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Prevalence of Eating Disorder Risk and Body Image Distortion Among National Collegiate Athletic Association Division I Varsity Equestrian Athletes

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Context: Participation in appearance-based sports, particularly at the collegiate level, may place additional pressures on female athletes to be thin, which may increase the likelihood of their resorting to drastic weight control measures, such as disordered eating behaviors.

Objectives: (1) To estimate the prevalence and sources of eating disorder risk classification by academic status (freshman, sophomore, junior, or senior) and riding discipline (English and Western), (2) to examine riding style and academic status variations in body mass index (BMI) and silhouette type, and (3) to examine these variations across eating disorder risk classification type (eg, body image disturbances).

Design: Cross-sectional study.

Setting: Seven universities throughout the United States.

Patients or Other Participants: A total of 138 participants volunteered (mean age = 19.88 ± 1.29 years). They represented 2 equestrian disciplines: English riding (n = 91) and Western riding (n = 47).

Main Outcome Measure(s): Participants self-reported menstrual cycle history, height, and weight. We screened for eating disorder risk behaviors with the Eating Attitudes Test and for body disturbance with sex-specific BMI silhouettes.

Results: Based on the Eating Attitudes Test, estimated eating disorder prevalence was 42.0% in the total sample, 38.5% among English riders, and 48.9% among Western riders. No BMI or silhouette differences were found across academic status or discipline in disordered eating risk. Overall, participants perceived their body images as significantly larger than their actual physical sizes (self-reported BMI) and wanted to be significantly smaller in both normal clothing and competitive uniforms.

Conclusions: Disordered eating risk prevalence among equestrian athletes was similar to that reported in other aesthetic sports and lower than that in nonaesthetic sports. Athletic trainers working with these athletes should be sensitive to these risks and refer athletes as needed to clinicians knowledgeable about disordered eating. Professionals working with this population should avoid making negative comments about physical size and appearance.

Key Words: disordered eating behaviors, riding disciplines, aesthetic sports

Key Points

- Female collegiate equestrian athletes displayed a disordered eating risk prevalence that was similar to that seen in female athletes in other appearance-based sports and greater than that seen in female athletes in non–appearance-based sports.
- Female collegiate equestrian athletes should be screened for eating disorder risk during the preparticipation physical examination.
- Education programs on weight management, body image, and disordered eating may be helpful to athletes in aesthetic sports such as equestrian.

In January 1999, the National Collegiate Athletic Association (NCAA) approved equestrian as an emerging sport. Currently, 23 collegiate equestrian teams (18 Division I, 5 Division II) are sponsored in the United States. These horse-riding competitions are steeped in tradition and full of beauty, stateliness, and ceremony. In some areas of equestrian sport, the strict requirements and the drive to excel can be enticing to those susceptible to eating disorders. Equestrian competitions emphasize the physical appearance of the rider and may put pressure on the athlete to engage in disordered eating.

Equestrian is divided into 2 disciplines: English and Western. Western riders may endure more pressures to be aesthetically pleasing because the evaluation is on the rider rather than the horse. Equestrian athletes must control the horse while also controlling their bodies. The additional demands from coaches and judges may be similar to those placed on athletes in other aesthetic sports favoring a lean frame, such as gymnastics, wrestling, cheerleading, and figure skating,[1–5] and the athlete's appearance is included in the judging or scoring.

Johnson et al[6] stated that more than 13% of the female collegiate athletes they surveyed had clinically significant problems with eating disorders, whereas 35% and 38% were deemed to be at risk for anorexia nervosa and bulimia nervosa, respectively. More specifically, aesthetic sport athletes and those in weight-restricted sports such as rowing and horse racing (eg, jockeys)[7,8] have been the focus of study on the prevalence of eating disorder risk,[9–13] which ranges from 33% to 50% in aesthetic sports.[2,12] However, no current investigators have estimated prevalence among female equestrian athletes.

