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COMPARISON OF EXERCISE AND EATING IN COLLEGIATE ATHLETES VS. NON-
ATHLETES ACTIVE IN HIGH SCHOOL SPORTS

A Thesis
presented in partial fulfillment of requirements
for the degree of Master of Science
in the Department of Food and Nutrition Services
The University of Mississippi

by

LAURA BLAIR

April 2012

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ABSTRACT

Numerous studies have been conducted on eating disorders (ED) in collegiate athletes. Many studies conclude that collegiate athletes are more at risk of developing an ED compared to non-athletes, while some report the opposite.

Purpose: To determine if collegiate athletes are more likely to exhibit ED characteristics compared to those who only participated in high school sports. **Method:** Each participant completed The Eating Attitude Test-26 (EAT), The Eating Disorder Inventory subscales Body Dissatisfaction (EDIBD), Drive for Thinness (EDIDFT), and Bulimia (EDIBUL) and The Body Shape Questionnaire-34 (BSQ).

Group differences were examined for males (N=101), females (N=189), collegiate athletes (N=107), non-athletes who played sports in high school (high school athletes) (N=152), and those who did not play sports in high school (non-athletes) (N=31). **Results:** A one-way analysis of variance (ANOVA) showed that when combining both genders combined, collegiate athletes scored significantly lower than high school athletes and non-athletes regarding EAT, EDIDFT, EDIBD, and BSQ. No significant difference was found between high school athletes and non-athletes. When separating male and female samples, the ANOVA showed that female collegiate athletes (N=64) scored significantly lower than female high school athletes regarding EAT, while female high school athletes (N=99) and female non-athletes (N=26) did not differ significantly. Female collegiate athletes also scored significantly lower in EDIBD and BSQ than both female high school athletes and female non-athletes. No significant difference was found between female high school athletes and female non-athletes in these measures. No significant

difference was found between these groups regarding EDIDFT and EDIBUL. For the male only sample, the ANOVA found no significant differences between collegiate athletes (N=43), high school athletes (N=53), and non-athletes (N=5). Two-tailed independent-sample T tests for equality of means (equal variances not assumed) found that in comparison to males, females scored significantly higher on the EAT, EDIDFT, EDIBD, and BSQ. No significant differences were found regarding EDIBUL. **Discussion:** Compared to collegiate athletes, high school athletes and non-athletes scored significantly higher on the EAT, EDIDFT, EDIBD, and BSQ, indicating they are at a greater risk of an ED. No significant difference was found between high school athletes and non-athletes, indicating the need for more research. When males and females were analyzed separately based on athlete status, most measures found that female high school athletes and non-athletes were at a greater risk of an ED compared to collegiate athletes. No significant difference was found between the 3 groups regarding males indicating the need for more research concerning these groups. Consistent with most literature, females are more at risk for an ED compared to males. Overall, this study suggests female high school only athletes and non-athletes are more at risk of developing an ED compared to collegiate athletes.

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CHAPTER 1

INTRODUCTION

Research has shown that 38% of college students exhibit characteristics of anorexia nervosa or bulimia and 44% percent have frequently dieted (Smith & Trent, 2008). The many changes that take place in the transition from high school to college can put a lot of pressure on an individual. Students are adapting to a different environment, and college is probably one of the first times that they don't have much adult supervision. This change and stress has often led to changes in eating behaviors. Much of the research emphasis has been on females with research concerning males in relation to eating disorders limited with mixed findings. The lack of research on eating disorders in males is probably due to the disease being underreported in males. Eating disorders are still thought of as a "female disease" which could cause males to be under-represented (Papathomas & Lavalley, 2006).

Studies have also found that college male and female athletes are at more risk for an eating disorder than non-athletes (Kirk, Singh, & Getz, 2001; Hinton, Sanford, Davidson, Yakushko, & Beck, 2004). The transition from high school to college is a big change that might influence the risk of weight gain and eating patterns in all college students (Maulinauskas, Raedeke, Aeby, Smith, & Dallas, 2006). This transition as well as the increased pressure to balance the demands of sports scheduling and schoolwork can also influence eating behaviors in an athlete (Hinton, Sanford, Davidson, Yakushko, & Beck, 2004). Although some athletes are

able to handle the pressures and find reward in playing a collegiate sport, some collegiate athletes are crippled by this stress which can in turn lead to an unstable and unhealthy lifestyle (Steiner, Pyle, Brassington, Matheson, & King, 2003).

