

# Factors Related to the Onset of Eating Disorders Reported by Female Collegiate Athletes

Jessyca N. Arthur-Cameselle

Vassar College

Paula A. Quatromoni

Boston University

The purpose of this study was to identify factors related to the onset of eating disorders in female athletes. Participants were 17 collegiate female athletes (mean age of 20.7) who experienced eating disorders. Participants were interviewed individually and responses were coded thematically. Results revealed internal and external factors related to the onset of eating disorders. Internal factors included: *Negative Mood States*, *Low Self Esteem*, *Perfectionism/Drive for Achievement*, and *Desire for Control*. External factors included: *Negative Influences on Self-Esteem*, *Hurtful Relationships*, *Hurtful Role Models*, and *Sport Performance*. Findings suggest that many triggers for onset among athletes are similar to those reported among nonathletes. However, results demonstrate that the sport environment has a unique impact on athletes' eating disorder development. In particular, negative comments by coaches, modeling of eating disordered behaviors by other athletes, and sport performance pressure all contributed to eating pathology. Implications and recommendations for the sport community are discussed.

Determining an accurate percentage of athletes who experience eating disorders has been difficult for sport psychology researchers. Prevalence rates of eating disorders in athlete populations range from as low as 1% up to 62% across a variety of sports, according to a review of the literature (Byrne & McClean, 2001). Differences in eating disorder prevalence in athletes compared with nonathletes have been described in depth. Some studies indicate that athletes are at greater risk for developing eating disorders than nonathletes (Hausenblas & Carron, 1999; Sundgot-Borgen, 1994; Zucker, Womble, Williamson, & Perrin, 1999), while others contend that sport serves to protect athletes from developing eating disorders (Di Bartolo & Shaffer, 2002; Gutgesell, Moreau, & Thompson, 2003; Hausenblas & McNally, 2004; Reinking & Alexander, 2005). A meta-analysis of 34 studies indicated that compared with nonathletes, it is primarily athletes in "thin-build" sports

that emphasize leanness, such as gymnastics and diving, who are at greater risk for developing eating disorders (Smolak, Muren, & Ruble, 2000). This conclusion was supported by Black, Larkin, Coster, Leverenz, & Abood (2003) who found that, out of 12 sports, the highest rates of disordered eating were noted in three “thin-build” sports: gymnastics, dance, and cross country running.

The literature is rich with studies attempting to improve the precision of prevalence estimates, while other areas of distinction between athlete and nonathlete sufferers of eating disorders are relatively unexplored. For example, factors related to the onset of eating disorder symptoms in athletes compared with nonathletes have not been thoroughly investigated; yet, this information seems central to the development of effective prevention efforts designed specifically for athletes.

Given the paucity of information on athletes’ experiences, nonathlete literature traditionally serves to formulate an understanding of factors related to the onset of eating disorder pathology, despite the hypothesis that factors may be unique for athletes given the different social norms and pressures of the sport environment (Thompson & Sherman, 1999). There are a few noteworthy studies that used qualitative methodology to specifically examine the onset of eating disorders in nonathletes, though they have primarily included only participants with anorexia nervosa (AN). In the earliest published study on this topic, Beresin, Gordon, and Herzog (1989) elicited reports from 13 women (mean age 29.4 years) who had recovered from AN. Family conflict was identified as the primary factor that instigated eating disorders in participants, who typically described their mothers as intrusive and concerned with physical appearance and their fathers as distant breadwinners. In addition, the researchers identified a common theme in that participants reportedly were not allowed to express their feelings, particularly anger, within their families.

Subsequently, Button and Warren (2001) studied a cohort of 36 women (mean age 27.9 years) who had previously undergone inpatient treatment for AN at an eating disorder clinic. When interviewed, participants reported that the two most common perceived causes of their disorder were feeling a loss of control and experiencing relationship problems. Participants reported that although the disorder impacted them primarily in negative ways, it did provide a sense of control and power that they were seeking.

In a more detailed study, Tozzi, Sullivan, Fear, McKenzie, & Bulik (2003) examined potential causes of eating disorders in 70 women (mean age 32.3 years) with histories of AN. During interviews, researchers elicited participants’ views on factors that contributed to AN onset. Most commonly, participants reported family dysfunction (34.8%), weight-loss/dieting (21.7%), and pressure/stress/frustration (20.3%). The remaining contributors, in order of their prevalence, were: inappropriate comments, control, family weight/food issues, sexual abuse, mood, low self-esteem, loss (grief), adolescence, perfectionism, achievement, and parental expectations.

