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Female Distance Runners and Disordered Eating

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Abstract
This literature review aims to discern patterns among empirical research regarding the association between distance running and disordered eating among females. The findings show that female distance runners share certain characteristics with eating disordered non-athletes, such as low BMI, perfectionist tendencies, and menstrual dysfunction. These characteristics, indicative of disordered eating among non-athletic females, do not indicate a similar risk among runners. These findings suggest that perfectionism may be channeled more healthily through exercise than through disordered eating, and that low BMI and menstrual dysfunction among distance runners can appear in the absence of disordered eating.

Introduction

Women and girls have become increasingly involved in athletics since the 1970s, coinciding with second-wave feminism and the passage of Title IX, which granted equal funding to female and male athletic teams (Federal Reserve Bank of San Francisco, 2006). While success in nearly all sports demands physical fitness, some sports specifically demand thinness. In some activities this demand for thinness is based on standards of competition, such as in lightweight rowing and wrestling, while other sports focus on thinness for its aesthetic appeal, such as ballet and figure skating. In other sports, distance running included, thin athletes tend to perform better than heavier athletes (Legaz, & Eston, 2005). In a modern society in which the idyllic female body continues to get thinner and in which eating disorders are becoming more frequently diagnosed among adolescent and young adult females, athletes competing in such sports may be particularly at risk. The pressure to achieve athletic success compounded with the pressures inflicted by the media and surrounding culture may dispose athletes such as female distance runners to eating disordered behaviors.

Eating disorder treatment and identification is a complicated field. Individuals with diagnoses of anorexia nervosa, bulimia nervosa, or EDNOS (eating disorder not otherwise specified) are characterized as "eating disordered." People who meet some (but not all) of the criteria used to diagnose eating disorders are characterized as exhibiting "eating disordered behaviors" or sometimes

as being "eating disturbed" (Tanofsky-Kraff, & Yanovski, 2004). Anorexia nervosa and bulimia nervosa have been diagnosed in higher numbers among affluent adolescent and young adult White females in Western, industrialized nations, such as the United States, than among other populations (Tsai, 1999).

Anorexia nervosa is an eating disorder characterized by low body weight, body image distortion, body dissatisfaction, and an obsessive fear of weight gain. Common symptoms of anorexia nervosa include depression, anxiety, denial of pathology (Viglione, Muratori, Maestro, Brunori, & Picchi, 2006), lack of concern, over-activity (Casper, 1998), and obsessive-compulsive behaviors (Matsunaga, Kiriike, Nagata, &Yamagami, 1994). Personality traits associated with anorexia nervosa include perfectionism and psychorigidity (Rousset, Kipman, Ades, & Gorwood, 2004), a propensity toward anxiety, depression and schizo-paranoia (Lazaro, Toro, & Marcos, 1995), a propensity toward identity problems and intimacy problems (Holliday, Uher, Landau, Collier, & Treasure, 2006), and obsessive-compulsive personality traits (Crane, Roberts, & Treasure, 2007).

Treatments for anorexia nervosa include training patients to eat more food at a progressively higher rate (Zandian, Ioakimidis, Bergh, & Sodersten, 2007), exposure therapy (Steinglass, Sysko, Schebendach, Broft, Strober, & Walsh, 2007) and inpatient treatment using target weights (Roots, Hawker, & Gowers, 2006). People suffering from anorexia nervosa often do not seek treatment or refuse to accept it (Tan, Stewart, Fitzpatrick, & Hope, 2006), and relapse is common, especially among patients high in impulsivity-compulsivity (Lazaro et al., 1995).