Research studies have also had trouble defining the terms “non-athlete” (Muscat & Long, 2008). College athletes can be easily identified because of the sport they play whereas college non-athletes cannot. Taking into account the background of the non-athletes might lead to new and interesting results. The transition from playing sports in high school to not playing sports at all in college might also have led to changes in a non-athlete’s eating behaviors. How a student reacts to the first year of college, whether they play a collegiate sport or not, could possibly impact their long-term dietary and exercise behaviors. Because of the high expectation and pressure for increased performance in college sports, the hypothesis of this study is that collegiate male and female athletes are more likely to exhibit characteristics of an eating disorder than college males and females who competed in high school but did not continue collegiately.

Critical Evaluation of Literature

Studies have shown that the transition from high school to college increases stress as well as anxiety in most students whether they are athletes or non-athletes. These stresses a college student faces can include the pressure of greater personal responsibility, loss of social support, as well as increased academic demands. These pressures along with a college students desire to maintain or achieve a thin body can lead to pathogenic eating behaviors which might lead to disordered and binge eating (Greenleaf, Petrie, Trent, Carter, & Reel, 2009).

Many studies have been conducted supporting the hypothesis that college athletes are even more at risk for developing an eating disorder than college non-athletes (Kirk, Singh, & Getz, 2001; Hinton, Sanford, Davidson, Yakushko, & Beck, 2004; Rosen, McKeag, Hough, &

Curly, 1986). One research study showed that college female athletes are two to three times more likely to meet the criteria for an eating disorder than non-athletes (Black, Laurie, Larkin, Coster, Leverenz, & Abood, 2003). Other studies have also shown that between 15% and 62% of women athletes in college exhibit some sort of pathogenic weight control behaviors such as excessive exercising, intentional vomiting, or taking diuretics and/or diet pills (Kirk, Singh, & Getz 2001; Mintz & Betz, 1988). Deciding to play a sport in college can put increased pressure on a female to perform well and some research has shown that some female athletes do not develop eating disorder behaviors until they are playing just one sport at an intense level such as in college (Holm-Denoma, Scaringi, Gordon, Van Orden, & Joiner, 2009).

Whether the female college students are aware of proper eating behaviors but just not following them is one topic that needs to be addressed. Raymond-Barker, Petroczi, & Queded (2007) compared female college athlete's and non-athlete's nutrition knowledge and how they applied it to their eating behaviors. Although results from this study showed higher nutrition knowledge in female athletes compared to non-athletes, athletes were less likely to use this nutrition knowledge in their regular eating patterns compared to non-athletes (Raymond-Barker, Petroczi, & Queded, 2007). One possible reason for this result is that athletes sometimes think of themselves as an "exception" to normal dieting because of the sport they play. They might have the mindset that pathogenic weight control methods and dieting are normal in their specific sport and therefore not even consider it a problem (Torstveit, Rosenvinge, & Sundgot-Borgen, 2008). These dedicated college athletes that might have this wrong mindset are then more likely to display characteristics of anorexia nervosa such as training excessively, denying pain, and committing to unattainable and unhealthy goals (Buccholz, Mack, McVey, Feder, & Barrowman, 2008).

Although not as much emphasis has been put on the eating behaviors of male athletes compared to female athletes, studies have shown that about 50% of male athletes would like in some way to change their body shape (Hausenblas & McNally, 2004; Cohane & Pope 2001). Baum (2006) recognized that there has been an increase in male athletes preoccupied with their body image, especially in the sports of football, baseball, and track and field. Male athletes sometimes suffer from “reverse anorexia”, a condition in which an individual becomes obsessive about increasing muscle mass which often leads to the use of harmful anabolic steroids (USA Today Magazine, 2002). One study determined that the ban of anabolic steroids by sport managing organizations, is causing some male athletes to manipulate their diet and physical activity in often dangerous ways (Baum, 2006).

