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# Collegiate Coaches' Knowledge of Eating Disorders

**Joanne C. Turk, MA, ATC; William E. Prentice, PhD, ATC, PT; Susan Chappell, MPH, RD, LDN; Edgar W. Shields, Jr, PhD**

Department of Physical Education, Exercise, and Sport Science, University of North Carolina at Chapel Hill, Chapel Hill, NC

***Objective***: To assess, through exploratory research, 1) collegiate coaches' knowledge of eating disorders, 2) the confidence of collegiate coaches in their response correctness to questions about eating disorders among athletes, and 3) demographic data related to prior education about eating disorders and the role of the athletic department in providing such educational experiences.

***Design and Setting***: We distributed a 2-part questionnaire to 258 NCAA Division I-A coaches from 5 universities selected by sampling convenience.

***Subjects***: One hundred thirty-eight collegiate coaches responded to the questionnaire for a response rate of 53.5%.

***Measurements***: Our survey consisted of 30 true-false questions that tested knowledge of eating disorders overall and in 5 domains. These domains included etiology, identifying signs and symptoms, management and treatment, risk factors, and education and prevention of eating disorders. Coaches indicated their level of certainty in their responses by rating their confidence level on a 4-item Likert-type scale. Demographic data focused on educational programs attended by coaches and teams. Descriptive statistics were used to analyze all data.

***Results***: Our results suggest a need for coaches to achieve a greater knowledge of eating disorders in all domains. Evidence showed that educational programs about eating disorders were not often sponsored by the athletic department for coaches or athletes. There seemed to be poor communication between athletic departments and coaches regarding the availability of eating disorder educational resources.

***Conclusions***: Data suggested coaches could benefit from comprehensive education in all domains of eating disorders; however, further study is needed to validate these findings, to determine the actual effectiveness of education in the prevention of eating disorders, and to differentiate coaches' knowledge specific to sport coached and to coach and team sex.

***Key Words***: anorexia nervosa, athlete, education, prevention

Although the prevalence of eating disorders has increased alarmingly over the past 2 decades, such self-imposed practices date back to the Middle Ages[1–4] and seem to occur more frequently in certain cultures or populations.[5] Mangweth et al[6] found that Americans may be more predisposed to a critical view of their bodies due to cultural pressures alone. Pressures placed on athletes to have the "ideal" body may compound the problem and further differentiate American athletes as a high-risk population within an affected culture. A 1992 study by the National Collegiate Athletic Association (NCAA)[7] reported that 70% of the responding institutions (312 of 443) had at least 1 case of an athlete with an eating disorder. This was a 6% increase over the same study done in 1990.[8,9] Although eating disorders are not directly "caused" by participation in athletics, the athletic environment may precipitate or exacerbate such a disorder in a susceptible individual.[2,8–17]

DePalma et al[18] concluded from their study of 131 lightweight football players that the "teacher/coach" was perceived to be the individual who encouraged dieting practices most often. This is a cause for concern, since 42% of the players showed evidence of disordered eating practices. Coaches and others in the sports environment need to be aware of inappropriate practices, behaviors, and misconceptions that can trigger an eating disorder in a susceptible athlete.[2,12,17,19] Coaches have a great deal of influence over athletes, so they are in a position to play a primary role in the prevention and management of eating disorders in athletes. Pliner and Haddock[20] found that female subjects who showed increased anorexia nervosa characteristics were more sensitive to wishes, opinions, or corresponding positive or negative feedback from others. This may suggest that athletes who are predisposed to developing an eating disorder may take comments from coaches more seriously and personally because of their greater need for approval, particularly from a coach. Studies by Rosen and Hough[21] and by Harris and Greco[22] showed how coaches could negatively influence athletes. In these studies, female gymnasts resorted to pathogenic dieting practices after reporting pressure from coaches to lose weight. It is apparent from such research that coaches can influence the actions of their athletes. For this reason, coaches should be properly edu-

Address correspondence to Joanne C. Turk, MA, ATC, Curriculum Director, Athletic Training Education Program, College of Education, Butler University, 4600 Sunset Avenue, Hinkle Fieldhouse, Indianapolis, IN 46208. E-mail address: jturk@butler.edu

cated about eating disorders and related topics, so they can feel confident that they are enhancing the health of their athletes and not contributing to the possible development of an eating disorder.