Bulimia nervosa is an eating disorder characterized by recurrent binge eating episodes, followed by compensatory "purging" behaviors in the forms of vomiting, laxative use, or over-exercise (Favaro, & Santonastaso, 1998). Common symptoms of bulimia nervosa include depression (Anderson, 1998), anxiety (Steere, Butler, & Cooper, 1990), obsessive-compulsive behaviors (Thiel, Ohlmeier, Jacoby, & Schussler, 1995), body image disturbance and appetite disturbance (Kaye, Strober, & Rhodes, 2002), and alcohol abuse (Koeppe, & Tuschen-Caffier, 2002). Personality traits associated with bulimia nervosa include a propensity toward avoidant personality disorder, borderline personality disorder and depression (Ellis, 1994), the perception of differential parent-child relationships (Lehoux, 2001), high neuroticism and low self-directedness (Diaz-Marsa, Carrasco, & Saiz, 2000), a sense of alienation (Lilenfeld, Stein, Bulik, Strober, Plotnicov, Pollice, et al., 2000), and affective instability (Vitousek, & Manke, 1994).

Treatments for bulimia nervosa include cognitive-behavioral or interpersonal psychotherapies and pharmacotherapies with antidepressants (Kennedy, & Garfinkel, 1992), cognitive-behavioral guided self-help treatment (Banasiak, Paxton, & Hay, 2007), and inpatient treatment by group therapies (Suzuki, Takeda, Takemura, Murayama, & Hida, 2004). Following treatment interventions, relapse is relatively common (Richard, Bauer, & Kordy, 2005).

A physiological component of eating disorders, particularly anorexia nervosa, is menstrual dysfunction (Casper, 1998). Oligomenorrehic women are those who menstruate infrequently or abnormally lightly. Amenorrheic women are those who have not menstruated at all for at least several months. Much like patients suffering from anorexia nervosa, female distance runners are frequently amenorrheic (Cobb et al., 2003). Given that anorexic patients tend to be amenorrheic, amenorrhea could be taken as an indication of an eating disorder in female runners. However, it is possible that anorexic women with amenorrhea and female distance runners with amenorrhea experience menstrual dysfunction for different reasons.

Amenorrhea constitutes one dimension of the "female athlete triad," the paradigm claiming that the three most prevalent, robust health issues associated with athletics among females often coincide with one another. The three issues are disordered eating, amenorrhea, and osteoporosis (Sherman, & Thompson, 2004).

Distance runners are generally seen as highly motivated (Heffner, 2006), highly concerned with physical fitness (Goldfarb, & Plante, 1984), and as having highly perfectionist tendencies (Hall, Kerr, Kozub, & Finnie, 2007). Perfectionism is likely where anorexic patients and female distance runners most overlap. Since female distance runners tend to exhibit a drive for perfection coupled with a tendency to be thin (and, as mentioned above, a propensity toward amenorrhea), it is logical that one might presume an association between distance running and eating disorders. It is possible, however, that perfectionism is characterized differently among distance runners than among eating disordered women.

This review focuses on several questions: What are the findings of studies on female distance runners and disordered eating? Specifically, do the similarities between eating disordered women and female distance runners with regard to menstrual dysfunction, perfectionism, and thinness indicate a higher incidence of eating disorders among female distance runners? What are the implications of the findings? What should future researchers consider when examining this topic?

Method

I obtained the reviewed studies via two databases, Medline and PsycInfo. All studies are empirical and have been published since 1987 in English. Medline returned 16 results to a search for "distance runners eating disorders." I narrowed my search to studies published since 1987 and in English, leaving me with 14 results. Based on information provided in the abstracts, I determined that four of the studies were irrelevant.

I then searched for "distance runners eating disorders" on PsycInfo, checking off "Map Term to Subject Heading." I searched for "Athletes" AND "Running" AND "Eating Disorders" and received 14 results. I narrowed my search to studies published since 1987 and in English, which left me with 13 results. I had already found three of through Medline. Based on the abstracts, I determined that three of the articles were irrelevant. Thus I was left with 17 studies to review.