Some studies have also shown that non-athletes might be as much or more at risk as athlete for eating disorders. Gutgesell, Moreau, & Thompson (2003) collected information from female college athletes and non-athletes about their weight, desired weight, meal patterns, methods of gaining/losing weight, as well as past or current eating problem behaviors and found that non-athletes were more likely to eat fewer meals per week, reported more often that they were too heavy, as well as reported using more weight loss methods. DiBartolo & Shaffer (2002) supported this finding and compared these two groups but measured eating attitudes, body satisfaction, reasons for exercise, and psychological well-being (DiBartolo & Shaffer, 2002). This study revealed that athletes reported less eating disorder characteristics, healthier psychological functioning, as well as motivation to exercise because of enjoyment instead of weight loss purposes (DiBartolo & Shaffer, 2002). Although most research leans toward the theory that athletes are at an increased risk for eating disorders, some studies still say otherwise.

Few studies have shown that undergraduate males not competing in a sport can exhibit some eating disorder characteristics. Franco, Tamburino, Carroll, & Bernal (1988) reported that males make up only 5-10% of anorexia nervosa patients; however, unlike females, college males usually strive to put on instead of lose weight which can possibly lead to binge eating (Ousley, Cordero, & White, 2008). One study found that out of 340 male college students, the majority felt dissatisfied about their weight (Carroll & Bernal, 1988), and another reported that while some males complained about being “fat” and “flabby”, others exhibited characteristics of binge eating (Ousley, Cordero, & White, 2008). Bramon-Bosch, Troop, & Treasure (2000) stated that compared to females, male eating disorders have a stronger psychiatric link which in some cases have led to suicidal behaviors. Unlike females, the little disordered eating research that has been conducted concerning male athletes and non-athletes have resulted in mixed findings and uncertainty (Button, Aldridge, & Palmer, 2008).

Studies focusing on high school athletes and their eating behaviors are relevant to the topic of whether collegiate athletes are more at risk than individuals who just participated in high school sports. A cross-sectional study was conducted on 80 female high school athletes and 80 female non-athletes to compare their energy balance. Results from this study found that both groups showed relatively no signs of disordered eating (Hoch et. Al, 2009), which supports the hypothesis that female high school athletes may not be at as much risk of an eating disorder as female college athletes. One program that addresses high school athletes’ eating habits is Athletes Targeting Healthy Exercise and Nutrition Alternatives (ATHENA). It addresses the issue of disordered eating as well as providing healthy sports alternatives (Elliot et. Al, 2008).

Factors associated with disordered eating behaviors in male and female athletes might include a lower body weight or fat percentage, competition anxiety, or societal pressures such as

that from teammates or coaches. If an athlete's teammates practice food restricting behaviors, it might make the athlete more prone to that behavior as well (Smith & Trent, 2008). The way a coach perceives a certain body weight related to performance in the sport usually has a great affect on how the athlete will perceive it in order to meet a coach's expectation (Berry & Howe, 2000). It has been reported that a large number of female athletes who reduce their eating do so because their coaches have asked them to lose weight in order to improve performance (Berry & Howe, 2000).

Turk, Prentice, Chappell, & Shields (1999) measured collegiate coaches' knowledge of eating disorders as well as their ability to respond correctly about eating disorders to athletes. They found that coaches lacked a considerable amount of knowledge concerning eating disorders and confidence in addressing the issue with athletes (Turk, Prentice, Chappell, & Shields, 1999). This factor is crucial in both high school and college settings in that a coach will most likely be in the position to recognize eating disorder behaviors in the early stages. Early detection is important because, in most cases, the rate of recovery from eating disorder behaviors is related to severity (Beals & Manore, 2000). Another study compared the effects that coaches had on male and female athletes, and found that both genders exhibited more anxiety and fear concerning diet because of their coach's negative attitude and pressure to perform well in the sport (Baum, 2006). A coach is the leader and support system of the team, and therefore everything they say or do will likely be taken very seriously by athletes.