The purpose of our investigation was to assess collegiate coaches' knowledge about eating disorders among athletes. This assessment could be useful for setting up appropriate educational programs to increase the active role of coaches in the prevention and management of eating disorders in athletes. Powers and Johnson[23] believe that governing bodies within the athletic community play a primary role in prevention efforts. Since the athletic department governs the university's athletic community, the department should create policy to ensure education about eating disorders for coaches and athletic teams. For this reason, we collected demographic data to see what role the athletic departments played in the education of coaches and athletes regarding eating disorders.

## METHODS

Since we were unaware of any available instruments with which to measure knowledge of eating disorders, we designed a 2-part questionnaire to collect such data from collegiate coaches. The instrument was critiqued by 11 experts in the following relevant disciplines: athletic training, exercise physiology, nutrition, psychiatry, sport administration, sport psychology, sport science, and sports medicine (physicians). Seven of these 11 individuals are respected experts in the area of eating disorders and have published extensive literature on the subject. All reviewers had at least a general background in sports nutrition and eating disorders. The questionnaire was also examined and completed by 10 coaches at 2 participating institutions in a pilot study. Suggestions from the experts and coaches were taken into consideration, and appropriate corrections of the instrument were made.

### Instrumentation

The questionnaire contained both demographic and survey sections. The survey was divided into 5 sections to assess the knowledge of coaches on specific aspects of eating disorders. These sections each contained 6 true-false statements on 1) etiology, 2) identifying signs and symptoms, 3) risk factors, 4) prevention and education, and 5) management and treatment. Coaches indicated their confidence in the correctness of their response to each statement on a 4-item Likert-type scale.

### Procedures

After project approval from the Institutional Review Board at the University of North Carolina at Chapel Hill, we contacted the athletic directors of 5 NCAA Division I-A institutions to explain the purpose, possible significance, and intended procedures of the study. Four of these universities were members of the Atlantic Coast Conference, and one was a Big Ten Conference member. These universities were selected based on sampling convenience. After each athletic director agreed to participate, we modified procedures according to individual institution allowances. Athletic directors provided a listing of all female, male, head, assistant, and graduate assistant coaches.

An informed proxy attended a coaches' meeting at 2 universities to seek participation from all coaches. The proxy explained the purpose, possible benefits, assurance of confidentiality, instructions, and time needed to participate. A consent form was also included and explained. All coaches not in attendance had questionnaire packets placed in their mailboxes; each packet included an explanatory cover letter, a human consent form, and a coded questionnaire. All coaches from the remaining 3 institutions were sent questionnaire packets directly, since there were no other coaches' meetings scheduled during our available time frame. Those coaches not responding within 2 weeks were sent a follow-up letter and questionnaire.

## RESULTS

### Demographic Results

Of a possible 258 Division I-A coaches from 5 selected universities, 42.2% (n = 109) responded initially. We conducted a follow-up study, which increased the response rate by 11.2% (n = 29), producing a total response rate of 53.5% (N = 138). Frequency reports differ slightly throughout the demographic results due to some instances where demographic questions were left incomplete. All demographic and survey data were analyzed by descriptive statistics. Data were analyzed collectively, instead of by institution, due to the small sample size at each university.

Males constituted 70.1% (n = 96) and females, 29.9% (n = 41) of the sample. One coach did not indicate sex. Most responses came from assistant coaches (58.4%, n = 80). Thirty-five percent (n = 48) of head coaches, 4.4% (n = 6) of graduate assistant coaches, and 2.2% (n = 3) of "other" coaches indicated their current positions. These coaches represented 18 different sports, which were not differentiated according to sex. Approximately 48% (n = 66) of the respondents coached male athletes, 38.7% (n = 53) coached female athletes, and 13.1% (n = 18) coached both female and male athletes. The mean total number of years coaching was 13.3 years, with a range of 1 to 45 years.

