



# Critical Elements That Affect Collegiate Athletes' Risk of Eating Disorder

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## INTRODUCTION

In 2003, 24 million people suffered from eating disorders within the United States, where eating disorders had the highest mortality rate among mental illness (The Renfrew Center Foundation for Eating Disorders, 2003). Among the adult population, 0.6% will suffer from anorexia nervosa and 1.0% will suffer from bulimia nervosa (Hudson, Hiripi, Pope, & Kessler, 2007). Among college athletics eating disorders occur most often when it is important to keep a low body weight for competition (Arthur-Cameselle & Quatromoni, 2010), and where pressures from family, friends, spectators, coaches, and personal expectations are high (Arthur-Cameselle & Quatromoni, 2010; Sudi et al, 2004).

Sundgot-Borgen and Torstveit (2004) discovered that female elite athletes report significantly more symptoms of anorexia and bulimia (20%) than the females who are not participating in athletics (9%). Petrie, Greenleaf, Reel, and Carter (2008) discovered similar patterns among male athletes. Elias (2004) and Atkinson (2007) explain that these social norms are learned, processed, and suppressed within the mind where the nature of poor eating behaviors become unconscious and appear normal to an individual, particularly to individuals involved in athletics.

Gay, Mady-Foster, Minton, Monsma, and Torres-McGeHee (2011) proposed that an individual's desire for thinness and susceptibility to developing an eating disorder may be significantly correlated with the type of sport in which the athlete participates: Aesthetic (e.g. cheerleading, wrestling, and gymnastics) or Non-Aesthetic sports (e.g. baseball, volleyball, and soccer). Sundgot-Borgen and Torstveit (2004) indicated that 42% of athletes in aesthetic sports and 24% of athletes in non-aesthetic sports exhibited eating disorder behaviors.

The level of competition can also drastically affect an athlete's risk of developing an eating disorder. When investigating eating habits and training routines in Division I male athletes, Petrie, Greenleaf, Reel, and Carter (2008) discovered that 16.7% ( $N = 203$ ) of participating athletes experienced binge eating at least one time every week. Stoutjesdyk and Jevne (1993) found that 5% of male athletes who completed the Eating Attitudes Test (EAT) showed characteristics of anorexia.

Two studies suggested that Division I female athletes are at a high risk of developing an eating disorder when drive for thinness and total body fat were associated with the amount of achievable success in their sport (Johnson, Powers, & Dick, 1999; Powers & Johnson, 1996). Female athletes in Division II athletics did not exhibit significant differences in risk of eating disorder when compared to non-athletes. Also, Picard (1999) found that Division I student-athletes displayed higher levels of eating disorder behaviors than Division III student-athletes.

## PURPOSE

The purpose of this study was to investigate the role gender, sexual orientation, level of competition, and type of sport have on athletes' risk of developing an eating disorder. The EAT-16 (an adapted version of the EAT-26) was used in the present study.

## METHOD

Participants were collegiate athletes (57 males and 210 females) from eight Divisions I ( $N = 64$ ), II ( $N = 79$ ), and III ( $N = 119$ ) universities and colleges. The surveys were administered using Survey Monkey. Participants were asked to complete a demographic questionnaire and the Eating Attitudes Test-16 (EAT-16).

The EAT-16 The EAT-16 is a 6-point Likert scale (1 = *Always*; 2 = *Usually*; 3 = *Often*; 4 = *Sometimes*; 5 = *Rarely*; 6 = *Never*) and was found to be reliable ( $r \geq .70$ ; Ocker, Lam, Jensen, & Zhang, 2007).

A one-way ANOVA was used to examine the mean differences of risk of developing an eating disorder between males and females. A hierarchical multiple regression was used to examine whether collegiate athletes' risk of developing an eating disorder was a function of gender, height, age, division, and year in school. The significance level was set at  $p < .05$ .

## RESULTS

Results of the one-way ANOVA indicated female athletes overall had a significant ( $F_{1, 265} = 9.39, p = .002$ ) higher risk of developing an eating disorder than male athletes (see Table 1 below).

Table 1: One-Way ANOVA Comparing Gender Differences in Risk of Developing an Eating Disorder

	Males Mean $\pm$ SD	Females Mean $\pm$ SD	<i>F</i>	<i>p</i>
Risk of Developing an Eating Disorder	5.12 $\pm$ 7.18	9.42 $\pm$ 9.90	9.39	.002**

\*\*  $p < .01$

In model 1 of the hierarchical multiple regression, one predictor (gender) was entered. This model was statistically significant  $F(1, 243) = 9.15; p < .05$  and explained 3.6% of variance in risk of developing an eating disorder. The unstandardized coefficient (*B*) for gender was -4.44, suggesting that female athletes have a score of 4.44 points higher (i.e., a higher risk of developing an eating disorder) than male athletes on the EAT scale.