Most recently, Kally and Cumella (2008) analyzed etiological factors in 100 “midlife women” (ages 40–65 years) who, at the time of the interview, were undergoing inpatient treatment for an eating disorder. The most common theme related to onset was family of origin issues which included various negative experiences such as nonsexual trauma, controlling or critical parents, neglect, family alcoholism, and family issues with food. Other reported factors were family of choice issues, sexual abuse, poor body image, and health/medical issues.

Overall, previous qualitative investigations into eating disorder onset reveal several common themes, according to subjective reports from nonathlete participants. It appears that family dysfunction, lack of control, relationship difficulties, abuse, negative mood, dieting, and unintentional weight loss are most commonly related to the onset of eating disorders (Beresin et al., 1989; Button & Warren, 2001; Hardin, 2003; Hesse-Biber, Marino, & Watts-Roy, 1999; Hsu, Crisp, & Callender, 1992; Matoff & Matoff, 2001; Tozzi et al., 2003; Brandenburg & Anderson, 2007; Kally & Cumella, 2008).

At present, there are only two published qualitative studies that describe experiences of athletes with eating disorders to provide clues about onset in this distinct population. First, Sundgot-Borgen (1994) used structured clinical interviews with 103 elite Norwegian female athletes (ages 12–35 years) deemed “at risk” for eating disorders based on the Eating Disorder Inventory, to obtain information about “risk and trigger factors” for onset of eating pathology. Her findings revealed that dieting, fluctuations in weight, sudden high training demands, and traumatic events such as injury, losing a coach, or having relationship issues were related to eating disorder onset in athletes. While this information is helpful for understanding experiences of athletes, these interviews were highly structured, a design feature that may have limited the depth of responses elicited. In addition, the interview component was only a segment of a much larger study involving multiple surveys and medical evaluations. As such, the participants’ direct quotes were not included in the published results and their personal experiences were not fully described.

In the second study, Woods (2004) did not specifically intend to study an athlete population; however, the 18 participants (16 females and 2 males, ages 18–21 years) who completed her online survey coincidentally had all been former high school athletes. Their written responses to structured survey questions revealed that pressure from parents and coaches to meet a certain weight for athletic performance and positive reinforcement of weight loss were factors in both the development and maintenance of eating disorders. While this information provides some clues to risk factors unique to the sport environment, participants in Woods’ study were not high-level competitive athletes and the structured nature of the online survey did not allow for follow up questions to fully characterize their eating disorder experiences.

In addition to the limited body of qualitative research, a few quantitative studies have explored eating disorder onset in young, competitive, female athlete cohorts. Across these studies, it appears that negative mood states such as anxiety (Vardar, Vardar, & Kurt, 2007), perfectionism (Schwarz, Gairrett, Aruguete, & Gold, 2005), and negative comments about body shape or weight from coaches (Muscat & Long, 2008; Kerr, Berman, & De Souza, 2006) are related to disordered eating in female athletes.

Currently, there is a gap in the literature since in-depth qualitative studies are lacking to confirm hypotheses about factors in the sport environment that may be related to the onset of eating disorders in highly competitive athletes. It is unsatisfactory to simply apply results from qualitative studies on nonathletes to athlete populations given the likelihood that unique environmental triggers exist for athletes. Moreover, in-depth qualitative studies on eating disorder onset have typically included only participants with anorexia, failing to examine those with bulimia and binge eating disorder. Finally, the participants in previous nonathlete qualitative studies have been, on average, in their late 20s through 40s, which may limit the generalizability of findings to younger women.

The aim of this study was to investigate the experiences of young women with a variety of previous eating disorder diagnoses using in-depth interviews to characterize factors related to the onset of eating disorders in high-level collegiate athletes. Male athletes have been identified as potentially susceptible to eating and body image disturbances, particularly to “*muscle dysmorphia*,” a condition in which one is preoccupied with leanness or muscularity to the point of impairment in functioning as a result of lengthy exercise routines, strict diets, or use of anabolic steroids (Pope et al., 1997; Olivardia, 2001). While men with muscle dysmorphia are a population of concern, females were chosen as research participants for this study, since previous research demonstrates that 90% of sufferers with more traditional eating disorder diagnoses are women (American Psychiatric Association, 2000). The goal was to better understand participants who are members of demographic categories that have not typically been included in previous research. Based on findings from the aforementioned studies, we hypothesized that female athletes would experience interpersonal and social triggers for the development of eating disorders that are similar to nonathletes, with additional risk factors that are uniquely related to sport performance pressure, training demands, and relationships with coaches and other individuals in the sport environment.

## Method

### Participants

All participants met the following inclusion criteria: a) female gender; b) 18 years of age or older; c) current or former competitive NCAA collegiate athlete; d) diagnosed with an eating disorder (Anorexia, Bulimia, or Binge Eating Disorder) by a professional or met DSM-IV-TR clinical criteria (American Psychiatric Association, 2000) for an eating disorder for a period of six months; and e) self-reportedly experienced three months of recovery/remission from their eating disorder.

