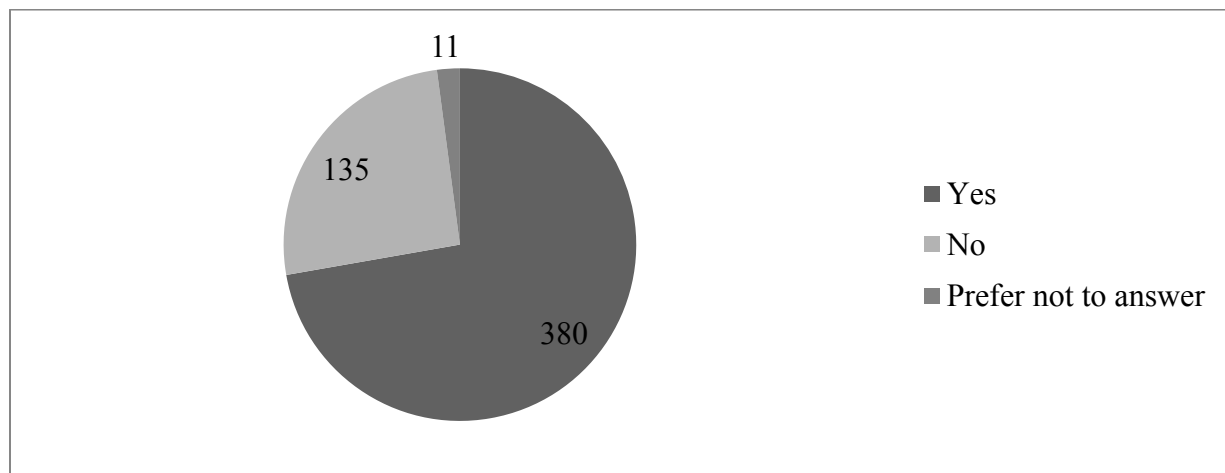
## Personal Health

The remaining questions (questions 24 through 39) addressed issues regarding the athletes' personal health and habits. The purpose of this section was to identify lifestyle habits of the athletes that may indicate potential health risks or concerns.



*Figure 3.* Do you or have you ever smoked?

Figure 3. Question 24 asked athletes if they do, or had ever smoked. 82% (n=431) claimed to never have smoked, 17% (n=91) have smoked at some point, and 1% (n=4) preferred not to answer the question.



*Figure 4.* Do you consume alcohol?

Figure 4. Question 25 asked athletes if they consume alcohol. 73% (n=380) claim that they do, 26% (n=135) claim that they do not, and 2% (n=11) preferred not to answer the question.