**Table 1. Coaches' Attendance at Eating Disorders Educational Programs (N = 138)**

| Attendance | No. (%) |
|---|---|
| Ever attended | 61 (44.2) |
| Within past year | 57 (41.3) |
| Within past 5 years | 33 (23.9) |
| Sponsored by athletic department | 37 (26.8) |
| Mandatory attendance | 23 (16.7) |

Coaches indicated whether or not they had ever attended an educational program about eating disorders, whether or not it was sponsored by the athletic department, and whether attendance was mandatory (Table 1). Coaches also stated whether their teams had attended an educational program about eating disorders. Of the 127 coaches who responded, 61.4% (n = 78) reported that their teams had not attended such a program within the last year. Thirty-three of 39 who responded indicated that attendance was mandatory, representing 23.9% of the total sample (N = 138) of coaches.

Coaches also indicated which educational resources regarding eating disorders were made available by the athletic department. Although subjects reported literature to be the resource most readily available (n = 52), most subjects were not aware of any educational resources available from the athletic department (n = 53) (Table 2).

### Survey Results

The frequency of individual correct responses was calculated and organized into 6 differentiated percentage groups with scores falling into a normal distribution (Table 3). Table 4 shows the percentage of correct and incorrect responses for each domain compared, in rank order, with mean confidence levels of correct versus incorrect responses for each domain. The domain with the highest mean percentage incorrect (education and prevention) showed the highest mean confidence level for incorrect responses. This domain also showed the highest composite mean confidence level (19.6 ± 3.5) (Table 5). The mean composite confidence level for each domain was then compared, in rank order, with the mean percentage of correct responses for each domain (Table 5). The mean composite confidence score was calculated by summing each individual's confidence level for each question in the domain. A sample mean was then derived for composite confidence scores in each domain.

## DISCUSSION

### Educational Programs for Coaches

Despite a lack of concrete documentation, experts[17,19,24–30] agree that education is a primary tool for minimizing the risk of eating disorders and that coaches, parents, athletes, and sport-related personnel should all be included in educational programs. We found that less than half of the coaches (44.5%) reported ever having attended an educational program about eating disorders. Although coaches should be responsible enough to seek education on potential problem areas such as eating disorders, in our opinion it should be the responsibility of the athletic department to establish and implement educational programs for athletes, coaches, and others who work closely with athletes.

Approximately 27% of the total sample indicated that they had attended an eating disorders educational program sponsored by the athletic department, and only 16.7% reported mandatory attendance. Forty-seven percent of the coaches did not know if such a program was sponsored yearly. In these last cases, if a program existed, we speculate that attendance was not mandatory and that communication between the department and the coaches was minimal. The low rate of attendance and knowledge of program existence is a cause for concern since the athletic department acts as the organizational body for all coaches and teams. Those policies, procedures, and preventative guidelines enforced by the athletic department will be carried out by coaches and department personnel and, in turn, will benefit the health of the athletes.

**Table 2. Eating Disorders Educational Resources Available from Athletic Departments According to Coaches (N = 138)**

| Resource | No. (%) |
|---|---|
| Video | 12 (8.7) |
| Literature | 52 (37.7) |
| Sponsored programs | 39 (28.3) |
| Other sources | 28 (20.3) |
| Not aware of available sources | 53 (38.4) |

**Table 3. Distribution of Coaches' Scores on an Eating Disorders Questionnaire (N = 138)**

| Percentage Correct | No. of Coaches (%) |
|---|---|
| 100–90 | 6 (4.3) |
| 89.5–80 | 41 (29.7) |
| 79.5–70 | 44 (31.9) |
| 69.5–60 | 34 (24.6) |
| 59.5–50 | 8 (5.8) |
| Below 49.5 | 5 (3.6) |

### Educational Programs for Athletes

Coaches and teammates are often the first to suspect that an athlete has a problem, due to their close daily contact. This is only one of many reasons why it is imperative for coaches and teams to be educated about signs, symptoms, and other issues related to eating disorders. Only 38.3% of the coaches reported that their teams had attended a program about eating disorders in the past year, and 23.9% indicated mandatory attendance. Where eating disorders programs are not sponsored by departments for coaches or teams, we hope coaches will see the importance of finding resources to educate themselves and their teams.