To better understand the causes of disordered eating, researchers have targeted the role of body image. Theorists agree that perceptions such as body image distortion and dissatisfaction play a crucial role in the development of disordered eating[14,15] and pathogenic behaviors such as excessive dieting, exercising, and purging.[12] However, most eating disorder risk tools that assess body-related perceptions are fee based or time consuming (eg, Eating Disorder Inventory–3 and Eating Disorder Evaluation) and impractical, especially in nonclinical settings. A more practical alternative is the Stunkard Figural Stimuli Scale.[16] The most frequently used version of this scale involves 9 sex-specific body mass index (BMI)-based silhouettes (SILs). These pictorial images of body shapes are associated with 9 specific BMI increments that were established in a population-based normative data set of 16728 white women ranging in age from 18 to 100 years.[17] Researchers use these images when asking questions pertaining to participants' current perceptions of their physiques (ie, perceived SIL) or their desired physique perceptions (ie, desired SIL). The magnitude of body image dissatisfaction using the SILs is calculated as perceived SIL−desired SIL.[17,18] To date, many terms have been used inconsistently in the literature to describe body image perceptions. For the purposes of this study, *body image disturbance* is an umbrella term encompassing perceptions, cognition, affect, behaviors, and subjective evaluation related to body image.[19] Because sociocultural ideals involving thinness are common, especially among collegiate women, greater discrepancies between actual size (ie, self-reported or measured BMI) and perceptions of size may reflect greater degrees of body image dissatisfaction.

Whether athletes and nonathletes differ in body image disturbance is unclear. Before 2001, evidence[20,21] to support body image disturbance in athletes compared with nonathletes was conflicting. As in the disordered eating literature, the risk of body image disturbance is linked to task (eg, performance advantages, weight requirements) and contextual pressures (eg, coach, judge, teammates)[22] to attain an ideal physique.[20,21] Aesthetic and lean sport athletes are at greater risk for eating disorders and body disturbances than athletes participating in more traditional, nonlean sports.[1–4] However, in a meta-analysis, Hausenblas and Downs[23] found no differences in body image disturbance between athletes and nonathletes. Yet none of their samples included equestrian athletes, so further research is warranted.

Although body image concerns are amplified by pressure from coaches with team weigh-ins and appearance-related performance demands, revealing uniforms and judging criteria are also implicated as stressors.[24] More specifically, Torres-McGehee et al[13] found that whether they were wearing normal clothing or their competitive uniforms, dancers' desired body images were still smaller than their perceived body images. As in competitive dance and other aesthetic sports, the physical demands of equestrian favor a lean frame and unique uniforms. Competitive clothing for the English discipline is usually based on traditional needs for this riding style, but most standards include boots; tight pants (breeches or jodhpurs); a shirt with some form of tie; a hat, cap, or equestrian helmet; and a jacket. Western riders wear tight-fitting jeans and chaps and an equestrian shirt for each event. The equestrian shirt has sequins and rhinestones across the shoulders; the body portion of the shirt is tight and tucked in. These shirts are considered very flashy and are used to gain a competitive edge. Given these differences in uniforms, it is reasonable to assume that Western riders may feel greater pressure regarding their appearance, especially in uniform, and might also be at greater risk for body image disturbance and associated disordered eating.

Evidence[25] suggests that females' body perceptions change from high school to college: relative to high school, women in college categorized themselves as overweight and reported greater body disturbances. Barker and Galambos[26] found that moving away from home to attend college increased the likelihood of binge eating among young women. At the collegiate level, the risk of developing body image disturbances may also be linked to the academic status of the rider. However, whether body disturbance is greater among those who are further in their academic careers (eg, seniors) than those who are closer to having experienced puberty (eg, freshmen) is unknown.

Our study had 3 main purposes. First, we calculated the estimated prevalence of eating disorder risk for the total sample, by academic status (freshman, sophomore, junior, or senior) and by riding discipline (English or Western). Second, we compared BMI, perceived and desired SILs in daily clothing and uniform across riding disciplines, and academic status. Third, we considered variations in BMI and SILs across participants classified as at risk and not at risk for disordered eating.