The study sample consisted of 17 females who ranged in age from 18 to 28 years old ( $M = 20.7$ ,  $SD = 2.4$ ). There were 15 Caucasian participants, one Asian-American, and one African-American. Fifteen of the 17 participants were competitive Division I athletes, two competed at the Division III level. They competed in a variety of sports: track/cross country ( $n = 9$ ), swimming, tennis, crew, golf, and diving. Participants experienced a variety of eating disorder diagnoses, including: Anorexia Nervosa ( $n = 8$ ), Bulimia Nervosa ( $n = 2$ ), Binge Eating Disorder ( $n = 2$ ), Anorexia followed by Bulimia ( $n = 4$ ), and Anorexia followed by Binge Eating Disorder ( $n = 1$ ).

Athletes in this study reported varying lengths of time during which they experienced eating disorder symptoms, from 8 to 96 months, with an average of 31.6 months ( $SD = 25.2$ ), or slightly more than two and a half years. Fifteen participants received a clinical diagnosis from a medical or psychological professional. The remaining two athletes met all DSM-IV-TR diagnostic criteria for an eating disorder, as determined by the interviewer, but had not received either professional treatment or a formal diagnosis.

Participants identified an average age of 16.6 years ( $SD = 2.6$ ) for the onset of their eating disorder and an average age of 18.5 years ( $SD = 2.4$ ) that marked the onset of recovery. They often moved in and out of recovery; the average length of

the longest reported recovery period ranged from 3 to 44 months, with an average of 14.2 months.

## Data Collection

Each participant was interviewed by a single interviewer (the primary researcher). While the interviewer used a discussion guide containing four questions to start the interviews (See Table 1), the interview was then open-ended and participants were encouraged to tell their stories about factors related to the development of their eating disorder at their own pace. If a participant did not discuss the topics on the interview guide related to each of the four questions, she was redirected using probing questions, including: “Can you tell me about [the topic of interest],” “How were you feeling emotionally at the time?” and “What was that experience like for you?” The interviewer frequently used reflective statements, such as “It sounds like you were feeling lonely” or “It seems like that was a difficult time,” to establish rapport, build trust, and ensure an accurate understanding of the participants’ experiences. Participants were encouraged to expand on brief answers with statements such as, “Tell me more about that,” or “Keep going.”

## Procedure

Participants were initially recruited using an on-line questionnaire created for a related survey research study. All 47 participants in the survey study were asked if they were willing to complete a follow-up interview about their eating disorder experiences. Of those, 19 responded to the interview invitation and 17 met inclusion criteria for this study. Participants were required to be, from their perspective, in

**Table 1 Interview Discussion Guide: Questions and Topics Covered with Participants**

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1. “Tell me about where you are from and your family background.”
    - a. Closeness and quality of relationships
  2. “When did you start getting involved with sport?”
    - a. Type and intensity of training
    - b. Collegiate sport experience
  3. “When did you have your first signs of eating disorder behavior?”
    - a. Age at onset
    - b. Type of symptoms
  4. “What do you think contributed to the eating disorder starting at that time?”
    - a. Situational factors at onset
    - b. Social factors/relationships at onset
    - c. Thoughts/Emotions at onset
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a current period of recovery of three months or longer from eating disorder symptoms and could not meet DSM-IV-TR clinical criteria for their former disorder. This recovery requirement allowed for greater ability to look back and reflect on their experiences. Aside from the required inclusion criteria, there was no attempt to create a random sample that equally represented specific demographic groups.

Because recruitment for this study used an on-line survey, participants were drawn from diverse geographic regions across the United States. Although all participants were willing to be interviewed in person, it was not possible to do so given limited resources. Therefore, six interviews were conducted in-person and 11 were conducted by telephone for those at great geographical distance from the primary researcher. No substantive differences in interview responses, length of interview, or qualitative data codes emerged in the transcripts of participants who were interviewed by phone compared with those interviewed in-person.

Interviews lasted between 40 min and 1 hr. All interviews were audio-taped using a standard tape recorder and were transcribed by the interviewer. All participants were contacted to review the transcript of their interview. This member check process allowed the interviewer to verify the content accuracy of the interviews.

All participants provided informed consent, were debriefed at the end of the interview, and were treated according to the ethical guidelines of the American Psychological Association. The research design and informed consent procedures were approved by the Boston University School of Education research review board. All interviews were voluntary and participants were not compensated.

## Data Analysis

Interview audio-tapes were transcribed verbatim; however, superfluous words used by participants that did not relate to the meaning of their statements, such as “like,” “you know,” and “um” were deleted from the quotes to enhance clarity for publication purposes. Transcript responses were qualitatively analyzed, grouped by themes, and placed into codes and categories accordingly using NVIVO version 7, qualitative research software. Larger themes were given the title of “category,” while “codes” that related to larger themes were organized into subcategories.