### Educational Resources

Besides attending educational programs, there are many ways of becoming knowledgeable about eating disorders, including literature, videos, and outside programs. Coaches were asked what educational resources were made available to them and their teams by their athletic departments. Only 12 (8.7%) individuals reported that videos were available, while 52 (37.7%) indicated that literature regarding eating disorders

**Table 4. Distribution of Coaches' Scores (with Confidence Levels) by Domain on an Eating Disorders Questionnaire***

| | Correct Responses | | Incorrect Responses | |
|---|---|---|---|---|
| Domain | Mean Percentage | Mean Confidence | Mean Percentage | Mean Confidence |
| Risk factors | 80.0 | 3.0 | 20.0 | 2.6 |
| Etiology | 73.9 | 3.0 | 26.1 | 2.7 |
| Identifying signs and symptoms | 73.8 | 2.9 | 26.2 | 2.5 |
| Management and treatment | 70.6 | 3.0 | 29.4 | 2.7 |
| Education and prevention | 68.5 | 3.3 | 31.5 | 3.1 |

* Confidence range: 1 = not at all confident; 4 = very confident.

was accessible for educational purposes. This is especially astonishing, because in 1989 the NCAA provided each NCAA-affiliated school with 2 educational videos, as well as supplemental literature about eating disorders.[10–12] It is important that athletic departments make coaches cognizant of educational material available to them. Even if the NCAA had not provided such resources, one would hope that athletic departments would have taken the responsibility to create educational opportunities and communicate with coaches and teams about the availability of such educational tools. In this study, 38.4% (n = 53) of the coaches were not aware of any eating disorders resources available from the athletic department.

## Survey Data

Scores seem to fall into a normal distribution, with the fewest frequency of individual percentage of correct responses falling at the ends of the distribution. Only 4.3% of the sample scored 90% correct or greater. Most (31.9%) scored between 70% and 79.5%. Although a distribution of this manner is considered normal, it may not be desired in this case. Eating disorders can be a matter of life or death, and coaches can significantly affect the prevention or exacerbation of these harmful disorders. The question remains to be answered as to what amount of knowledge is enough to prove helpful and not harmful with regard to eating disorders in athletes. This study showed that most coaches had a sizable amount of knowledge left to obtain. This point is profoundly emphasized by the 34 coaches (24.6%) who scored between 60% and 69.5% and the 13 coaches (9.4%) who scored below 60% correct (Table 3). A mean percentage correct value was computed for each of the 5 domains (Table 4). The risk factors domain had the highest percentage correct, and education and prevention had the lowest percentage correct. Since experts believe that education plays a primary role in the prevention of eating disorders, there could be serious implications if coaches lack considerable knowledge in this domain.

The overall mean score for the 5 domains was 73.4%, with a range of 68.5% to 80.0%. There is no score from other research with which to compare true knowledge, but data from this study imply the need for further education of coaches in all domains. Although the determination of an acceptable score remains an individual decision, personally or institutionally, one has to keep in mind the consequences that may result from an avoidable lack of knowledge about eating disorders.

**Table 5. Rank Ordered Mean Composite Confidence Levels Compared with Mean Percentages for the 5 Domains on an Eating Disorders Questionnaire**

| Domain | Mean* ± SD | SE | Mean Percentage Correct |
|---|---|---|---|
| Education and prevention | 19.6 ± 3.5 | .30 | 68.5 |
| Management and treatment | 17.9 ± 3.2 | .28 | 70.6 |
| Risk factors | 17.62 ± 3.8 | .33 | 80.0 |
| Etiology | 17.59 ± 3.2 | .28 | 73.9 |
| Identifying signs and symptoms | 16.5 ± 4.2 | .36 | 73.8 |

* Possible mean composite range: 6–24.

