Weight Concerns, Weight Control Techniques, and Eating Disorders Among Adolescent Competitive Swimmers: The Effect of Gender

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Since most research on eating disorders among athletes has focused on college-age samples, the present investigation examines the adolescent competitive swimmer. Three areas related to weight and eating habits were explored: general concerns about weight, use of weight control techniques, and tendencies toward anorexia nervosa and bulimia nervosa and associated behavioral/personal characteristics. Previous research has found females to be at greater risk than males, thus gender comparisons were undertaken. Questionnaires were completed by 85 adolescent competitive swimmers attending a nationally known summer swim camp at a large midwestern university. Consistent with the cultural norm of thinness for women, young female swimmers desired weight loss more than their male counterparts did. In terms of actual pathogenic weight control techniques or eating disorder tendencies, however, few significant gender differences were found. Neither male nor female adolescent swimmers were particularly susceptible to eating disorders or pathogenic weight control techniques.

The prevalence of eating disorders among certain demographic groups, particularly young, white, affluent females, has been attributed to the cultural norm of slimness (Nasser, 1988; Rodin, Silberstein, & Striegel-Moore, 1985; Striegel-Moore, McAvay, & Rodin, 1986). The vulnerability of females to anorexia nervosa (self-starvation) and bulimia nervosa (binge/purge syndrome) can be related to gender-role socialization through which girls are taught that the ideal female body is thin (Garner, Garfinkel, Schwartz, & Thompson, 1980; Rodin et al., 1985; Silverstein, Peterson, & Perdue, 1986). This orientation toward thinness is so ingrained that even when women are not overweight (based on standard reference tables), they frequently perceive themselves as such (Connor-Greene, 1988; Halmi, Falk, & Schwartz, 1981).

Other groups that have been identified as susceptible to developing eating disorders are those among whom a lean body shape is valued. For example,
eating disorders have been reported among ballet dancers (Brooks-Gunn, Burrow, & Warren, 1988; Szmukler, Eisler, Gillies, & Hayward, 1985); models (Garner & Garfinkel, 1980); cheerleaders (Lundholm & Littrell, 1986); and athletes (Brooks-Gunn et al., 1988; Weight & Noakes, 1987).

Since athletes have often been identified as a risk group, it is possible that characteristics of the sport context, in conjunction with gender norms and body shape focus, contribute to the incidence of eating disorders. Excess body fat and body weight in both males and females are widely considered by coaches, parents, and participants to hinder performance (Davis & Cowles, 1989; Thornton, 1990) by slowing the movement in quickness activities and by causing fatigue and sluggishness in endurance pursuits (Leon, 1984; Overdorf, 1987).

To encourage athletes to be in the best possible physical condition, coaches may weigh athletes and hold them responsible for achieving and maintaining a certain weight (Fairbanks, 1987; Thornton, 1990). Weight control is one of a wide array of behaviors designed to gain an advantage in the competitive sport context. Athletes' vulnerability to eating disorders is also heightened by the fact that they share a number of characteristics commonly found in individuals with eating disorders—perfectionism, rigid self-discipline, self-motivation, high performance expectations, competitiveness, high pain tolerance, and viewing the body as an instrument (Smith, 1980; Thornton, 1990; Yates, Leehey, & Shisslak, 1983).

Although athletes as a group are at risk for eating disorders, athletes in certain sports have been identified as being more susceptible to the development of eating disorders. These sports include figure skating (Brooks-Gunn et al., 1988), running (Weight & Noakes, 1987), gymnastics, swimming, and wrestling (Combs, 1982; Round Table, 1985; Thornton, 1990). In general, athletes with eating disorders are more likely to be found in activities that (a) are individual (rather than team) in nature and in which individual accountability is more discernible, (b) involve airborne movements, (c) expose body size and contours in the competitive uniform, and (d) emphasize appearance in overall performance evaluation (Combs, 1982; Thornton, 1990).