METHODS

Participants

After appropriate university review board approval was acquired at the institution of the first author (T.M.T.), all 18 NCAA Division I Varsity equestrian coaches were asked to grant permission for their institution and athletes to participate in the study; 7 agreed to do so. After each coach granted permission, the first author contacted individual equestrian athletes via e-mail. On the 7 teams (39% team response rate), 211 equestrian athletes were contacted to seek participation; 138 completed the study, yielding a relative response rate of 65.4%. Participants ranged from 18 to 25 years of age (mean = 19.88 ± 1.29 years), competed in the English (n = 91) or the Western (n = 47) discipline, and were freshmen (n = 44, 31.9%), sophomores (n = 34, 24.6%), juniors (n = 24, 17.4%), or seniors (n = 36, 26.1%).

Instrumentation

Demographic and Anthropometric Data. A questionnaire was used to acquire basic personal and demographic data. Information collected included academic status (eg, freshman, sophomore, junior, or senior) and equestrian background (type of riding discipline, number of years riding, and weight requirement policies). Volunteers also self-reported their height, current weight, lowest weight, and ideal weight.

Eating Attitudes Test. The Eating Attitudes Test (EAT-26) was administered to screen for eating disorder characteristics and behaviors. This widely used and well-validated instrument

has reliability (internal consistency) of $\alpha = 0.90$.[27] The α coefficient for our study was .89. Although not diagnostic, the EAT-26 is commonly used as a 0 screening tool to identify early characteristics and behaviors indicating the potential presence of an eating disorder.[27] It includes 3 subscales: dieting, bulimia, and food preoccupation and oral control. Five supplemental questions are used to identify risky behaviors, such as purging, suicidal thoughts, binge eating, intake of weight-loss supplements and laxatives, and diagnosis of previous eating disorders. An EAT-26 score of 20 or more or a *yes* to 1 supplemental question identifies an individual as at risk (AR) of eating disorder characteristics and behaviors. An EAT-26 score of less than 20 and *no* answers to all supplemental questions means that the person is considered not at risk (NR) for eating disorder characteristics and behaviors.

Sex-Specific BMI Figural Stimuli Silhouette. The Figural Stimuli Survey[16] was used to assess body disturbance based on perceived and desired body images. The Figural Stimuli Survey is a scale involving sex-specific BMI figural stimuli SILs associated with Likert-type ratings of oneself against 9 SILs; each SIL is associated with a number, which represents a specific BMI ranging from 18.3 to 45.4 kg/m^2 (eg, SIL 1 = BMI of 18.3, SIL 2 = BMI of 19.3, SIL 3 = BMI of 20.9, SIL 4 = BMI of 23.1). The test-retest correlation for females' perceived body image was $r = 0.85$ ($P < .0001$) and for desired body image was $r = 0.82$ ($P < .0001$).[28] Validity coefficients using Pearson r correlations ranged from 0.69 to 0.84 for comparisons between perceived BMI values and actual BMI measures.[29] Consistent with previous research,[13] SIL surveys were used as a basis of comparison for 4 questions about perceived and desired body image. Participants were asked to select the SIL (numbered 1–9) that best represented (1) "how you appear in normal daily clothing (eg, what you wear to school)," (2) "how you would prefer to appear in normal daily clothing," (3) "how you appear in performance/competition uniform," and (4) "how you would prefer to appear in performance/competition uniform." Scores were recoded based on the BMI values associated with each score.[16] Self-reported BMI was used to compare the participant's actual body size with the associated SIL for each question.

Procedures

Consenting participants completed the personal information survey, EAT-26, and a sex-specific BMI-based SIL questionnaire. All surveys were distributed via e-mail through SurveyMonkey.com (Palo Alto, CA). A reminder e-mail was sent to nonrespondents every 10 days, for a total of 3 reminders.

Data Analysis

The power and sample size (n = 100) were estimated using an α of .05 and a moderate effect size using the Cohen method.[30] Comparisons across riding style in physical variables and weight perceptions were compared using independent t tests. Chi-square analyses to examine the proportion of participants classified as AR of having an eating disorder were conducted for the total sample and by academic status and riding discipline using EAT-26 criteria. Three separate multivariate analyses of variance (MANOVAs) were run to examine differences in self-reported BMI and SILs (perceived and desired in daily clothing and uniform) by academic status, riding style, and eating disorder risk classification. The MANOVA was selected because of the strong correlations between BMI and SIL variables (Pearson correlation coefficient range, 0.22–0.90). When the overall MANOVA was significant, separate analyses of variance were performed. Because academic status had more than 2 levels, the Tukey post hoc adjustment for multiple comparisons was used to determine differences among group levels. Analyses were conducted in SPSS (version 14; SPSS Inc, Chicago, IL). Significance was set at $\alpha = .05$.