The instruments used to measure the characteristics associated with eating disorders are also extremely important to consider. Common surveys used to measure eating behaviors across many studies included the Eating Attitudes Test (EAT) (Gamer, Olmstead, Bohr, & Garfinkel, 1982), the Body Shape Questionnaire to determine if an individual exhibits preoccupations

concerning their body image and weight (Cooper, Taylor, Cooper, & Fairburn, 1987), and the Eating Disorder Inventory (EDI) which measures obsessive eating behaviors and weight preoccupation (Gamer, Olmstead, & Polivy, 1983). In a study measuring the effectiveness of each of these eating disorder surveys given to athletes, EAT was found to be the most effective (DePalma, Koszewski, Romani, Case, Zuiderhof, & McCoy, 2002). These surveys and scales work well together to not only identify the athletes at risk for an eating disorder, but also identify some of the factors that might be the cause. One study that addressed the concept well was a study comparing the eating behaviors of female college athletes and female college non-athletes. Instead of diagnosing the female with/without an eating disorder it instead focused on seven different categories including anorexia nervosa (AN), bulimia nervosa (BN), not otherwise-specified AN, not otherwise-specified BN, not otherwise specified AN or BN, disordered eating, or no eating disorders/disordered eating (Black, Laurie, Larkin, Coster, Leverenz, & Abood, 2003). This study found that twice as many athletes were at risk for disordered eating instead of an actual eating disorder (Black, Laurie, Larkin, Coster, Leverenz, & Abood, 2003). By using these categories, specificity in eating behaviors of each female can be better identified.

A review of the literature suggests that there are still some topics regarding sports and eating disorders that need research. More research concerning male athletes and eating disorders need to be conducted in order to clear up confusion and be able to identify those at risk. Societal pressures whether from coaches, family, or peers should also be studied further. Also, defining the terms “athlete” and “non-athlete” is something that needs to be taken into addressed. “Non-athletes” in college but who played sports in high school should also be studied as a subject group. Therefore this study will examine whether collegiate male and female athletes are more

likely to exhibit characteristics of an eating disorder compared to college males and females who participated in high school sports but did not continue playing collegiately.

CHAPTER 2

METHODS

A cross-sectional, cohort study was conducted to compare the eating behaviors of males vs. females, both separately and as collegiate athletes vs. high school athletes vs. non-athletes. Before data collection, this study was approved by the University of Mississippi's Institutional Review Board (IRB). University faculty and coaches/coaching assistants were contacted by the researcher and were e-mailed a copy of the proposal approved by the IRB for Human Subjects.

Subjects

Freshmen, sophomore, junior, and senior male and female collegiate athletes and male and female non-collegiate athletes were chosen for the study. Male and female collegiate athletes included those from the sports of baseball, basketball, football, track and field, soccer, softball, cheerleading/dance, as well as an "other" collegiate sport option. Non-athletes were recruited from classes open to the general student population. All subjects were asked not to complete duplicate surveys.

The study examined group differences for University of Mississippi males (N=101), females (N=189), collegiate athletes (N=107), college students who played sports in high school (high school athletes) (N=152), and those who did not play sports in high school (non-athletes) (N=31).

Procedure

Subject recruitment and survey administration occurred during class time or team meetings. The researcher described the purpose of the study and the design. Students, age 18 years or older, were informed that their participation in the study was optional. Students willing to participate then completed a cover-letter with the sport(s) they played in high school, the sport they play in college (if applicable), their college classification, and their gender. If their sport was not listed on the cover-letter, an “other” option was available to check. Along with the cover-letter the students also completed a survey. When they finished, the cover-letter attached to the survey was deposited in a container provided by the researcher. Surveys and cover-letters that were found incomplete were discarded.

Measures

The Eating Attitude Test-26 (EAT-26) is a 26 item, 6 point Likert scale inventory that was used to examine the subjects’ attitudes and beliefs about food and its possible relation to disordered eating (Gamer, Olmstead, Bohr, & Garfinkel, 1982). The behaviors that EAT-26 mainly focuses on are dieting (15 items), bulimia and food preoccupation (6 items), and oral control (7 items) (Gamer, Olmstead, Bohr, & Garfinkel, 1982). The Eating Disorder Inventory (EDI) is a 64 item, 6 point Likert scale inventory with 8 subscales that indicate obsessive eating concerns and weight preoccupation related to eating disorders (Gamer, Olmstead, & Polivy, 1983). In this study, the Body Dissatisfaction subscale (EDIBD), Drive for Thinness subscale (EDIDFT), and Bulimia subscale (EDIBUL) was implemented. The Body Shape Questionnaire-34 (BSQ) is a 34 item, 6 point Likert scale to determine if an individual exhibits preoccupations concerning their body that are related to bulimia nervosa and anorexia nervosa (Cooper, Taylor, Cooper, & Fairburn, 1987).