In most studies of eating disorders as well as pathogenic (potentially injurious) weight control techniques among athletes, college-age samples have been used (Black & Burckes-Miller, 1988; Borgen & Corbin, 1987; Kurtzman, Yager, Landsverk, Wiesmeier, & Bodurka, 1989; Rosen & Hoough, 1988; Rosen, McKeag, Hough, & Curley, 1986; Warren, Stanton, & Blessing, 1990). The relative neglect of research on adolescents is unfortunate since the teen years are a peak period for the onset of anorexia nervosa and bulimia nervosa (Leichner & Gertler, 1988; Mitchell & Pyle, 1988). Moreover, research on college athletes indicates that their eating disorders and pathogenic weight control techniques frequently began at a younger age (Dummer, Rosen, Heusner, Roberts, & Counsilman, 1987; Round Table, 1985).

In view of the dearth of research on eating disorders in the adolescent athlete, the present investigation examines adolescent male and female swimmers. Swimming as an activity includes many of the characteristics previously associated with eating disorders. This study focuses on (a) concerns about weight, (b) use of weight control techniques, and (c) tendencies toward eating disorders and associated behavioral/personal characteristics. Since research has shown that females are at greater risk than males for eating disorders, gender comparisons were undertaken.
Method

Subjects

The sample consisted of 85 competitive swimmers, 9 to 17 years of age, who were attending a nationally known summer swim camp at a large midwestern university. This 1- to 3-week swimming camp, considered by university personnel to be in the top 25% of available swimming camps in the United States, attracts swimmers from several midwestern and southern states. The participants are both elite and beginning level swimmers who compete in U.S. Swimming (USS) and/or high school programs. The swimmers, many of whom have been nationally ranked in their respective age groups, have included Junior National, Senior National, and Olympic trial qualifiers. Given the monetary cost associated with attending such a camp, camp organizers indicated that participants are generally year-round swimmers who are serious about improving swimming performance, as opposed to recreational swimmers who may engage in a variety of sport activities.

Swim camp registrants and their parents were informed by mail about a study that would be conducted at the upcoming swim camp. Swimmers’ informed consent and parental permission were obtained prior to administration of the instrument. Of the 88 camp registrants, only 3 declined to participate in the study. The final sample included 54 boys (64%) and 31 girls (36%). The mean age of the boys was 13.5±2.3 years, and for the girls it was 12.6±2.3 years. A full 98% of the swimmers were Caucasian.

Instrument

The instrument contained three sections: (a) demographic information and dieting behavior, (b) behavioral and personal characteristics linked to anorexia nervosa and bulimia nervosa, and (c) motivations for weight control and frequency of pathogenic and other weight control methods.

To evaluate traits associated with eating disorders, the Eating Disorder Inventory (EDI), a 64-item, 6-point Likert scale, with responses ranging from always to never, was used (Garner & Olmsted, 1986; Garner, Olmsted, & Polivy, 1983). The EDI encompasses eight subscales: drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, and maturity fears. The EDI has been shown to be valid and reliable (Raciti & Norcross, 1987; Rosen, Silberg, & Gross, 1988) and has been used extensively by researchers studying eating disorders. Shore and Porter (1990) found that six of the eight subscales of the EDI are quite reliable for adolescent populations; the bulimia and maturity fears subscales were lower in reliability.

Motivations for weight control (e.g., appearance reasons, performance reasons) were ascertained using Likert items. To measure weight control behaviors, athletes were asked how often they used various weight control techniques (diet aids such as Dexatrim and Ayds, laxatives, vomiting, skipping meals, and limiting calories). Questionnaires were administered to camp participants during a classroom session; both of us were present to answer questions. Anonymity of respondents and confidentiality of questionnaire responses were guaranteed and maintained throughout the study.
Results and Discussion

General Weight Concerns

Analysis was undertaken to determine to what extent athletes were satisfied with their present weight and, if dissatisfied, what type of weight change they desired. This decision for weight change was then related to the relative weight classification of the athlete (i.e., underweight, average weight, overweight).