Each study compares female distance runners with at least one of the following: other female distance runners (Henrickson, Schell, & Hirschberg, 2000; Cobb et al., 2003; Gibson, Mitchell, Harries, & Reeve, 2004; Hulley, & Hill, 2001; Owens, & Slade, 1987), female athletes of other sports (Bale, Doust, & Dawson, 1996; Hopkinson, & Lock, 2004; Karlson, Becker, & Merkur, 2001; Pasman, & Thompson, 1988; Rippon, Nash, Myburgh, & Noakes, 1988), male distance runners (Gutgesell, & Timmerman, 1998; Hopkinson, & Lock, 2004; Pasman, & Thompson, 1988; Ryujin, Breaux, & Marks, 1999), female non-athletes without diagnosed eating disorders (Gleaves, Williamson, & Fuller, 1992; Gutgesell, & Timmerman, 1998; Hulley, Currie, Njenga, & Hill, 2006; Karlson et al., 2001; Klock, & Desouza, 1995; Parker, Lambert, & Burlingame, 1994; Pasman, & Thompson, 1988; Rippon et al., 1988; Ryujin et al., 1999; Weight, & Noakes, 1986), and female eating disordered non-athletes (Bale et al., 1996; Gleaves, 1992).

The female and male distance runners in the studies tended to be marathon runners, competitors in five-kilometer road races, or members of college and university cross country teams. The non-running athlete comparison groups consisted of weightlifters (Pasman, & Thompson, 1988), ballet dancers (Rippon et al., 1988), gymnasts (Bale, 1996), lightweight rowers (Karlson et al., 2001), and soccer players and swimmers (Hopkinson, & Lock, 2004). The non-athletes without eating disorders were generally volunteers from university psychology courses. Some control subjects from universities received course credit for participation. The female eating-disordered non-athlete comparison groups were comprised of hospitalized patients.

Demographically, the subjects ranged in age from 12 to 85 but were mostly young adults. They were all from the United States except for groups from Cape Town, South Africa (Weight, & Noakes, 1986), Stockholm, Sweden (Henrickson et al., 2000), Britain (Hulley, & Hill, 2001), and the United

Kingdom and Kenya (Hulley et al., 2006). There was one international group whose countries of residence were not specified (Gibson et al., 2004). Almost all subjects were White.

Findings

The data put forth in virtually all of the studies in this review were gathered through two surveys that rely on self-report: the Eating Attitudes Test-26 (EAT-26) and the Eating Disorders Inventory-2 (EDI-2). Both surveys have high validity and are used widely for diagnostic and research purposes. Research utilizing these surveys might examine which characteristics and behaviors associated with disordered eating are demonstrated by various subsets of the population, how characteristics associated with eating disorders correlate with recovery and relapse rates with various kinds of treatment programs, and which characteristics indicate that a person may be at risk for the development of an eating disorder. The EAT-26 assesses three subscales: the Dieting subscale, the Bulimia and Food Preoccupation subscale, and the Oral Control subscale. The EDI-2 assesses three related subscales pertaining to: Asceticism, Impulse Regulation and Social Insecurity. Scores on subscales are determined by a person's responses to specific items in the surveys. These scores provide information about a person's tendencies toward particular dimensions of (behaviors and characteristics associated with) eating disorders. The EAT-26 and the EDI-2 are meant to serve as aids, and are not meant to stand on their own, in diagnosing eating disorders. Particularly relevant to this review is one specific scale measured by the EDI-2: the Perfectionism scale, which indicates one's tendency toward perfectionist attitudes and behaviors.