Analysis

This cross-sectional, cohort study compared the eating behaviors of males vs. females; collegiate athletes vs. high school athletes vs. non-athletes; and male and female collegiate athletes vs. high school athletes vs. non-athletes using the EAT, EDIDFT, EDIBUL, EDIBD, and BSQ. Scores above 20 on the EAT-26 (Dibartolo & Shaffer, 2022) and/or above 120 on the BSQ identify an individual at risk for an eating disorder. Also, the higher the score on the EDI, the more an individual poses at risk (Wilkins & Boland, 1991). A one-way analysis of variance (ANOVA) was conducted to determine whether there is a difference in eating behaviors and body image in collegiate athletes, high school athletes, and non-athletes. Two-tailed independent-sample T tests for equality of means (equal variances not assumed) were computed to examine differences between all males and females.

CHAPTER 3

RESULTS

For both genders combined when comparing collegiate athletes, high school athletes, and non-athletes, the ANOVA was significant for EAT ($F=6.145$, $p=.002$), EDIDFT ($F=4.834$, $p=.009$), EDIBUL ($F=4.264$, $p=.015$), EDIBD ($F=12.734$, $p=.000$), and BSQ ($F=10.998$, $p=.000$). Post hoc comparisons with the use of the Dunnett's C test, a test that does not assume equal variances, were conducted. Regarding EAT, EDIDFT, EDIBD, and BSQ, college athletes scored significantly lower than high school athletes and non-athletes. Although high school athletes scored lower on average than non-athletes in all five measures, no significant difference was found between these two groups. There was no significant difference between collegiate athletes, high school athletes, and non-athletes regarding EDIBUL. These results can be found in Table 1.

When separating male and female samples to determine whether the difference in eating behaviors and body image by athlete status vary by gender, the ANOVA was significant for the female only sample for EAT ($F=4.194$, $p=.017$), EDIBD ($F=12.116$, $p=.000$), and BSQ ($F=10.009$, $p=.000$). The ANOVA was not significant for EDIDFT and EDIBUL. Post hoc comparisons with the use of Dunnett's C was used for EAT, EDIBUL, EDIBD, and BSQ. Because Levene's test for the equality of variances was not significant for EDIDFT, the Tukey test was used as the post hoc test for that measure. Regarding EAT, female collegiate athletes

scored significantly lower than female high school athletes, while female high school athletes and female non-athletes did not differ significantly. With regards to EDIBD and BSQ, female collegiate athletes scored significantly lower than both female high school athletes and female non-athletes. Although female high school athletes scored slightly lower than female non-athletes in EDIBD and BSQ, no significant difference was found between female high school athletes and female non-athletes in these measures. There was no significant difference between female collegiate athletes, female high school athletes, and female non-athletes regarding EDIDFT and EDIBUL. These results can be found in Table 2.

The ANOVA was also conducted for the male only sample but was significant only for EDIDFT ($F=4.956$, $p=.009$). The ANOVA was not significant for EAT, EDIBUL, EDIBD, or BSQ. Post hoc comparisons with the use of Dunnett's C were estimated for EDIDFT and did not find any significant differences between the three male groups. These results can be found in Table 3.

In comparison to males, the two-tailed independent-sample T tests showed that females scored significantly higher on the EAT ($t=-3.186$, $p=.002$), the EDIDFT ($t=-4.897$, $p=.000$), EDIBD ($t=-4.075$, $p=.000$), and BSQ ($t=-6.618$, $p=.000$). No significant differences were found regarding EDIBUL. These results can be found in Table 4.

CHAPTER 4

DISCUSSION

The results of this study do not support the hypothesis that male and female athletes are more likely to exhibit characteristics of an eating disorder compared to college male and female high school athletes. Specifically, collegiate athletes scored significantly lower on the EAT, EDIDFT, EDIBD, and BSQ compared to high school athletes. These results are not consistent with other findings that collegiate athletes are more at risk for an eating disorder compared to non-athletes (Kirk, Singh, & Getz, 2001; Hinton, Sanford, Davidson, Yakushko, & Beck, 2004). The results however are consistent with DiBartolo & Shaffer's (2002) findings that collegiate athletes reported less eating disorder characteristics when compared to non-athletes. Although no significant difference was found between high school athletes and non-athletes, high school athletes on average scored lower on all five measures. These results reveal that more research needs to be conducted to determine if one of these groups is at a greater risk of an eating disorder than the other.