Through self-reported measures of height and weight, the relative weight of each swimmer was computed. Self-reported height and weight have been shown to be valid and reliable among adolescents (Brooks-Gunn et al., 1988; Stewart, 1982), including those who are severely overweight (Stewart, 1982). Based on the latest weight for height norms according to gender and age (National Center for Health Statistics, 1970, 1973), respondents were classified relative to their height as either underweight (below 25th percentile), average weight (between 25th and 75th percentiles), or overweight (above 75th percentile).

Although the percentage of males and females classified in each of these three categories did not significantly vary (approximately 11% classified as underweight, 55% as average weight, and 33% as overweight), gender was significantly associated with the desire for a weight change, $\chi^2(2) = 7.56, p<.03$. Girls were more likely than boys to want to lose weight (80.7% of the girls vs. 63.5% of the boys), while boys were more likely than girls to want to gain weight (26.9% of the boys vs. 3.2% of the girls).

With the majority of swimmers desiring to lose weight, the relationship between relative weight classification and desire for weight loss was examined by gender. As shown in Figure 1, girls displayed a strong preference for weight loss regardless of their relative weight. For example, 75.0% of the underweight girls, 70.6% of the average weight girls, and all of the overweight girls wanted to lose weight. Unlike females, the male swimmers’ desire for weight loss was more closely associated with their relative weight grouping. The percentage of male swimmers desiring a weight loss increased from 20.0% for the underweight

![Figure 1](image)

Figure 1 — Relative weight and percent desiring weight loss for adolescent male and female swimmers ($N=58$).
Figure 2 — Relative weight and percent desiring weight gain for adolescent male and female swimmers (N=15).

group to 55.2% for the average weight group and 88.9% for the overweight males.

Similarly, as shown in Figure 2, gender was related to the likelihood of desiring a weight gain for each of the three relative weight classifications. Underweight males were much more likely to want to gain weight than were underweight females (60.0% vs. 25.0%). None of the average weight or overweight girls indicated they wanted to gain weight, whereas 31.0% and 11.1% of the males in these two respective categories wanted to gain weight.

The finding that girls wanted to lose weight regardless of their relative weight, and at a greater frequency than males, is suggestive of the thinness orientation commonly associated with females (Rodin et al., 1985; Striegel-Moore et al., 1986). Although male swimmers were more likely than females to desire weight gain, it is interesting to note that approximately two-thirds of the males wanted to lose weight, including half of the average weight males.

Weight Control Techniques

Despite the expressed desire to lose weight on the part of many male and female adolescent swimmers, there was little evidence that pathogenic weight control techniques such as diet aids, laxatives, and vomiting were used by athletes (Table 1). As indicated in Table 1, use of these techniques ranged from 0.0 to 10.0%. Moreover, there were no statistically significant differences between males and females relative to their use of these weight control methods.

Although pathogenic techniques were not common, athletes did use less radical strategies for weight control. Both males and females exhibited moderate frequencies of skipping meals and limiting calories; however, there were no significant gender differences in the use of these weight loss techniques (Table 1). When asked if they were currently dieting, 11.1% of the males and 9.7% of the females indicated they were presently on a diet to lose weight.

In addition to similar weight control behaviors, male and female swimmers did not differ significantly in their motivations for weight control. Boys and girls were comparable in their views about the importance of weight control for
Eating Disorders Among Competitive Swimmers

Table 1

Percentage of Swimmers Ever Using Pathogenic and Other Weight Control Techniques

<table>
<thead>
<tr>
<th>Weight control technique</th>
<th>Males (N=54)</th>
<th>Females (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet aids</td>
<td>5.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Laxatives</td>
<td>3.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Vomiting</td>
<td>3.8</td>
<td>10.0</td>
</tr>
<tr>
<td>Skipping meals</td>
<td>41.5</td>
<td>26.7</td>
</tr>
<tr>
<td>Limiting calories</td>
<td>39.6</td>
<td>43.3</td>
</tr>
</tbody>
</table>

appearance and for improving swimming performance; both motivations were marginally important factors underlying the swimmers’ weight control behaviors.