The studies in which runners were compared with non-athletes generally found that runners reported less body dissatisfaction than non-athletes (Hulley et al., 2006; Parker, 1994; Ryujin et al., 1999) or similar levels of body dissatisfaction to non-athletes (Gleaves, 1992; Owens, & Slade, 1987; Weight, & Noakes,1986). However, Owens and Slade (1987) and Ryujin and colleagues (1999) also found that runners exhibited higher levels of perfectionism (as measured by the Perfectionism scale on the EDI-2) than non-athletes who did not exhibit disordered eating. Out of eleven scales that are measured by the EDI-2 (including Drive for Thinness, Bulimia, Body Dissatisfaction, and Social Insecurity), female distance runners score similarly to eating disordered non-athletes *only* on the Perfectionism scale (Hopkinson, & Lock, 2004; Owens, & Slade, 1987; Ryujin et al., 1999). Since female distance runners did not exhibit higher levels of body dissatisfaction than non-athletes, it appears as though perfectionism, as measured by the EDI-2, is an indication of risk for the development of eating disorders among non-athletes, but not among athletes. Therefore, it seems that perfectionism is, in fact, less detrimental to healthiness among distance runners than among eating disordered women.

Studies considering factors that correlate with health issues of female runners, such as low bone density and anemia, focused mainly on menstrual dysfunction. Rippon and colleagues (1988) found that elevated EAT-26 scores, but not low BMI or increased exercise, were associated with menstrual dysfunction. On the contrary, Klock and Desouza (1995); Henrickson and colleagues, (2000); and Gibson and colleagues (2004) found that low body mass was, in fact, associated with menstrual dysfunction. Despite differences in BMI, Klock and Desouza (1995) found no differences in levels of body dissatisfaction between women runners characterized by eumenorrhea (regular menstruation) and amenorrhea. Gibson and colleagues (2004), however, found greater menstrual dysfunction among those with greater body dissatisfaction. Thus, the findings with regard to menstrual dysfunction are mixed. It is possible that some female distance runners with amenorrhea or oligomenorrhea experience menstrual dysfunction for similar reasons as eating disordered women, namely malnutrition resulting in vitamin and iron deficiency. Meanwhile, other female distance runners may experience menstrual dysfunction in spite of a healthy concept of one's body and healthy eating

behaviors because high levels of physical activity can cause menstrual dysfunction even in the absence of low body mass or disordered eating (Warren, & Perlroth, 2001).

One study (Bale, 1996) found that female distance runners and female gymnasts had similar BMIs and similar levels of menstrual dysfunction. These levels were lower and higher, respectively, than among non-athletic girls of the same ages (12-16). Another study (Karlson et al., 2001) found that while rowers showed less "shape concern" than either runners or control subjects, there were no differences between groups in any eating disorder diagnostic category. Based on these findings, female distance runners do not seem to be particularly more at risk for eating disordered behaviors than other female athletes.

Implications of Findings

The research does not lend support to the hypothesis that female distance runners are a population particularly at risk for disordered eating. Psychologists in a clinical setting ought to be aware of this so as to avoid the potential biased expectation that female distance runners are more at risk than non-running females. Rather than increasing the pressures to be thin, success in distance running may provide girls and women with self-confidence and an appreciation for the efficacy of one's body. The fact that female distance runners are similar to eating disordered non-athletes in perfectionism suggests that athletic competitive success may be an effective, healthy, and socially accepted outlet for women high in perfectionism. Females predisposed to body dissatisfaction may find that distance running—or athletics in general—may provide a better way to channel perfectionist tendencies than disordered eating.

A number of studies cited the "female athlete triad"—the concurrence of disordered eating, amenorrhea, and osteoporosis—as an issue requiring attention. The research suggests that amenorrhea may be more common among distance runners and other athletes than among non-athletes, which may reflect different percentages of body fat or different diets. In either case, female distance runners should pay special attention to the maintenance of a healthy body fat percentage and a healthy diet (Williams, 2005). Since the research largely fails to support the notion that distance running is correlated with disordered eating, we must question several assumptions: that thinness and perfectionism are indicative of eating disorders among female runners, that losing weight causes body image disturbance among female runners, that amenorrhea is indicative of disordered eating, and that distance running predisposes women to disordered eating.