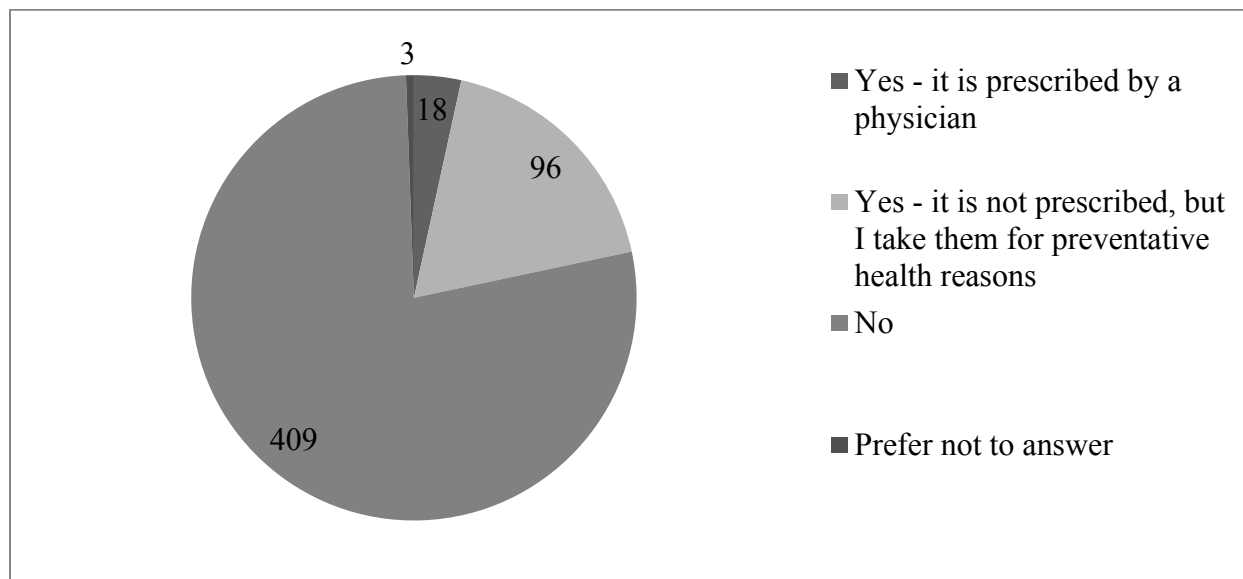


Figure 5. Do you take calcium supplements?

Figure 5. Of all athletes (N=526) that answered question 26, 78% (409) are not currently using calcium supplements, 18% (n=96) are taking them for preventative health reasons, 3% (n=18) are taking supplements based off of a physician prescription, and less than 1% (n=3) preferred not to answer the question.



Table 6

*Have you Missed a Menstrual Cycle in the Last 12 Months?*

<b>Response</b>	<b>Frequency (N=526)</b>	<b>Percentage</b>
Yes – Only 1	37	7%
Yes - more than 1	109	21%
No - I am on a regular schedule.	371	71%
No - I have not started menstruating yet.	4	1%
Prefer not to answer	5	1%

Table 6. Question 27 asked athletes to disclose if they have missed any menstrual cycles in the last 12 months. Of all athletes 71% (n=371) are on a regular schedule and 21% (n=109) have missed more than one menstrual cycle.

Table 7

*Are You on Birth Control?*

<b>Response</b>	<b>Frequency (N=526)</b>	<b>Percentage</b>
Yes	275	52%
No	249	47%
Prefer Not to Answer	2	1%

Table 7. Question 28 asked if athletes were on birth control. Of all participants 52% (n=275) indicated that they used birth control.