Codes present in two or more participants’ interviews were retained as part of the final coding structure, as this indicated commonality in experience. Names of codes were developed by finding common words in participants’ narratives that captured related ideas and experiences. Codes reflected information that emerged directly from interview transcripts and were neither a priori nor conceptualized by the research team. The coding structure was reviewed by a panel of qualitative research peers in a series of debriefing checks to assure that codes were accurate and simplified. These checks added validity to the coding structure.

Due to the fact that nearly 30% of participants experienced more than one type of eating disorder, it was not possible to analyze results by type of disorder since diagnostic groups were not mutually exclusive. In our data set, it was clearly evident that information about the onset of one disorder was highly relevant to the other diagnoses. This data handling decision was also influenced by previous research demonstrating that individuals with anorexia often meet criteria for bulimia or binge eating disorder after treatment for their initial disorder (Fichter, Quadflieg, & Hedlund, 2006; Strober, Freeman, & Morrell, 1997).

## Results

Numerous themes emerged from stories told by participants as they discussed the circumstances surrounding the onset of their eating disorders. As the athlete participants shared their stories, a variety of factors were described as having notable influence on the initiation of eating disorder behavior. These factors were easily characterized into two major domains; factors that were internal and those that were external. Participants did not point to one causal factor, but rather told stories that emphasized the interplay between events in their external environment and their internal perceptions or emotional states, which triggered the development of their eating disorder symptoms. As such, the resulting themes reflect this global division.

The category of “Internal Factors” that contributed to the onset of eating disorder symptoms included the following subcodes: *Negative Mood States*, *Low Self-Esteem*, *Perfectionism/Drive for Achievement*, and *Desire for Control*. The category of “External Factors” included the subcodes: *Negative Influences on Self-Esteem*, *Hurtful Relationships*, *Hurtful Role Models*, and *Sport Performance* (see Table 2).

### Internal Factors that Contributed to Onset

*Negative Mood States* at the time of onset, such as depression, stress, grief, and loneliness, were reported by 82% of participants ( $n = 14$ ). For example, “*I just remember being in bed at three in the afternoon and crying and not knowing why*” (Participant #2) and “*I had stressed out a lot . . . because I completely switched majors and schools, like three times and it was really hard . . . I remember kind of having crying breakdowns to my mom*” (Participant #1).

For many, eating disorder symptoms began as a way to cope with difficult emotions and experiences:

*There wasn't anything I could do to be happy and all of my emotions were tied to food . . . The only time I felt good was when I had a candy bar or something... it was just that exhaustion. Like, 'Its 3 o'clock. I'm exhausted. I still have practice. I still have hours of homework.' And . . . if I just sit down and eat candy, I would relax a little bit and have a little more courage to face the day.* (Participant #7)

*Low Self-Esteem* was mentioned by 76% of participants ( $n = 13$ ). In some cases, feelings of low self-esteem were general evaluations of low self-worth. For example, “*If I didn't reach my expectations, because I had self-doubts...I would just be so pissed at myself and I almost hated myself. I did hate myself*” (Participant #14).

For others, feelings of low self-esteem were reflected through body image dissatisfaction. Just before their eating disorder onset, many participants compared themselves unfavorably to others and felt badly about their bodies as a result. For example, “*I just felt bigger than most people and I was, especially in my school,*” (Participant #11) and “*I was not necessarily the fattest, but the other girls on the team were really skinny*” (Participant #6). Regardless of the source of low self-esteem, focusing on weight, body shape, and food became driving forces of the eating disorder for these athletes, as evidenced by this reflection, “*I have low self-esteem, and just physically looking good makes me feel better about myself because I feel like I don't offer anything else to the table*” (Participant #15).

**Table 2 Self-Reported Factors that Contributed to the Onset of Eating Disorder Symptoms in Female Collegiate Athletes**