Thinness and perfectionism, though both correlated with a propensity toward distance running and disordered eating among non-athletes, paradoxically do not seem to indicate a propensity toward disordered eating among runners. While losing weight has been found to cause body image disturbance among non-athletes (Hagan, Tomaka, & Moss, 2000), this does not seem to be the case for distance runners, perhaps because the weight loss is a result of exercise rather than a restrictive diet. Amenorrhea can take place even in the absence of low body mass or disordered eating possibly because high levels of physical activity dispose the body to physiologically respond to the environment as it would respond in a "fight or flight" situation: bringing reproductive functions to a temporary standstill. While some people may associate distance running with disordered eating because female distance runners and eating disordered women tend to share the traits of thinness and perfectionism, it seems as though these traits are exhibited in different ways, and for different reasons, among female distance runners than among eating disordered women.

Too few studies reported on the results of bone mass density to draw conclusions about the third part of the "female athlete triad": the association between distance running and osteoporosis.

Recommendations for future research

Two recommendations for future research on female distance runners and disordered eating include attention to patterns over time and comparisons between female distance runners at different levels of athleticism.

By following the eating and athletic habits of specific girls and women over long periods of time, longitudinal studies may allow for inferences regarding causal relationships between variables, such as intensity of involvement in running or other exercise compared with EAT-26 and EDI-2 subscale scores. Such studies would undoubtedly deepen our understanding of the relationship between distance running and disordered eating, and extend the implications of current research. A study following women through different periods of their lives would be particularly enlightening with regard to women who alternate between periods of an exercise-based lifestyle and periods of a sedentary lifestyle. Display of body dissatisfaction and/or eating disordered behaviors only while engaged in distance running would indicate a correlation between distance running and eating disorders. Display of body dissatisfaction and/or eating disordered behaviors either before participating in distance running or somewhat after engaging in distance running would indicate a potentially causal relationship between distance running and disordered eating. A lack of fluctuation in body dissatisfaction and eating disordered behaviors would indicate a lack of association between distance running and disordered eating.

In addition, research is needed on the comparison between female distance runners at different levels of athleticism because of the ambiguity of what defines a distance runner. It is important to determine whether or not there are differences between elite and non-elite, competitive and recreational, and successful and relatively unsuccessful runners with regard to disordered eating and body dissatisfaction. Such clarification has important implications for female runners. If elite, competitive, successful running is more strongly correlated with disordered eating and body dissatisfaction than recreational running, possible reasons for the distinction should be systematically measured and investigated. If competitive runners exhibit higher body dissatisfaction and/or disordered eating, it is important to consider whether their success led to disordered eating or vice versa, or if there is any causal relationship at all. If, on the other hand, recreational runners exhibit higher levels of body dissatisfaction and/or disordered eating than their competitive counterparts, we must consider why this is; perhaps competitive runners are driven by the attainment of success while recreational runners are more directly driven by the attainment of thinness. No differences in body dissatisfaction and/or eating disordered behaviors between competitive and recreational runners would suggest that the goals and aims of female distance runners are fairly universal.

Conclusion

The 17 empirical studies on female distance runners and disordered eating published since 1987 suggest that female distance runners have more in common with non-athletes without eating disorders than they do with eating disordered non-athletes, with exception to levels of perfectionism and menstrual dysfunction. Female distance runners, coaches of girls' and women's distance running teams, psychologists, and nutritionists ought to be aware of the finding that thinness and perfectionism—common traits among female distance runners—do not necessarily imply the existence or threat of an eating disorder. On the contrary, since female distance runners are similar to eating disordered non-athletes mainly in perfectionism and BMI, it is possible that distance running deters, rather than encourages, the development of eating disorders.

By virtue of potentially increasing one's self-confidence and increasing one's understanding and appreciation for the effectiveness and strength of one's body, distance running may lead to lower scores on subscales of the EAT-26 and the EDI-2. Since distance running may redirect perfectionist

tendencies away from disordered eating, health professionals working with eating disordered non-athletes might likewise attempt to incorporate a constructive redirection of perfectionist tendencies into a treatment plan.

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