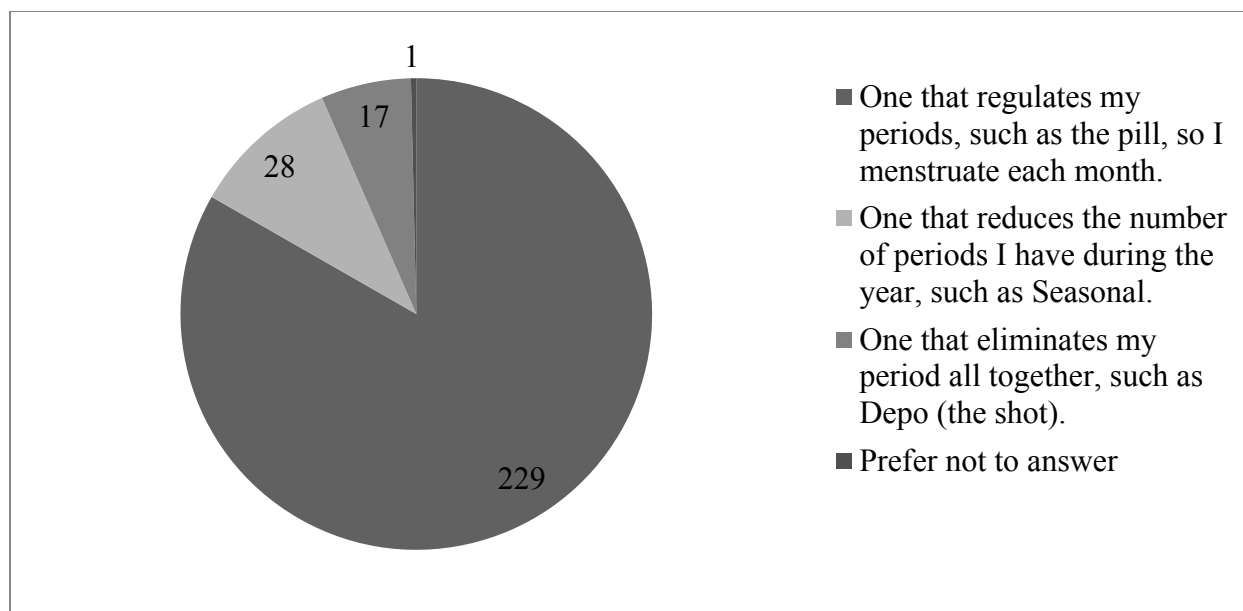


Figure 6. What type of birth control do you use?

Figure 50. For question 29 only the athletes who answered “yes” (n=275, 52%) to question 28 were required to answer. Of this population the most common method of birth control was one that regulates menstrual cycles so the athlete menstruated each month.

Table 8

*Have You Ever Been Approached by a Member of Your Teams Coaching Staff Who Has Had Concerns With Your Weight?*

Response	Frequency	Percentage
Yes - He/she was concerned because I had lost weight.	51	10%
Yes - He/she was concerned because I had gained weight.	27	5%
Yes - I was told that I need to lose weight.	38	7%
No - I have never been approached about my weight.	418	79%
Prefer not to answer	5	1%

Table 8. Question 30 asked about coaching staff weight concerns and 79% (n=418) appeared to maintain acceptable weight per expectations of the sport and coach.

Question 31 was asked only of the athletes (n=108) who had been approached by coaching staff regarding weight issues. Of that population 92% (n=95) were not put on any type of restriction, 6% (n=6) were able to meet the weight expectations and rejoin the team, 2% (n=2) were not able to maintain weight and rejoin the team, and the remaining five athletes chose the prefer not to answer option for the question.