When males and females were analyzed separately based on athlete status, female collegiate athletes were less likely to exhibit characteristics of an eating disorder compared to high school athletes and non-athletes on most measures. These results do not support research including Raymond-Barker, Petroczi, & Quested (2007) that have found that female collegiate athletes are more at the most risk for eating disorders. Although female high school athletes on

average scored lower compared to non-athletes, no significant differences were found. This result as well as the finding that no significant differences were found in the measures of EDIDFT and EDIBUL, reveal that more research needs to be conducted to determine if there is a difference in eating patterns of these female groups. Results also found no significant difference in the male sample of collegiate athletes, high school athletes, and non-athletes in all five measures. This is consistent with findings from Franco, Tamburino, Carroll, & Bernal (1988) reporting that males are less likely to develop of an eating disorder compared to females.

In addition, this study also showed that females as a whole are more likely to exhibit characteristics of an eating disorder compared to males which is consistent with most studies including Franco, Tamburino, Carroll, & Bernal (1988). This study could also be consistent with the statement made by Papathomas & Lavallee (2006) in that because eating disorders are associated as a “female disease” this could cause eating disorders to be underreported in males.

Overall results revealed that collegiate athletes were less likely to exhibit characteristics of an eating disorder. This is consistent with Maulinauskas, Raedeke, Aeby, Smith, & Dallas (2006) who stated that college students are adapting to a different schedule which can in turn lead to a different eating pattern. The transition from high school to college can possibly create stress on a college student as they try and adapt to a new environment. No longer having adult supervision and more independence can often lead to unhealthier eating patterns and choices. This could have an affect on high school athletes that do not continue playing a sport at a collegiate level because they might not be aware of the proper ways to exercise because they no longer have a sport to keep them motivated. In the effort to maintain or lose weight, a high school athlete that is unaware of the proper way to exercise and diet in college could possibly be at risk of “over-exercising” or “under-eating” to make up for the sport(s) they are no longer

playing. Although, there was no significant difference between high school athletes and non-athletes, high school athletes scored slightly lower in the measures on average, revealing they might be less likely to develop an eating disorder compared to non-athletes. This result might be because a non-athlete has never played a sport and therefore might not exercise or be physically active on a regular basis. Lack of exercise along with changes in eating patterns and possibly consumption of unhealthier foods in college might put a non-athlete at the most risk of gaining weight. In order to prevent weight gain and maintain or achieve a thin figure, a non-athlete might try to manipulate their diet in an unhealthy way to make up for their lack of exercise. Although this research study provided many significant results, there were still some mixed findings concerning female collegiate athletes, high school athletes, and non-athletes as well as insignificance regarding male and female high school athletes compared to non-athletes. Therefore more research needs to be conducted focusing on these groups and to determine the different factors that affect eating and exercise behaviors in order to reduce the risk of an eating disorder in collegiate athletes, college students that played sports in high school, and college non-athletes.

Limitations and Future Research

It is important to note that this study included a sample of convenience in which results were obtained from participants at the University of Mississippi, therefore different results could be found if this study was conducted at other universities. The University of Mississippi does not participate in some sports that are offered at other schools such as swimming, gymnastics, and wrestling. Not having these sports to account for at the collegiate level could have had an affect on the results of the collegiate athletes. To better understand the risk of eating disorders in these different groups, it would be helpful not only to conduct this study at other universities.

This would help to determine if specific sports have affect on eating patterns and body image. Another limitation of this study is the small sample (N=31) of non-athletes which could have effected the results. Future research that includes a larger sample size of non-athletes to compare to collegiate athletes and high school athletes is needed to develop a better understanding of the risks of eating disorders in these groups. Another limitation to note is that all results were self-reported which could lead participants to under-report or over-report symptoms of an eating disorder which could affect results.