## Coaches' Confidence Levels

Knowledge of eating disorders, alone, is not the only factor. One's confidence in that knowledge plays an important role. Coaches who have a high level of confidence in their knowledge but actually have a low knowledge score could pose more of a threat than an individual with a high knowledge and low confidence score. Individuals who are very confident in their level of knowledge about eating disorders may offer suggestions or tips or impose ideas about an athlete's weight, body fat, nutritional needs, or so forth. If these individuals actually have a low level of accurate knowledge about eating disorders, the information they offer may be incorrect or they may inadvertently promote harmful eating or dieting practices. An example of this can be seen in Benson's study[31] of 394 elite female swimmers. Of the 70% of athletes who reported that coaches told them to lose weight, 36% thought that the weight loss requested by the coach was detrimental to their performance. Coaches who are properly educated about weight loss may be more confident in their knowledge. These coaches may then feel more assured that they are offering sound advice about nutrition, body composition, and weight loss that would help and not hinder the health and performance of athletes. Ideally, those coaches not confident in their knowledge would first seek correct information from a knowledgeable source before offering any diet or nutrition advice to athletes.

Survey results (Table 4) showed that the domain with the lowest percentage correct (education and prevention) had the highest mean confidence response. Mean composite confidence scores compared with mean percentage correct (Table 5)

showed similar results; the education and prevention domain had the highest mean composite confidence level and the lowest mean percentage correct. In other words, individuals generally indicated a higher confidence level across this domain, although they answered more questions incorrectly in this area. This domain, which obviously had the highest mean percentage incorrect, also showed the highest mean confidence score for incorrect answers. To reiterate, coaches were more confident that they answered questions correctly when in fact they actually answered more questions incorrectly in the education and prevention domain. This could have serious implications, given the previous scenario described.

The domain with the highest percentage correct (risk factors) fell in the middle of the composite confidence ranking, indicating that coaches were only moderately confident in their responses in this area. In general, since the majority of coaches did not have a strong level of confidence, coaches need to be educated about risk factors so that they are confident in the accuracy of their knowledge in that domain area. Overall, coaches who exhibit a greater confidence in their knowledge may be more likely to actively participate in the prevention and management of eating disorders in athletes.

Composite means, standard deviations, and standard error scores are seen in Table 5. Although means are very close (range 16.5–19.6) for the 5 domains, standard deviations and standard errors are low. Low standard errors can imply accurate generalization to true population means. The low sample number and restricted geographic area of the study, however, decrease true representation of an NCAA Division I-A coaching population.

## CONCLUSIONS

This study offered much insight regarding collegiate coaches' knowledge of eating disorders. Results suggested that coaches could benefit from comprehensive education in all domains of eating disorders. It is important that information relayed to coaches comes from knowledgeable, accurate sources. We recommend that coaches attend educational programs yearly, to reinforce their confidence in their knowledge. Coaches who are more confident in their knowledge will take a more active role in the prevention and management of eating disorders in athletes. We suggest that athletic departments take the responsibility to educate coaches, athletes, and those department members who work closely with athletes.

Although this study looked at past educational programs attended by coaches, these data were not correlated with actual knowledge scores. Research that directly compares knowledge of eating disorders with past educational experience could be very beneficial, as could research that determines the actual effectiveness of education in the prevention of eating disorders. Further study that differentiates coaches' knowledge specific to sport coached and in relation to their sex and the sex of their team could also be useful in the development of proper education and prevention programs. Perhaps most important, we recommend validation of an instrument to measure knowledge of eating disorders. Evidence presented in our research suggests a need for further understanding of the knowledge levels of coaches regarding eating disorders. A standardized instrument to measure the prevalence of eating disorders in athletes also needs to be created in order to fully understand the implications of lack of knowledge about eating disorders in the athletic environment.

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