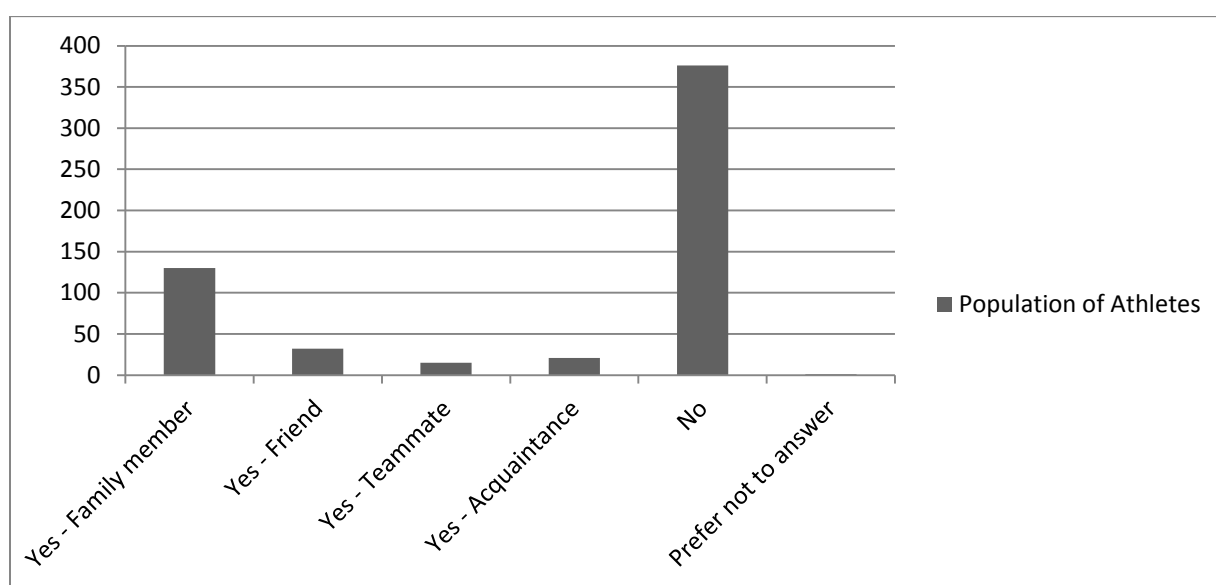
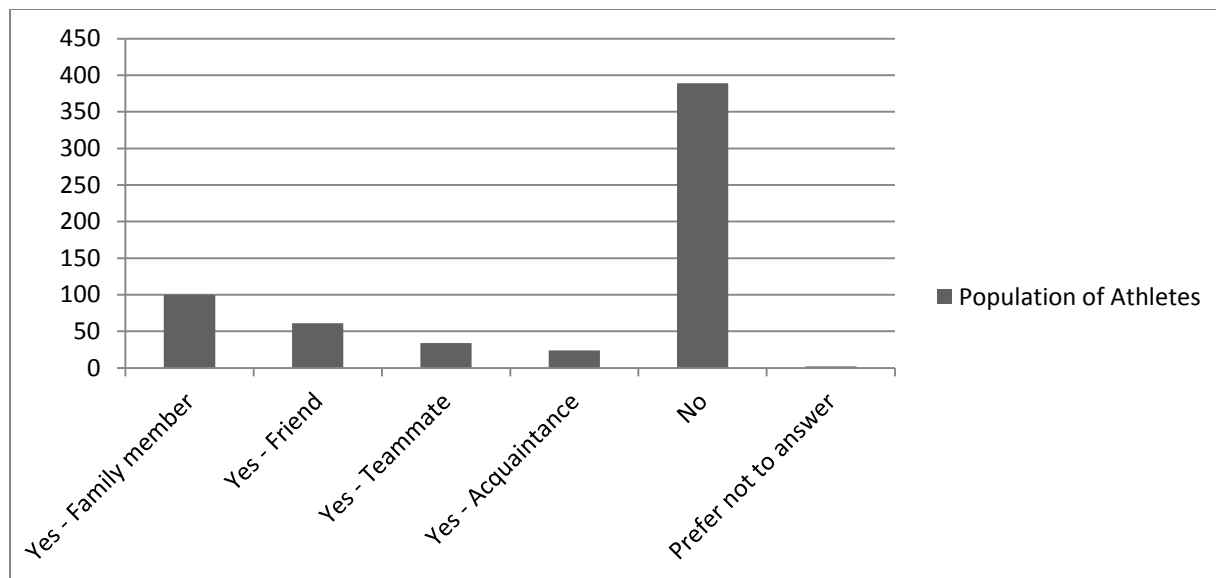


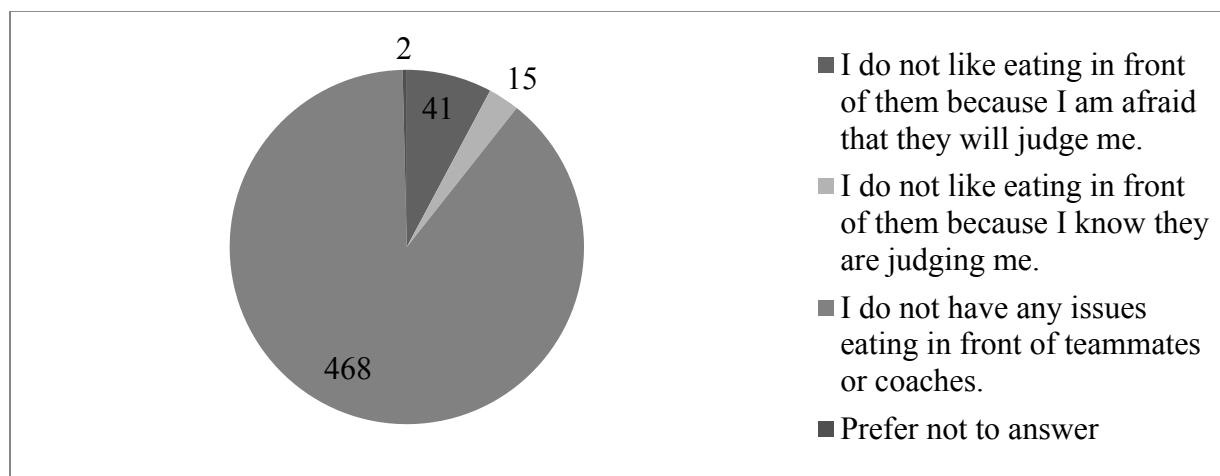
Figure 7. Have you ever been told that you need to lose weight by a family member, friend, teammate or acquaintance?