Primary Category	Secondary Code	Examples
Internal Factors	Negative Mood (82%)	<p>“My grandfather died . . . I think I started to get depressed;” (P#13)</p> <p>“I think that I was really stressed. I felt really lonely and I was unhappy.” (P#10)</p>
	Low Self Esteem (76%)	<p>“I definitely would look in the mirror and be like, “that’s ugly” . . . I would always be scrutinizing myself. . . I hated myself.” (P#9)</p>
	Perfectionism/Achievement (53%)	<p>“I was obsessed with how I looked and perfection. I won’t stop short of super model looks, even though that’s completely unreasonable and nobody else looks that way.” (P#6)</p>
	Desire for Control (47%)	<p>“It was absolutely just a way to have control over something because I didn’t have control over my emotions.” (P#8)</p>
External Factors	Negative Influences on Self-Esteem (82%)	<p>“[My mom] was like, ‘oh, you are getting kind of chunky’ and it really upset me;” (P#7) “My dad would make comments . . . when I was in bathing suits.” (P#12)</p>
	Hurtful Relationships (71%)	<p>“I think part of the reason I developed an eating disorder was that my mother doesn’t really talk to me . . . there are just like specific moments where a mom should have been there for me.” (P#12)</p>
	Hurtful Role Models (59%)	<p>“I was noticing [another tennis player’s] eating patterns and she clearly had a problem, but I didn’t realize it at the time . . . I started doing [what she was doing] and working out excessively.” (P#2)</p>
	Sport Performance (41%)	<p>“I had just started running more intensely, was following the media knowledge at the time about fat free foods and what was healthy . . . I just wanted to be a good runner.” (P#4)</p>

*Perfectionism and Drive for Achievement* were cited by 53% of participants ( $n = 9$ ). What often started as simple dieting became an “*obsession*” and an all-consuming challenge for participants who later developed anorexia. Participant #16 reflected on this experience, “*My mom bet me that if I lost 10 pounds she would give me 100 dollars . . . I think, after I got the initial ten, I was like, ‘ok let’s see how much more I can do.’*”

Others reported that their struggles with food and body image were related to a general need for perfection. Participant #2 noted this connection, “*I’ve just always put so much pressure on myself . . . looking in the mirror and looking perfect, doing perfect, doing well in everything.*”

For many with anorexia, losing weight was described as an important source of accomplishment. “*The less I could eat through a day, the more successful I am. That was my thinking . . . if I could make it to dinner and just eat salad at dinner, oh that was great*” (Participant #9). This sense of achievement, in turn, reinforced eating disorder behavior and drove additional weight loss:

*Weight became . . . another measure of whether I was good enough or not. I could step on the scale and, ‘Oh, I lost another pound,’ and feel good about myself, ‘cause I wasn’t getting that anymore from interaction with friends. It was almost like the scale was giving me the approval sign if I had lost another pound or if I hadn’t gained any weight.* (Participant #5)

Finally, *Desire for Control* initiated onset for 47% of participants ( $n = 8$ ). This need for control seemed to stem from feeling powerless in other aspects of life. For example, “*I liked what I was doing. I felt like I had control over what I was eating...for once I had control over my life*” (Participant #15). For many, disordered eating behavior became the primary area in which the athlete could feel in control and powerful:

*I think it was a control thing. It was the only thing I could control. . . . It was something that you couldn’t touch me on. I’d be like, ‘OK. [My coach] can yell at me on the course or whatever, but [she] can’t change my physical image.’ . . . if I got myself in the perfect shape, it was that kind of thought, like ‘that’s something that you can’t control.’* (Participant #6)

## **External Factors that Contributed to Onset**

The most commonly reported external factor related to the onset of eating disorder symptoms was *Negative Influences on Self-Esteem*, reported by 82% of participants ( $n = 14$ ). This code was comprised of both explicit pressure from others to excel, as well as others’ negative comments about the athletes’ weight and shape. Pressure from parents and coaches often contributed to feelings of inadequacy and low self-esteem. For example, “*It was a nightmare because my coach was just really hard on me...[She] yelled at me and told me that I wasn’t doing things right . . . that really took a toll on me*” (Participant #14).

In particular, direct negative comments about body shape and weight were described as highly influential in the development of eating disorder symptoms

according to the women in this study. Negative comments from family members were most frequently mentioned, such as, “[My mom] would just call me . . . ‘little pig.’ . . . or say ‘Maybe if your waist was a little thinner this would look better on you’” (Participant #16). Negative comments from coaches were also detrimental to the athletes’ self-esteem and influenced the onset of eating disorders:

*My [high school] coaches would make fun of the cellulite that I now had and they made fun of how I ran ‘cause I started waddling because I couldn’t run very well. And so it was just kind of a battle for me.* (Participant #7)

*Hurtful Relationships* were experienced by 71% of participants ( $n = 12$ ) and reportedly contributed to eating pathology. Peer and romantic relationships were mentioned as sources of distress:

*I wasn’t really getting along with some people on my floor anymore, so I was having problems with that. . . I liked this guy on my floor and so I think that had an issue with it because he liked this [other] girl.* (Participant #9)

However, family dysfunction was the most common relationship concern that coincided with the onset of eating disorder symptoms, reported by 53% of participants ( $n = 9$ ). For some, family dysfunction was related to a lack of emotional connection with parents:

*My dad was very much like, “Here’s a credit card, go have fun, but I don’t want to talk about it.” And once he told me to “take my feelings upstairs.” He’s made it very clear that he didn’t want to hear anything about [my bulimia] at all.* (Participant #3)

Other participants described situational factors, such as work and parental separation, which kept them at a hurtful distance from parents:

*[His career] had to take precedence over my dad and myself having quality time together . . . That was one of the reasons why I started running so much, because I missed him so much that it was the thing that filled my life . . . I wanted him to be proud of me when he did come home . . . I wanted us to have something to bond about . . . if I had a really good track week the week before, we could be congratulatory and having a party.* (Participant #4)

For these athletes, exercise and food became methods to escape, or cope with the negative family situations they experienced.