Thus there appeared an interesting paradox in the responses of the adolescent swimmers in this sample. While a majority of swimmers wanted to lose weight, most were not taking specific steps to achieve weight loss. It is possible, however, that the desire to lose weight may be acted upon later if circumstances change (e.g., moving into a more competitive sport environment, or bodily changes occurring in puberty). Action to lose weight would particularly be true of swimmers who have behavioral or personal characteristics commonly found in individuals with eating disorders.

Eating Disorder Correlates

In order to assess whether adolescent swimmers had any of the behavioral or personal correlates of eating disorders, the Eating Disorder Inventory (EDI) was administered to the sample. Shore and Porter (1990, p. 206) indicated that the EDI “has great potential as a screening instrument to detect young people particularly at risk for developing eating disorders or already in the early stages.” Investigation focused on the swimmers’ overall responses on each of the eight subscales in the EDI, as well as the existence of gender differences. Such analyses were used to determine the degree to which adolescent swimmers have characteristics that put them at risk for developing an eating disorder.

Following Borgen and Corbin’s (1987) analysis of female athletes, swimmers in the present study were classified as having an inclination toward an eating disorder if they had scores at or above the mean for known anorexics (Garner & Olmsted, 1984) on at least five of the eight EDI subscales. Although no swimmer fulfilled this criterion for an eating disorder tendency, several athletes, as shown in Table 2, scored at or above the mean for known anorexics on individual subscales, especially the perfectionism and maturity fears subscales. While the maturity fears subscale was targeted by Shore and Porter (1990) as possessing lower levels of reliability for adolescent samples, the percentage of swimmers scoring at or above the mean for known anorexics on the perfectionism subscale is noteworthy (32.0% of males and 25.0% of females). The only additional subscale in which at least 10% of the sample scored at or above the
Table 2
Percentage of Swimmers Scoring At or Above the Mean for Known Anorexics on the 8 Subscales of the Eating Disorder Inventory

<table>
<thead>
<tr>
<th>EDI subscale</th>
<th>Cronbach's alpha</th>
<th>Males (N=54)</th>
<th>Females (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive for thinness</td>
<td>.74</td>
<td>4.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Bulimia</td>
<td>.59</td>
<td>6.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Body dissatisfaction</td>
<td>.82</td>
<td>4.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Ineffectiveness</td>
<td>.79</td>
<td>0.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Perfectionism</td>
<td>.66</td>
<td>32.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Interpersonal distrust</td>
<td>.68</td>
<td>11.1</td>
<td>13.3</td>
</tr>
<tr>
<td>Interoceptive awareness</td>
<td>.51</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Maturity fears</td>
<td>.60</td>
<td>24.4</td>
<td>28.6</td>
</tr>
</tbody>
</table>

Mean for known anorexics was the interpersonal distrust subscale (11.1% of the males and 13.3% of the females).

Gender comparisons on responses for the eight EDI subscales did not generally indicate significant differences between males and females. The only EDI subscale displaying a statistically significant difference by gender, with males scoring higher, was bulimia (t=2.44, p<.02). Males were more likely than females to engage in uncontrollable overeating, sometimes leading to self-induced vomiting.

Since this finding runs counter to existing literature, two points should be mentioned. First, Shore and Porter (1990) identified the bulimia subscale of the EDI as less reliable for very young populations because bulimia often does not appear until the late teens or early 20s. Second, as reported by Stein and Brinza (1989) in another study of adolescents, binge eating was sometimes misinterpreted as simply overeating rather than the rapid consumption of large amounts of calories. Although not statistically significant, females did score higher than males on five of the EDI subscales—drive for thinness, body dissatisfaction, ineffectiveness, interoceptive awareness, and maturity fears. In a study (Shore & Porter, 1990) of 619 boys and girls from 11 to 18 years of age, females had significantly higher scores on drive for thinness, body dissatisfaction, and interoceptive awareness.

Other findings of both the present research and the Shore and Porter (1990) study relate to age group differences within the samples of boys and girls. Although Shore and Porter found no age group differences for boys, they noted that older girls (14–18 years) differed significantly from younger girls (11–13 years) on two of the EDI subscales. The older girls were more likely than the younger ones to score higher on body dissatisfaction and lower on interpersonal distrust.