Figure 7. Question 32 found that athletes were criticized about weight concerns primarily by family members, however, the majority of athletes (n=376, 72%) indicated that they had not been approached and told to lose weight.



*Figure 8.* Has a family member, friend, teammate or acquaintance ever expressed concern about your weight being too low?

Figure 8. Question 33 found that the majority of athletes ( $n=389$ , 74%) did not have any concerns expressed by anyone regarding her weight being too low, however, family members were most likely to be the questioning party when there were concerns for 19% ( $n=100$ ) of athletes.



*Figure 9.* What are your eating habits like in front of teammates or coaches?

Figure 9. For question 34 the majority of athletes (n=468, 89%) had not issues eating in front of team staff and fellow athletes. The remaining 11% (n=58) of athletes either expressed concern about the situation or preferred not to answer the question.

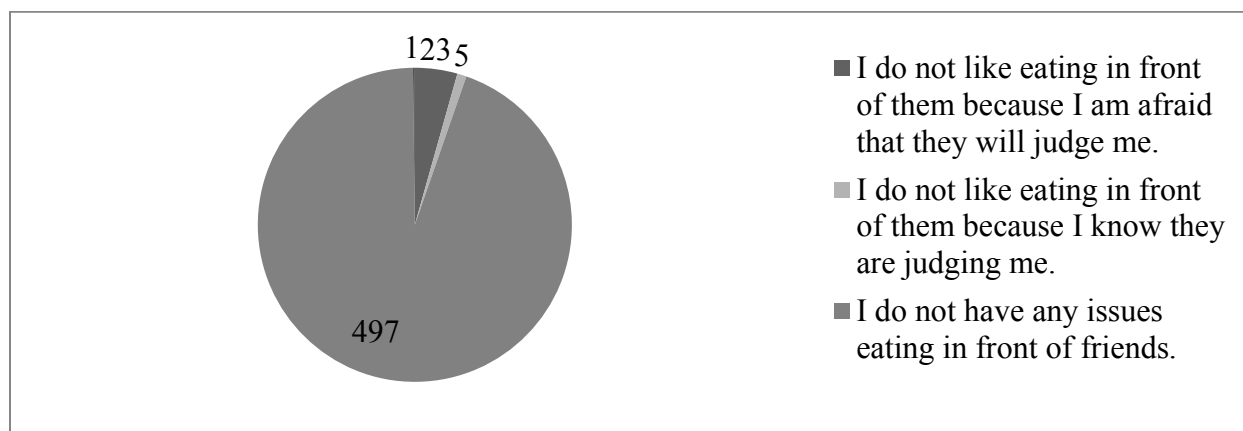


Figure 10. What are your eating habits like in front of friends?

Figure 10. Question 35 revealed that 95% (n=497) of athletes were substantially more comfortable eating with individuals that they viewed as friends.