*In my family . . . if you want to be heard, you have to yell and I hate that . . . It’s not always an encouraging environment. . . I didn’t want to be at home . . . I would always go to the gym, ‘cause that was my escape.* (Participant #9)

*Hurtful Role Models* with dysfunctional eating and exercise habits were reported by 59% of participants ( $n = 9$ ) as facilitators of onset. Exposure to others’ maladaptive eating behaviors and body dissatisfaction heavily influenced the participants’ own eating behavior and body image. This was especially true for participants’ mothers, whose own dysfunctional eating habits were directly observed and often internalized. “My mom had suffered from eating disorders . . .

*my mom would take a piece of bread off at dinner or whatever, with a sandwich, and I would do it too. Just 'cause I would copy what my mom did"* (Participant #2). Some participants' mothers never made direct comments about the importance of weight and shape, but daughters were indirectly taught to dislike their bodies through their mothers' actions:

*It's not like [my mom] ever, ever would have told me that I needed to lose weight. She thought I was the most beautiful person on earth. But it's the stacks of diet books she had around the house was not so much that I needed to be thin, but that she wasn't happy with her body . . . I think that really, that generational thing of just women hating themselves, I think really does a lot of damage and carries over even when parents clearly don't want to inflict that on their daughters.* (Participant #8)

Although participants most commonly mentioned their mothers, other important persons, such as teammates and friends with eating disorders or obsessive exercise habits, also played a role in eating disorder onset. Some participants observed athletes who restricted their food intake yet still performed well in their sport, which often influenced a desire to mimic unhealthy behaviors:

*My best friend from home, she was a really, really good swimmer . . . She had lost weight her freshman year from swimming and I remember her telling us, oh yeah, she was busy all the time she didn't have time to eat. . . I remember I was like, 'Oh, she can lose weight and do that, then I can do that.'* (Participant #1)

*Sport Performance*, cited by 41% of participants ( $n = 7$ ), was the final code that emerged as an external factor contributing to eating disorder onset. Disappointment with sport performance contributed to feelings of depression or stress, as described by Participant #14 who said, "*I just wasn't getting the results I wanted and, just, things started to go downhill. So I think I used food just to fill the void because I was never satisfied.*" While frustration with poor performance created a trigger for eating disorder development for some participants, a more common scenario involved restricting food intake and attempting to lose weight in the hopes of improving sport performance:

*I want to be the best diver I can and diving is about how you look and I am judged on how I look and if I don't look thin and fit, I'm not going to get as good of a score . . . And as you go to these meets and these women are so, they're just ripped, they're buff and they're really beautiful and I want to be that. They are good and I want to be good and [restricting food] is what I have to do to be good.* (Participant #7)

Other participants, particularly runners, felt similarly about intentionally restricting food intake to improve performance. For example, "*I think the restrictiveness was to try and bring myself in line. . . I probably thought if I was stricter and in control, then I could start to shape up and start to get to running better"* (Participant #13). Participant #4 described the way that her severe food restriction started after a realization that it had helped her performance: "*I had this pattern going that was working and I was running fast and I was running long distances and I was doing all these great things, that I didn't want to change [my eating*

*habits].*” Likewise, Participant #9 reported, “*I was a lot stronger and I was a lot faster, but I was a lot thinner too. So, my coaches didn’t like it. But I was like, ‘Well, screw you because I’m a better athlete for it.’*” In reflecting upon this common connection between lower weight and performance, Participant #8 stated, “*The entire [running] environment is very conducive to eating disorders.*”

## Discussion

Since there are only two previous studies that have examined eating disorder onset in athlete populations, the findings of this research are primarily compared with previous qualitative research conducted on nonathletes. The results of this study indicate that a variety of factors contribute to the development of eating disorders in athletes, most of which are consistent with reports from nonathletes. Of the 13 “perceived causes” of anorexia nervosa in nonathletes reported by Tozzi et al. (2003), 11 were mentioned by the athlete participants in this study. Only sexual abuse and adolescence life stage were not noted by our athlete participants.