RESULTS

For self-reported anthropometric measurements (eg, height, weight, BMI), no differences were noted across riding discipline in any of the variables ($P > .05$), but more variability was present in measures among Western riders (as noted by the higher SDs) and less variability in ideal weight compared with the other measures (Table 1). A total of 58 participants (42.0%) were classified as AR for eating disorders based on behaviors (n = 41), EAT-26 subscales (n = 6), or both behaviors and EAT-26 subscales (n = 11). The proportions of participants classified as AR by academic status and riding style and χ^2 statistics are provided in Table 2. No differences were observed in the proportion of participants categorized as AR by academic status or riding style.

Prevalence of Disordered Eating Risk

Based on EAT-26 scores, the estimated prevalence of eating disorders among the total participants was 42.0% (95% confidence interval [CI], 33.76%, 50.24%), with 38.5% (95% CI, 28.51%, 48.49%) among English riders and 48.9% (95% CI, 34.61%, 63.2%) among Western riders. Prevalence by academic status was 38.6% (95% CI, 24.2%, 53.0%) for freshmen (n = 44), 38.2% (95% CI, 21.9%, 54.5%) for sophomores (n = 34), 50.0% (95% CI, 30.0%, 70.0%) for juniors (n = 24),

Table 1. Self-Reported Measures in the Overall Group and English and Western Riders

Dependent Variable	Overall (n = 138), Mean ± SD	English Riders (n = 91), Mean ± SD	Western Riders (n = 47), Mean ± SD	t	P Value
Weight					
Self-reported, kg	63.4 ± 9.7	63.1 ± 8.2	63.8 ± 11.4	–0.3	.73
Ideal, kg	58.3 ± 7.0	57.9 ± 6.7	58.9 ± 7.4	–0.8	.45
Lowest, kg	57.4 ± 7.9	56.9 ± 7.3	58.2 ± 9.2	–0.8	.45
Self-reported – ideal, kg	5.0 ± 4.7	5.1 ± 4.5	4.8 ± 4.9	0.4	.68
Height					
Self-reported, cm	167.2 ± 6.5	167.3 ± 6.2	167.1 ± 6.9	0.1	.89
Body mass index,[a] kg/m^2	22.6 ± 3.0	22.6 ± 2.7	22.8 ± 3.6	0.4	.67

[a] Body mass index was calculated using each participant's self-reported height and weight.

Table 2. Proportion of Participants Classified as At Risk[a] in the Overall Group and by Academic Status and Riding Style

Group	Proportion Classified as At Risk, %	χ^2
Overall (n=138)	42.0	
Academic status		.772
Freshman (n=44)	38.6	
Sophomore (n=34)	38.2	
Junior (n=24)	50.0	
Senior (n=36)	44.4	
Riding style		.237
English (n=91)	38.5	
Western (n=47)	48.9	

[a] At risk was defined as a score >20 on the Eating Attitudes Test (EAT-26).

and 44.4% (95% CI, 28.2%, 60.6%) for seniors (n=36). Supplemental questions for the total sample revealed that 24.6% (n=34) engaged in binge eating; 11.6% (n=16) vomited to control weight or shape; 15.2% (n=21) used laxatives, diet pills, or diuretics to control weight; 3.6% (n=5) reported having previously attempted or had thoughts of suicide; and 2.9% (n=4) reported previously having an eating disorder. Although a χ^2 analysis indicated no differences within discipline for the EAT-26 supplemental questions, the proportions indicated that English riders, compared with Western riders, reported higher frequencies of bingeing (15.2% [n=21] versus 9.4% [n=13]), vomiting (8.7% [n=12] versus 2.9% [n=4]), using laxatives and diet pills (8.7% [n=12] versus 6.5% [n=9]), and thoughts of suicide (2.2% [n=3] versus 1.4% [n=2]).