Table 9

*Have You Ever Used Any of the Following Purging Techniques for Maintaining or Initiating Weight Loss?*

Response	Frequency (N=219)	Percentage
Caloric Restriction/Simply not eating	140	64%
Vomiting/Purging	35	16%
Laxatives	13	6%
Herbal teas or supplements	46	21%
Other	32	15%
Prefer not to answer	37	17%

Table 9. Only 219 athletes participated in question 36, which focused on purging techniques. Caloric restriction was the most popular with athletes (n=140, 64%), and this potential means that 58% (n=219) of athletes either are or may be using unhealthy methods to control weight. This is significant and is used for cross tabulation purposes later in this chapter.

Table 10

*What Are Your Eating Habits Like in Front of Family?*

<b>Response</b>	<b>Frequency (N=526)</b>	<b>Percentage</b>
I do not like eating in front of them because I am afraid that they will judge me.	17	3%
I do not like eating in front of them because I know they are judging me.	10	2%
I do not have any issues eating in front of family.	493	94%
Prefer not to answer	6	1%

Table 10. Question 37 found that once again the vast majority of athletes (n=493, 94%) had no issues eating in front of others, in this case family members. According to cross tabulation discussed later in this chapter this is a safer eating environment when compared to eating with coaches and teammates.

Question 38 asked if any of the athletes had been diagnosed by a physician with an eating disorder. Of the overall population (N=526) only 2% (n=11) confirmed that they had been diagnosed with at least one eating disorder. This question was evaluated in cross tabulations included later in this chapter.

Question 39 was asked of only those 11 athletes that confirmed being diagnosed with an eating disorder. Of those athletes 91% (n=10) were diagnosed with anorexia. Three athletes were diagnosed with bulimia and two athletes had an unspecified eating disorder. This question was evaluated in cross tabulations included later in this chapter.

### **Sport Type and Purging**

Of the 526 athletes that participated in the study, 41% (n=219) of total athletes admitted to using purging techniques to initiate or maintain weight loss. Athletes that participated in lean sports were the lowest reporting group for using purging methods, while those in the weight, aesthetic/judged, and those that participated in at least two sport type categories were the most likely to use purging methods. However, rates of purging were very close for all categories. For all athletes that participated in only one class of sport (aesthetic/judged, lean, weight, or team/technical) 60% (n=132) used purging techniques, while 58% (n=178) of all the multi-class athletes used purging techniques. Also, because at least 82% (n=432) of athletes were multi-sport participants and played sports that cover multiple categories, it would be difficult to determine which sport, if any are contributing factors in her purging habits.

### **Eating Disorders and the Female Athlete Triad**

The prevalence of purging behaviors in this study is substantial with 41% (n=219) athletes admitting to using multiple methods with intent of initiating or maintaining weight loss. Of those athletes 11 have been confirmed to have been diagnosed by a physician with an eating disorder. The remaining 208 athletes 10% (n=21) are symptomatic of at least two of the necessary criteria for the Female Athlete Triad with another 7% (n=15) at risk if they continued to miss menstrual cycles. Of the athletes that purge 25% (n=52) are taking calcium supplements

for preventative health reasons. Calcium is necessary to offset the development of low BMD or osteoporosis.

### **Family Dynamics, Purging and Diagnosed Disorders**

All 11 of the athletes diagnosed with an eating disorder by a physician reported being Caucasian and from the middle class. Of the 208 athletes that admitted to purging, but have not been diagnosed with an eating disorder 96% were Caucasian with 81% of them coming from a typical two parent home. The highest prevalence of purging behavior was noted for athletes whose mother had a bachelor's degree (37%) and for fathers who had a bachelor's degree (34%). The next highest group for both when parent education level was taken into consideration for mothers and fathers were those that had only obtained a high school diploma or GED (15% and 21% respectively). Socioeconomic status revealed that 46% of purging athletes come from the middle class and 34% come from the upper middle class. Sibling sets also revealed that the youngest (41%) are more likely to purge followed by the oldest (31%), with the middle (28%) children exhibiting the least amount of purging. Family members are also more likely to tell an athlete that she needs to lose weight (32%) than they are to express concern about her weight being too low (20%). Fear and anxiety towards eating with family members was only present in 10% of the purging population, 7% claimed the same issues while eating with friends, however, eating with coaches and teammates brought on the most fear and anxiety for 13% of the purging population.