After entering height, current weight, and age in model 2, the total variance explained by the model was 6.1% ( $F_{3, 240} = 2.12; p < .10$ ), a 2.5% change of explained variance. Gender remained significant after entering height, current weight, and age; however, the change in  $R^2$  is significant at the .10 level, but not at the .05 level. The unstandardized coefficient for gender was reported as -3.78. A significant difference in height and current weight were also recorded. The unstandardized coefficient for height was -.55, indicating that shorter athletes have a .55 higher risk of developing an eating disorder. The unstandardized coefficient for current weight was .06, signifying that heavier student-athletes have a .06 risk of developing an eating disorder than those who are of lower weight.

Division 1 to 3, division 2 to 3, freshman, sophomore, and junior were entered in model 3, the total variance explained by the model as a whole was 6.7% ( $F_{5, 235} = .29, p = .92$ ), a merely 0.6% change of variance. Gender, height, and current weight remained significant; therefore, the additional variables added in model 3 did not affect existing variables. In model 1, gender was statistically significant, in model 2, three out of four variables were statistically significant, and in model 3, three out of nine variables were statistically significant (see Table 2 below).

Table 2: Hierarchical Multiple Regression Predicting Eating Disorder Among Athletes

	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	<i>B</i>	<i>Std. Error</i>	$\beta$	<i>t</i>
<b>Model 1</b>	.19	.036*					
Gender				-4.44	1.47	-.19	-3.03*
<b>Model 2</b>	.247	.061†	.025				
Gender				-3.78	1.79	-.16	-2.11*
Height				-.55	.23	-.21	-2.36*
Current Weight				.06	.03	.17	2.03*
Age				-.09	.44	-.01	-.20
<b>Model 3</b>	.259	.067	.006				
Gender				-3.96	1.84	-.17	-2.15*
Height				-.55	.24	-.21	-2.34*
Current Weight				.07	.03	.18	2.11*
Age				-.24	.77	-.03	-.31
Division 1 to 3				-1.01	1.56	-.04	-.65
Division 2 to 3				-.83	1.46	-.04	-.57
Freshman				-1.12	3.04	-.05	-.37
Sophomore				.52	2.38	-.03	.22
Junior				-.51	2.07	-.01	-.07

\*  $p < .05$ ; † Significant at  $p < .10$

## CONCLUSION

Based on the results, there was a gender difference in risk of developing an eating disorder among athletes overall. College athletes not only encounter the pressures common among the general population, but are confronted with pressures specific to the sport environment, including weight requirements, coach and teammate expectations, uniform style, and method of judgment (Petrie & Greenleaf, 2007). Our findings support previous research suggesting that eating disorders are witnessed more often among female competitors. The significant difference observed may have occurred for several different reasons, for example, injury, sickness, loss of a coach (Sundgot-Borgen, 1994), unrealistic body image ideals, and fear of imperfection in performance (Frost, Marten, Lahart, & Rosenblate, 1990).

Similar to previous research, our findings indicate that females are more likely to develop eating disorders than males. The present study also suggests that the shorter the athlete, the higher the risk of developing an eating disorder. This is consistent with previous research suggesting that short stature is significantly correlated with the onset of eating disorders. For example, individuals below 163 cm (64 inches) demonstrate higher risk of developing eating disorders (Favaro et al., 2007). Within society, shorter stature can often be considered a disadvantage, especially in the athletic environment, which can influence body image as well as body weight, creating an increase in below average caloric intake therefore increasing the risk of developing an eating disorder and ultimately lowering self-esteem (Downie, Mulligan, Stratford, Betts, & Voss, 1997). Negative remarks regarding height and weight combined with low self-esteem has been directly correlated to the onset of eating disorders (Fairburn & Harrison, 2003). The present study also suggests that the heavier an athlete, the higher the risk of developing an eating disorder. Criticism associated with an individual's weight or diet expectations within an environment influence the likelihood of an eating disorder (Shomaker & Furman, 2009). Therefore, an athlete's current weight could influence the dangerous behaviors that he or she undergoes in order to be accepted by peers within an athletic environment as well as an attempt to satisfy personal, coaches, or parental expectations to perform well during competition.

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