Academic Status, Riding Style, and Eating Disorder Risk Classification Variation in BMI and Silhouette Type Variation

For the 5 SIL scores (self-reported BMI, perceived daily clothing image, desired daily clothing image, perceived uniform image, and desired uniform image), means and SDs by academic status, riding style, and risk classification and for the overall sample are shown in Table 3. We conducted MANOVAs to control for the inflation of type I error. The overall effect for riding style was not significant (Pillai Trace F=0.398, P=.850). Similarly, the overall effect for academic status was not significant (Pillai Trace F=1.285, P=.208); therefore, no post hoc tests were performed to examine differences across the 4 levels of academic status. However, the overall effect for eating disorder risk classification was significant (Pillai Trace F=4.612, P=.001). Further examination of the univariate analyses revealed that differences existed between participants classified as AR and NR for all SILs (P<.05) but not for BMI (P=.237). Differences were in the expected direction: AR participants had higher perceived daily clothing and perceived uniform SILs and lower ideal daily clothing and ideal uniform SILs.

DISCUSSION

Eating Disorder Prevalence

This study is unique because with Bulik et al,[17] we are among the first to consider the role of body image perceptions and eating disorder risk among collegiate varsity equestrian athletes, an understudied population. Prevalence in the current study was estimated at 42% for eating disorders in equestrian athletes, 38.5% for English riders, and 48.9% for Western riders. Johnson et al[6] stated that more than 13% of the female collegiate athletes they surveyed had clinically significant problems with eating disorders, whereas 35% and 38% were deemed to be AR for anorexia nervosa and bulimia nervosa, respectively. Our findings are consistent with those of previous authors who examined the prevalence of eating disorders in aesthetic athletes.[2,12] More specifically, Black et al[2] estimated the highest eating disorder prevalence to be among cheerleaders (33%), but disordered eating was common among gymnasts (50%), modern dancers (45%), and cross-country athletes (45%). Among categorized athletic sport groups versus individual sports, Sundgot-Borgen and Torstveit[12] estimated eating disorder prevalence at 42% in aesthetic sports (eg, gymnastics, dancing, figure skating, diving) and 24% in endurance sports (eg, aerobics, long-distance running). Eating disorder prevalence in female equestrian athletes was higher in our study than in athletes in technical sports (17%; eg, bowling, golf) and ball game sports (16%; eg, team handball, soccer, tennis, volleyball).[12] Greenleaf et al[31] recently estimated eating disorders in athletes (n=204) across 17 female sports (eg, gymnastics, rowing, softball, basketball, cross-country), classifying athletes with eating disorders (2.0%, n=4), symptoms (25.5%, n=52), or no symptoms (72.5%, n=148). However, they found no associations between sport team classification and eating disorder status.

Table 3. Descriptive Statistics for Body Mass Index Variables, Academic Status, Riding Style, and Eating Disorder Risk Classification (n=138), Mean±SD

Independent Variables	Body Mass Index	Perceived Daily Clothing Image	Desired Daily Clothing Image	Perceived Uniform Image	Desired Uniform Image	Pillai Trace F
Body mass index–based silhouette	22.64±3.02	23.73±3.22	21.03±1.34	23.83±3.58	20.86±1.27	
Academic status						1.285
Freshman (n=44)	21.96±1.88	23.51±3.88	20.72±1.30	23.40±4.12	20.83±1.36	
Sophomore (n=34)	23.63±4.08	23.95±3.15	21.28±1.42	23.98±3.08	20.88±1.34	
Junior (n=24)	22.66±2.63	23.36±2.57	20.89±1.26	23.49±3.29	20.80±1.17	
Senior (n=36)	22.52±3.10	24.03±2.85	21.26±1.32	24.44±3.55	20.91±1.19	
Riding style						0.398
English (n=91)	22.55±2.67	23.70±3.28	21.03±1.31	23.92±3.68	20.84±1.22	
Western (n=47)	22.80±3.63	23.78±3.14	21.02±1.40	23.66±3.42	20.90±1.37	
Eating disorder risk classification						4.612
At risk (n=58)	23.00±3.58	24.62±4.30	20.75±1.45	24.82±4.74	20.58±1.33	
Not at risk (n=80)	22.38±2.53	23.08±1.92	21.23±1.21	23.11±2.20	21.06±1.19	