### **Social Contexts and Purging**

All athletes in the purging population (n=208) identified themselves as having average or above athleticism. Of those athletes 14% (n=29) have an unhealthy concept of self-confidence. The athletes either identified themselves as feeling guilty of their performance (n=24) and feel



that their drive for perfection is crushing them; the remaining participants (n=5) portrayed a high level of narcissism and claimed that others would do well to strive for their level of performance to obtain superiority.

Table 11

*Self Confidence of Athletes in Relation to Parent Education*

<b>Degree/Parent</b>	<b>Bachelor's Degree – Mother</b>	<b>High School or GED - Mother</b>	<b>Bachelor's Degree – Father</b>	<b>High School or GED - Father</b>
Purging Athletes	36%	16%	33%	17%
Non-Purging Athletes	36%	20%	33%	16%

Table 11. Rates of self -confidence were highest amongst athletes who had at least one parent with a bachelor's degree and aligned with the self -confidence rates of those athletes that do not purge, however, confidence rates drop significantly when the parents only have a high school diploma or GED.

Body image was rated lower than self-confidence by purging athletes (n=208) with 29% of these athletes (n=61) either viewing themselves as “fat” and needing to lose weight to look “better” or that gaining any weight was “unacceptable”. This is significantly higher than the rating of non-purging athletes (n=303) where only 10% indicated that they had a negative body image. The highest body image ratings were reported by athletes who had a mother or father with a bachelor's degree in both purging (28% and 24% respectively) and non-purging athletes (32% and 30% respectively).

Bullying was difficult for purging athletes to define with only 56% of them selecting the correct definition when given only three options to define bullying. Regardless of the answer the athlete selected, each was provided with the correct answer prior to answering any questions about being bullied or being a bully. However, this closely mimics the success of the total

population athletes (N=526) to select the correct definition where, overall, 56% of athletes selected the correct definition. Purging athletes (n=208) were bullied most often regarding their athletic ability by teammates (8%) and non-athletes (9%), followed by being bullied by weight in both scenarios (5% and 10% respectively). However, when these athletes chose to be the bully they attacked the intellectual abilities of teammates (4%) first followed by athletic ability (4%) and attacked non-athletes at the same rate (4% respectively) for intellectual and athletic abilities. However, when all participating athletes were taken into consideration, the pattern was the same for all four scenarios provided for either being bullied or was being the bully by first attacking athletic ability, intellectual abilities, weight, and finally socio-economic status. Rates for athletes being bullied or bullying about an issue outside of these four factors was significantly higher for all athletes, purging or non-purging.

## **Chapter V: Discussion**

The overall purpose of this study was to evaluate the potential impact that sports participation, family dynamics, and social contexts may have on female athletes developing an eating disorder or the female athlete triad. First, limitations of the study will be reviewed followed by conclusions of the study. This chapter will conclude with recommendations for future research.

### **Limitations**

A limitation of this study was the population of participants. While honesty was expected of the athletes that consented to participate, it cannot be verified that all answers that were received were accurate.

Another limitation of this study was the exclusion of mass media and the role that it may play in how athletes develop ideas of what leads to optimal performance. With athletes having access to more technology through cell phone, computers, and other technological devices, they are being exposed to more advertising that may send them the wrong messages in regards to leading a healthy lifestyle.

### **Conclusions**

Athletics are meant to promote healthy living and provide enjoyment physical activity. Athletes that are able to successfully navigate the ups and downs of competition and that are still able to see success even in defeat are often times the most successful of all athletes. Weight and body image will always be a concern of female athletes, regardless of the level of athleticism that she has obtained or the sport that she participates in during her career. Being able to interact with parents, teammates, and coaches in healthy, meaningful relationships is paramount for athletes to continue to grow not only athletically, but as a person in general.