Similarly, in the present study few significant age differences were found between the younger (9–12 years) and older (13–17 years) girls and boys. The only EDI subscale on which an age effect was evident was the perfectionism...
subscale, with older boys and girls being more perfectionist. Although Shore and Porter (1990) related the higher scores on body dissatisfaction among older girls to bodily changes associated with puberty, this argument was not supported in the present study. The lack of difference in body dissatisfaction between older and younger female swimmers could be explained by pubertal changes being delayed or less pronounced among athletes compared to nonathletes (e.g., see Malina, Spirduso, Tate, & Baylor, 1978).

Conclusion

One purpose of this research was to ascertain the extent to which adolescent swimmers are at risk for developing anorexia nervosa and bulimia nervosa. Gender differences were examined relative to weight concerns, use of pathogenic and other weight control techniques, and behavioral and personal characteristics associated with eating disorders.

In general, results indicate that participation in competitive swimming does not make adolescents particularly vulnerable to eating disorders or pathogenic weight control behaviors. Moreover, even though female swimmers are significantly more likely than males to desire weight loss, the females were not more at risk than the males for developing an eating disorder (as based on EDI results) or for employing weight control techniques. Such findings generally challenge previous research suggesting that both athletic socialization and gender-role socialization predispose female athletes to behaviors associated with eating disorders.

Two critical factors in the present study appear to be the age of subjects and the nature of the sport context in which these swimmers participate. Adolescent swimmers, unlike older or more elite-level athletes, may find themselves in less competitive sport settings; thus sport participation may be less likely to influence the behavior and attitudes of young athletes. For example, the athletic identity of adolescents may not override other individual identities (e.g., student, peer, or family identities); hence adolescents may not be as likely to let sport dictate life decisions, including that of weight level. Moreover, conceptualizations of self would not be based solely on athletic performance, thereby making it possible for the swimmers to feel good about themselves without necessarily being consistently successful in the athletic role. Adolescent swimmers may feel less system-induced pressure to perform compared to athletes at higher competitive levels, and the coaches’ job may not hinge on the performance of the younger swimmers. Such factors would reduce the likelihood of these athletes adopting win-at-all-cost behaviors or of coaches imposing rigid weight restrictions on swimmers.

Given the mean ages of the swimmers (12.6 years for girls and 13.5 for boys), it is also possible that adherence to gender norms (e.g., the cultural norm of thinness) may not be as strong. This would be particularly true of prepubescent females who are generally allowed more latitude in terms of gender-role compliance (Shore & Porter, 1990). However, since only one age difference on the EDI subscales was found between younger and older swimmers, this argument needs to be viewed with caution.

It is interesting that few significant gender differences were found in this study, with the exception that females were more likely than males to desire
weight loss. As indicated previously, the purported desire for weight loss reflects the thinness orientation in our society that is especially found among women (Orbach, 1985; Rodin et al., 1985). Since prior research has frequently identified females as being at greater risk for eating disorders, it is plausible that the sport context itself may have reduced the likelihood that female adolescent swimmers would act upon their desire for weight loss.

Adolescent female swimmers may feel that excessive weight control would hamper the strength and endurance necessary for swimming, or they may believe that moderate body fat provides positive buoyancy benefits (Counsilman, 1968; Stager, Cordain, & Becker, 1984; Trup et al., 1986). These possibilities are supported by the finding that both male and female swimmers in the sample did not necessarily believe that thinner swimmers swim faster. In addition, the need to engage in weight reduction techniques may be countered by the fact that caloric expenditure during swim training is relatively high (Williams, 1983).

Although the results generally do not suggest that behavior associated with eating disorders is a major problem with adolescent swimmers, it cannot be denied that some adolescent swimmers have behavioral and personal characteristics that often underlie eating disorders. The existing desire for weight loss found among these athletes, along with pressures from both society and the sport context, may induce certain individuals to engage in behaviors associated with eating disorders as they mature and move up the competitive ladder.

References


Acknowledgment

The authors gratefully acknowledge the helpful suggestions and comments of the editor and Elaine M. Blinde.