Participation in Western riding (48.9% AR for eating disorders) versus English riding (38.5% AR for eating disorders) is related to disordered eating risk prevalence based on the higher prevalence (approximately 10%) in Western riders. The English discipline is judged primarily on the horse's freedom to move in the most optimal manner for a given task. Given the nature of evaluations in the disciplines, the higher prevalence for Western riders, which may result from the added pressure of the judges' criteria, is not unexpected. Performance of the horse is not specifically judged, but a poorly performing horse is considered to reflect the rider's ability, which may be the result of attending to body image cognitions while riding. Accordingly, the lack of body image differences was surprising. Whereas English and Western riders may experience similar pressures to maintain certain weights for appearance on the horse, jockeys may have to maintain their weights to enhance their performance on the horse. Previous authors[8,32] have reported eating disorder prevalence in jockeys as ranging from 15% to 20%.

The high prevalence of eating disorder risk in this study is of concern for several reasons. First, although prevalence rates of actual clinical disorders in equestrian athletes appear to be similar to the 2% prevalence found by Greenleaf et al[31] in traditional athletes, the riders may be experiencing subclinical levels of disordered eating symptoms. Second, because equestrian is a fairly new NCAA sport, very little is known about the risk at the collegiate level, making it less likely that collegiate personnel (coaches, athletic trainers, and teammates) can recognize the signs and symptoms of problematic eating behaviors when those behaviors are not at the clinical level. Third, equestrian athletes who are symptomatic may go undetected because of the subclinical level of their symptoms and, therefore, not receive the treatment or assistance that may be necessary to resolve the problems underlying their disordered eating.

Pathogenic Weight Control Behaviors and Health Concerns

Clinical and subclinical eating disorders involve the use of specific disordered eating and pathogenic weight control behaviors to manage emotions, weight, and body size.[33] A pathogenic eater may routinely engage in chronic dieting, fasting, laxative use, or self-induced vomiting (or a combination of these) during certain times of the year (eg, in-season athletes attempting to maintain a certain weight).[34] Our findings are consistent with those of several researchers who examined the prevalence of disordered eating symptoms. In our sample, a higher proportion of athletes reported binge eating, vomiting, and laxative use than previously shown in the literature (Table 4).[6,31,35,36] This evidence indicates that equestrian athletes may be at greater risk for disordered eating than other types of collegiate female athletes. Previous research on nonathletes has implicated the collegiate context in disordered eating behaviors,[26] but no statistically significant variations were demonstrated for academic status in disordered eating risk.

Although we did not examine them in this study, these pathogenic behaviors, increased physiologic demands, and self-imposed expectations of equestrian athletes may lead to concerns about energy availability, menstrual function, and optimal bone health, also known as the female athletic triad. Low energy availability, with or without disordered eating, can impair health.[37] Psychological problems associated with disordered eating include low self-esteem, depression, and anxiety disorders.[38] It is important to note the small percentage of equestrian athletes who reported having attempted or thought of suicide, which was similar to the 5.4% of athletes reported previously.[34] Health care professionals must not overlook such behaviors and should encourage additional psychological screening and intervention for these athletes.

Body Image

Female college students[39] and collegiate athletes and dancers[13,40] perceived themselves as heavier than their actual size, and the more inaccurate a woman's estimate of her body size, the more likely she was to be dieting.[41] Our results were consistent with those of Mossavar-Rahmani et al[41] in regard to athletes' perceptions of daily clothing SIL in relation to their actual BMIs. As did Torres-McGehee et al,[13] we examined actual BMI and competitive uniform SIL. As in competitive dance and other aesthetic sports, the aesthetic judging component of equestrian may favor lean frames and unique competitive uniforms. Overall, these equestrian athletes perceived themselves to be larger than indicated by their physical size but wanted to be smaller than their physical size (ie, BMI) in their uniforms, as indicated by the repeated-measures analysis. Our findings were consistent with those of Torres-McGehee et al,[13] who studied perceived SILs and desired SILs in uniforms for auxiliary units and dancers. Although we noted no differences in academic status or riding style, those who were AR reported higher scores for perceived SILs and lower scores for desired SILs for both daily clothing and uniforms. It is also important to recognize that there was more variation in daily clothing and