Data from this study supports that assumption that it is not the sport itself that necessarily supports the development of an eating disorder. Regardless of sport class competed in or the amount of sports competed in, athletes in this study appeared to be at risk for unhealthy weight maintenance techniques just from participating in a sport in general. While there were slight differences in the percentages in each sport category, it is a safe assumption that more frequent, and better, nutritional knowledge for athletes needs to start taking place much sooner than late high school and early college for those that pursue a major in a health related area. Also, knowledge for coaches will need to improve in this area as well and their knowledge in the area of eating disorders and the triad needs to be expanded as well at all coaching levels.

Family dynamics is an area that is often researched in terms of parental education level and the socioeconomic level of the family. Our data aligned with and supports other studies that athletes with parent that have a high level of education and are middle class appear to be at a greater risk. However, many issues still remain undetermined as culture plays a different role for every race and region in America. More research needs to be conducted involving athletes from multiple regions and cultural backgrounds. Another assumption of this study that was correct was that a middle child would be less likely to display the negative behaviors associated with eating disorders or the triad. This may be because middle children do not have the pressure of being the oldest child and do not have to live up to the standards they believe older siblings have already set. Additional research should continue to be conducted in this area, however, to determine why children from smaller families are more likely to display and develop these characteristics when compared to their peers from larger families.

The social context of bullying did not seem to play as large a role as originally thought. It is difficult to tell exactly what role that bullying may have played in the roles of the purging

population of this study to develop the unhealthy habits that they have because of the inability of the vast majority of participants to correctly define bullying. Even though athletes were supplied with the correct definition of bullying prior to being four different scenarios of bullying, each of the athletes that originally answered the question wrong may have still answered the questions based off of their own definition of what it meant to be bullied or meant to be a bully. Also, athletes could have been bullied at one point or other in the athletic career and after reflecting on the incident(s) may have decided that the issue was not as important as originally thought. Perhaps a better approach would be to look at the coping level of athletes when placed into different scenarios regarding bullying situations.

Both self-confidence and rating of body image were expected to be worse than what was revealed by the collected data. One may speculate that members of the purging population lack the abilities to effectively rate both of these aspects based on their inability to effectively pursue a healthy body through appropriate nutritional methods. What role media plays in their ability to view themselves is also unknown and more research should be done in this area to effectively rank the impact that may or may not exist.

### **Recommendations**

Bullying and the impact that mass media plays in the lives of athletes needs to be researched further. Many individuals accept bullying as a rite of passage and many are able to cope with it effectively. However, based off of the low amount of athletes in this study that have been exposed to anti-bullying propaganda, it was expected that many more of them would have been able to correctly define bullying.

A second recommendation is that sibships need be studied in relation to the development of eating disorders outside of those that are conducted using twin sets for genetic relations of

why one develops an eating disorder and the other does not develop a disorder. Sibling relationships are often some of the most significant relationships that an athlete can have; however, they can also be some of the most volatile in terms of physical and emotional abuse that is left unchecked by many parents as “learning how to cooperate with others”. Research needs to be conducted to verify if athletes are trying to gain parental favor, or just attention, if they are mimicking the behavior of an older sibling, etc.

Another recommendation to improve future research is to revise and update the survey. While it performed as expected there were areas that needed to be added, such as the role mass media plays and questions on the coach/athlete relationship. Also, conducting the survey in a controlled, personal environment that makes athletes feel more comfortable may reveal more accurate data.

A final recommendation is to incorporate more nutritional knowledge into collegiate sports by requiring athletes and coaches to attend classes or workshops on the subject then studying the before and after results of nutritional habits of athletes. It should also be required of coaches from all levels of sports to attend training, and be certified, on the warning signs and dangers of eating disorders and the Female Athlete Triad.

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