Negative mood states, one of the two most commonly reported contributing factors in this study, are well documented in association with eating disturbances (Braun, Sunday, & Halmi, 1994; Bravata, Storch, & Storch, 2003; Tozzi, et al., 2003; Wasson, 2003). Interestingly, two of our participants were diagnosed with obsessive compulsive disorder and several others noted strong family links to depression. Other research confirms that eating disorders are often related to other psychopathology including anxiety disorders and depression (Bulik, Sullivan, Fear, & Pickering, 1997; Deep, Nagy, Weltzin, Rao, & Kaye, 1995; Pollice, Kaye, Greeno, & Weltzin, 1997). In addition, more recent research has shown that athletes with disordered eating experience higher levels of both state and trait anxiety compared with athletes without disordered eating behavior (Vardar et al., 2007).

Low self-esteem, including poor body image, was the second most influential internal factor noted by athletes in our study, a factor documented in previous study samples (Krentz, Chew, & Arthur, 2005; Tozzi et al., 2003; Engel et al., 2003; Kally & Cumella, 2008). Many of our athletes reportedly engaged in restrictive dieting because of poor body image. Some stated that innocent dieting turned into an “*obsession*” or played into seeking “*perfection*,” which is supported by research that links dieting to the onset of eating disorders (Stewart, Williamson, & White, 2002; Hsu, 1997; Tozzi et al., 2003; Hsu et al., 1992; Sundgot-Borgen, 1994) as well as research that demonstrates a connection between perfectionism and pathological eating attitudes in collegiate female athletes (Schwarz et al., 2005).

While athletes in our study did cite family dysfunction as a common contributor to the onset of their eating disorder symptoms, it was not the most commonly reported factor as noted in some earlier studies involving nonathletes (Beresin et al., 1989; Krentz et al., 2005; Tozzi et al., 2003; Kally & Cumella, 2008). What appeared more salient among athletes were the negative impact of hurtful comments from others about weight and body shape, and the presence of role models with unhealthy eating behaviors. While both were mentioned by nonathletes in the study by Tozzi et al. (2003), hurtful comments about body shape were particularly influential for these female athletes given that they uniquely use their bodies as tools

for performance and achievement. As a result, these negative comments insulted areas of self-concept outside of physical attractiveness. Like nonathletes, athletes in this study were influenced by their mother's maladaptive eating and exercise behaviors. However, our participants were uniquely subjected to role models in the sport environment who had a negative impact on eating behaviors through their own disordered eating and compulsive exercising behaviors.

Another finding, consistent with previous research on nonathletes (Button & Warren, 2001; Lamoureux & Botorff, 2005; Tozzi et al., 2003; Watt, Sharp, & Atkins, 2002), is that the desire for control is a contributing factor to the development of eating disorders in athletes. For example, several participants stated that the stress and pressures of both school and sport led them to feel powerless, which fueled their need to control their eating to achieve a sense of personal power.

Female athletes in this study also differed from nonathletes with eating disorders because of the unique pressure to perform in athletics, which was cited as an important contributing factor to the onset of eating pathology. Some, particularly distance runners, became restrictive eaters because they believed that a small body type would enhance their performance. Others noted a generalized need to be "*perfect*" and "*be the best*" in their sport, which intensified negative feelings about body image and self worth. Coaches also put pressure on some athletes to lose weight and some made hurtful comments or jokes about the athletes' body shape and size. Participants perceived these comments as strongly related to the development of their eating disordered behavior. Woods (2004) found evidence of similar experiences among 18 former high school athletes who reported that coaches' reinforcement of weight loss and pressure to perform were factors that worsened their eating disorders. Sundgot-Borgen (1994) also found that 19% of the 103 elite athlete participants from Norway were triggered to develop eating disorders by negative comments from important others. This finding also aligns with past survey research that documented a higher incidence of disordered eating in athletes who either received critical comments about their bodies or who were instructed to lose weight by coaches (Muscat & Long, 2008; Kerr et al., 2006).

When comparing our findings in more detail to Sundgot-Borgen's (1994) research, it is notable that two of the top three triggers from her study, changing to a new coach and injury/illness, were not mentioned by the athletes in our study. In addition, important factors in our study, such as negative mood states, perfectionism, desire for control, and negative role models, were not noted as triggers in her study. However, there were several commonalities in reports about triggers for onset, such as dieting to improve performance, comments about body shape, athletic failures, relationship problems, and family problems. Differences in these results may be a function of differing sample sizes and sport populations, but could also be attributed to the starkly different style of interview. Given the highly structured nature of Sundgot-Borgen's (1994) interviews, it is difficult to tell whether factors that impacted her participants were similar to those reported by our participants. Without more detailed information about the experiences of participants in Sundgot-Borgen's (1994) research, it is difficult to speculate as to the nature of the similarities and dissimilarities in the data.