Table 4. Comparison of Prevalence Rates (%) of Pathogenic Behaviors Among Varsity Equestrian Athletes and Other Female Athletes

Pathogenic Behavior	Current Study (n = 138)	Greenleaf et al, 2009 (n = 204)[31]	Carter and Rudd, 2005 (2001: n = 353; 2002: n = 355)[36]	Johnson et al, 1999 (n = 562)[6]	Black and Burckes-Miller, 1988 (n = 382)[35]
Binge eating	24.6	15.2	7.1–6.2	16.2	NA
Vomiting	11.6	2.9	1.7–2.8	6.4	7.3
Laxatives	15.2[a]	0.98	4.6–2.3	1.78	4.5
Diet pills or dieting	NA	15.7	NA	1.42	15.3
Diuretics	NA	1.5	NA	0.53	4.2
Exercise	NA	25.5	NA	NA	53.1
Thoughts of suicide	3.6	NA	NA	NA	NA

Abbreviation: NA, not available.

[a] Value represents use of laxatives, diet pills or dieting, and diuretics.

uniform body image for those AR for eating disorders, even though the actual BMIs were about the same.

Limitations

We examined potential eating disorder characteristics and behaviors in collegiate varsity equestrian athletes. Although other contextual factors may be associated with these findings (eg, parental pressure, financial investment in sport), we focused on the prevalence of these behaviors among collegiate equestrian athletes. The EAT-26 was used to identify AR athletes and those who displayed risk behaviors of eating disorders. This tool is a widely used and psychometrically sound instrument, but it is a screening tool, not a diagnostic tool. Because we screened for, rather than diagnosed, eating disorder characteristics and behaviors, we cannot definitely conclude that equestrian athletes classified as AR actually had eating disorders. Possible causes of false-positive high EAT-26 scores may include participants with eating disorders not otherwise specified (EDNOS). Obsessive dieters without morbid concerns and generally disturbed people who respond positively on surveys without having significant eating concerns could have also inflated the EAT-26 scores in the absence of diagnosable eating disorders.[42,43] In addition, because of the structure of the EAT-26, it is possible to have similar mean values for athletes classified as AR and NR (eg, an AR athlete with a total EAT-26 score of less than 20 who answered *yes* to a behavioral question).

CONCLUSIONS

Participation in appearance-based sports, particularly at the collegiate level, may place additional pressures on female athletes to be thin, which may increase the likelihood of their resorting to drastic weight control measures, such as disordered eating behaviors.[44] Our findings validate concerns that varsity equestrian athletes may have an unacceptable prevalence of eating disorder risk and highlight the need to examine and address unhealthy weight management behaviors independent of eating disorder risk classification. Varsity equestrian athletes displayed characteristics indicating high risk for developing eating disorder thoughts and behaviors; therefore, we recommend screening all equestrian athletes for eating disorder risk during preparticipation physical examinations. The Eating Disorder Examination, a semistructured investigator-based interview,[42] is currently regarded as the most established inventory for assessing eating disorders[43] and should be considered for advanced screening. In addition, many of the athletes in this study wanted to be 10 to 15 lb (4.5 to 6.8 kg) lighter; education programs on weight management, body image, and disordered eating may benefit these athletes.

Varsity equestrian athletes had a higher prevalence of eating disorder risk symptoms and behaviors than did other female collegiate athletes. This is probably linked to their body images in uniform and daily clothing, as seen by higher body image disturbance scores among those AR. Understanding how female equestrian athletes perceive their bodies can have practical implications for weight loss and disordered eating, especially if athletes are striving to be smaller than is considered healthy for their frames, a situation that seems to be occurring, as seen in our findings, regardless of academic status and riding style. Future researchers should consider athletes' perceptions of what social network sources (eg, parents, coaches, peers) think about their body image and social physique anxiety.

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