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Table 1

*ANOVA of Collegiate Athletes vs. High School Athletes vs. Non-Athletes
Mean (Standard Deviation)*

	EAT	EDIDFT	EDIBUL	EDIBD	BSQ
Collegiate Athletes (N=107)	6.32 _a (6.81)	2.74 _a (4.45)	0.91 _a (2.15)	4.61 _a (5.60)	61.82 _a (34.79)
High School Athletes (N=152)	9.30 _b (8.49)	4.30 _b (5.61)	0.67 _a (1.40)	7.74 _b (6.95)	78.42 _b (38.14)
Non-Athletes (N=31)	10.65 _b (7.13)	5.68 _b (5.88)	1.90 _a (4.21)	10.90 _b (9.16)	94.35 _b (46.72)
ANOVA F	6.145**	4.834**	4.264*	12.734***	10.998***

***p<.001, **p<.01, *p<.05

Groups with means that were not significantly different at 5% level based on Dunnett's C test share the same subscripts.

EAT= Eating Attitudes Test

EDIDFT= Eating Disorder Inventory – Drive for Thinness

EDIBUL= Eating Disorder Inventory – Bulimia

EDIBD= Eating Disorder Inventory – Body Dissatisfaction

BSQ = Body Shape Questionnaire

Table 2

*ANOVA of Female Collegiate Athletes vs. High School Athletes vs. Non-Athletes
Mean (Standard Deviation)*

	EAT	EDIDFT	EDIBUL	EDIBD	BSQ
Female Collegiate Athletes (N=64)	6.89 _a (7.94)	3.45 _a (5.27)	0.89 _a (2.39)	4.59 _a (5.58)	66.86 _a (34.40)
Female High School Athletes (N=99)	10.58 _b (8.93)	5.53 _a (6.11)	0.85 _a (1.57)	9.45 _b (7.25)	90.94 _b (37.78)
Female Non-Athletes (N=26)	10.58 _b (6.18)	5.46 _a (5.63)	2.00 _a (4.52)	11.08 _b (9.12)	98.12 _b (45.87)
ANOVA F	4.194*	2.692	2.424	12.116	10.009***

***p<.001, **p<.01, *p<.05

Groups with means that were not significantly different at 5% level share the same subscripts. For female EDIDFT, Tukey test was used. For other measures for female, Dunnett's C was used.

EAT= Eating Attitudes Test

EDIDFT= Eating Disorder Inventory – Drive for Thinness

EDIBUL= Eating Disorder Inventory – Bulimia

EDIBD= Eating Disorder Inventory – Body Dissatisfaction

BSQ = Body Shape Questionnaire

Table 3

*ANOVA of Male Collegiate Athletes vs. High School Athletes vs. Non-Athletes
Mean (Standard Deviation)*

	EAT	EDIDFT	EDIBUL	EDIBD	BSQ
Male Collegiate Athletes (N=43)	5.47 _a (4.60)	1.67 _a (2.53)	0.93 _a (1.75)	4.63 _a (5.71)	54.33 _a (34.41)
Male High School Athletes (N=53)	6.91 _a (7.05)	2.00 _a (3.58)	0.34 _a (.96)	4.53 _a (4.99)	55.04 _a (26.03)
Male Non-Athletes (N=5)	11.00 _a (11.92)	6.80 _a (7.69)	1.40 _a (2.19)	10.00 _a (10.42)	74.80 _a (51.44)
ANOVA F	1.891	4.956**	2.824	2.22	0.989

***p<.001, **p<.01, *p<.05

Groups with means that were not significantly different at 5% level share the same subscripts. For male EDIBD and BSQ, Tukey test was used. For other measures for male, Dunnett's C was used.

Table 4

Two-tailed Independent T-tests of Males vs. Females
Mean (Standard Deviation)

	EAT	EDIDFT	EDIBUL	EDIBD	BSQ
Males (N=101)	6.50 _a (6.48)	2.10 _a (3.60)	0.64 _a (1.02)	4.84 _a (5.69)	55.71 _a (31.22)
Females (N=189)	9.32 _b (8.42)	4.82 _b (5.83)	1.02 _a (2.43)	8.03 _b (7.44)	83.77 _b (39.67)
T statistic	-3.186**	-4.897***	-1.647	-4.075***	-6.618***

***p<.001, **p<.01, *p<.05

EAT= Eating Attitudes Test

EDIDFT= Eating Disorder Inventory – Drive for Thinness

EDIBUL= Eating Disorder Inventory – Bulimia

EDIBD= Eating Disorder Inventory – Body Dissatisfaction

BSQ = Body Shape Questionnaire

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