## Limitations

Several limitations warrant careful interpretation of our findings. First, this was a self-selected convenience sample that was not intended to be a representative sample of the entire eating disordered population of athletes. As with most qualitative research, recall bias is also possible. In addition, participants' responses were not separated by category of eating disorder diagnosis due to the fact that nearly 30% of the participants experienced two or more eating disorders.

Other limitations include the relatively small sample size of 17 women and the fact that the participants represented only seven different sports. Over half of participants were runners, which makes comparisons to athletes in other sports, particularly those that are not in "thin build" sports, somewhat limited. As a result, findings cannot be assumed to be widely generalizable to all female athletes in all sports. Finally, interviews for some participants were conducted in-person, while others were completed by phone to increase the sample size through inclusion of participants at great geographical distance from the researchers. While no differences emerged in reported factors related to eating disorder onset based on method of interview, standardization of data collection methodology might enhance future studies on this topic.

## Conclusions

There are several unique strengths to this study that offer a new perspective on this area of research. First, this study provides an important contribution to the field of sport psychology, given that it is the first in-depth, open-ended qualitative study on highly competitive female athletes with eating disorders. By hearing directly from the athletes, we are better able to understand their experiences and therefore can tailor prevention programs to address their unique needs. Second, this study includes participants with bulimia nervosa and binge eating disorder, two groups that have rarely been studied in qualitative research on eating disorder onset. Next, this research differs from previous studies on athletes in that the role of family dysfunction and conflict outside of sport were explored, reminding us that we cannot overlook these issues among athletes and focus solely on specific elements of the sport environment. These results suggest that athletes with an unsupportive home environment, or a mother who role models disordered eating, may be just as susceptible to developing eating issues as an athlete who internalizes critical feedback from a coach. Finally, this study included a younger participant sample than has previously been studied in qualitative research. As a result, our findings are directly applicable to current competitive collegiate athletes and young adult athletes.

Overall, these results identify several factors that contribute to the onset of eating disorders in athletes that are also common to nonathletes, such as negative mood states, low self-esteem, perfectionism, desire for control, and hurtful relationships. However, pressure to perform in sport, other athletes who model maladaptive eating behaviors, and harmful comments from coaches are unique factors that influence the onset of eating disorders in female athletes. In this study, athletes who competed in track, cross country, and diving noted substantial performance pressure as a contributing factor, given that a lighter, thinner build initially may enhance sport performance. Several runners were also outspoken about their belief that their sport is "*conducive*" to eating disorders and "*encourages*" harmful eating and exercise practices. These responses are consistent with previous research on female athletes in "thin build" sports such as track and suggest that these athletes

are at higher risk for developing eating disorders compared with athletes in other sports (Torstveit, Rosenvinge, & Sundgot-Borgen, 2008; Black, et al., 2003; Hulley & Hill, 2001; Smolak, et al., 2000; Sundgot-Borgen, 1994).

Due to the unique nature of athletes' experiences compared with their nonathlete counterparts, it appears that more education is needed for coaches and parents of female athletes on the topic of predisposing factors for eating disorder pathology. In particular, based on these findings, it seems that enhancing coaches' awareness of the deleterious effects of negative comments about body weight and shape on athletes' mental and physical health is a priority area for education. Prevention programs that target team norms and attitudes about healthy exercise behaviors and healthy weight management practices are also recommended, given our findings related to the negative influence of sport role models and teammates with maladaptive eating behaviors. Moreover, our results warrant the implementation of early and recurrent screening to detect eating disorder risk factors, signs, and symptoms (Black, et al., 2003; McNulty, Adams, Anderson, & Affenito, 2001), given the fact that eating disordered behavior can spread to other teammates through the process of modeling. Lastly, the finding that some athletes initiate eating disorder behaviors as a way to improve their sport performance is a primary concern. During her interview, Participant #8 asked a concerning rhetorical question: "*Why would anybody get rid of their eating disorders if they're not going to ever run well again?*" Her question, like our general results, points to a need for greater education for female collegiate athletes on the long-term health risks and potential injuries associated with low body weight, restrictive eating, and obsessive exercise to counteract their beliefs that highly controlled eating and weight loss will only improve their performance.

This study highlights the need for more research that is focused on the experiences of athletes with eating disorders to effectively tailor prevention and treatment programs to their unique needs. Studies that replicate this model but focus on participants from only one sport would be of interest to determine sport-specific risk factors. Similarly, studies that separately evaluate experiences of women with different types of eating disorders may be helpful to provide diagnosis-specific recommendations, if at all possible given the common prevalence of coexisting eating disorder diagnoses. Finally, future research is also needed to determine if the implementation of education and prevention techniques recommended by the results of this study actually reduce eating disorder incidence in athlete populations.

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