Psychological Commitment to Exercise and Eating Disorder Symptomatology Among Female Aerobic Instructors

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Researchers have questioned aerobic instructors' status as healthy role models by suggesting that they are excessive exercisers who may be at risk for developing eating disorders. To address this issue, 286 female aerobic instructors (mean age = 34.1) completed the Commitment to Exercise Scale (CES) and the Bulimia (B), Body Dissatisfaction (BD), and Drive for Thinness (DT) subscales of the Eating Disorder Inventory-2 (EDI-2). Instructors scored low on the CES \( (M = 62.24) \) relative to other high-exercising populations. Scores on the EDI-2 subscales were also low compared to published norms (M = .78, 7.8, and 3.2 for B, BD, and DT, respectively). Simple correlations revealed that the CES was related to all three EDI-2 subscales \( (r_s \text{ ranged from .18 to .30; } p_s < .01) \). Discussion focuses on factors that may account for instructors' healthy attitudes toward exercise and eating, and practical implications for sport psychologists who work with fitness instructors.

Individuals who lead group physical activity sessions can have a powerful social influence on program participants (Carron, Hausenblas, & Mack, 1996; Turner, Rejeski, & Brawley, 1997). Fitness leaders both motivate and educate fitness class participants (Franklin, 1988; Wilmore, 1974) and can serve as role models for a healthy and active lifestyle (e.g., Markula, 1995; Olson, Williford, Richards, Brown, & Pugh, 1996). Recently, researchers have speculated that exercise leaders are at risk for developing eating disorders and an obsessive attitude toward exercise (Moriarty, Ford, Rawlings, & Leichner, 1991; Olson et al., 1996; Thompson & Sherman, 1993). The purpose of this study was to examine indices of

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excessive exercise and eating disorder symptomatology among aerobic instructors to determine whether they are positive role models for exercise class participants.

It has been suggested that aerobic instructors are at risk for developing an obsessive attitude toward exercise and dieting, because they believe these behaviors are conducive to fitness (Thompson & Sherman, 1993), aesthetic appeal, and athletic prowess (Olson et al., 1996). Moreover, fitness professionals, particularly those who participate in aerobics, may have a distorted self-perception of body shape and an intense fear of being fat (Markula, 1995; Thompson & Sherman, 1993). These perceptions, beliefs, and attitudes can lead to desperate attempts to control body weight through disordered eating behaviors and compulsive or excessive exercise (e.g., Olson et al., 1996; Hayes & Ross, 1987).

Excessive exercise (also referred to as a negative addiction, compulsion, dependence, or an obsession; Willis & Campbell, 1992) is physical activity that is extreme in frequency and duration, relatively resistant to change, and often accompanied by an irresistible impulse to exercise even when injury, fatigue, or other personal demands persist (Coen & Ogles, 1993). Excessive exercise is considered pathological and a health risk because of its association with injury, psychological burnout, mood disturbance, depression, and eating disorders (Polivy, 1994; Rejeski, 1994).

Davis and colleagues (Davis, Brewer, & Ratusny, 1993; Davis et al., 1995) suggested that researchers should consider obligatory and pathological commitment to exercise rather than exercise frequency when predicting psychological correlates of excessive exercise, such as eating disorders. Davis et al. (1993) found that individuals whose commitment to exercise was pathological (e.g., continuing to exercise even when sick or injured) and obligatory (e.g., becoming upset when an exercise session is missed) scored high on a measure of eating disorder symptomatology. However, the association between frequency of exercise and eating disorder symptomatology was not significant. Thus, excessive exercise appears to have a psychological component that is at least partially reflected by commitment to exercise.

Researchers have not determined whether aerobic instructors are excessive exercisers in terms of psychological commitment to exercise and whether their commitment places them at risk for eating disorder symptoms. Because fitness instructors are considered a reliable source of health information (Worsely, 1989), they may serve as role models that influence other people’s health attitudes, beliefs, and behaviors (Bandura, 1986; Glover, 1978). For better or worse, aerobic instructors can have a powerful social influence on other people’s exercise and dieting regimens. Thus, determining whether instructors are healthy role models is prudent. To address this issue, we compared aerobic instructors’ exercise commitment to that of other high-level exercisers. Behavioral and attitudinal correlates of eating disorders were also examined to determine whether aerobic instructors displayed eating disorder symptoms. In addition, generalizability of the observed relationship between commitment to exercise and eating disorder symptomatology (Davis et al., 1993) was evaluated.

Method

Participants

Participants were 286 volunteer Canadian female aerobic instructors who attended a national fitness conference. Participants had a mean age of 34.11 years (SD =
This value is consistent with age data from a recent survey of 2,000 Canadian fitness leaders (National Fitness Leadership Advisory Council [NFLAC], 1996). The NFLAC survey showed that 77% of leaders were ages 25–44, with the majority in the 30–39 age bracket. Thus, although inconsistent with the stereotype of the college-age aerobic instructor, the present sample represents Canadian aerobic instructors.

Participants had been teaching aerobics for an average of 6.96 years ($SD = 4.87$) and had a mean mass of 60.51 kg ($SD = 7.18$) and height of 163 cm ($SD = 7.10$). On average, subjects reported 10.53 ($SD = 5.17$) exercise bouts per week, which included aerobic class participation and instruction ($M = 6.16$, $SD = 5.17$ aerobic classes per week) as well as other exercise, such as running, weight training, and cycling ($M = 4.37$, $SD = 2.81$ exercise bouts per week). Based on their exercise activity levels, instructors were considered a high-exercising sample (i.e., relative to activity levels of other aerobic instructors and high-level exercisers; Davis et al., 1995; Williford et al., 1993).

**Measures**

**Eating Disorder Inventory-2 (EDI-2).** The EDI-2 was used to measure attitudinal and behavioral attributes common to anorexia and bulimia nervosa (Garner, 1991). Similar to a protocol used by Davis et al. (1993) to examine the relationship between eating disorders and exercise commitment, the following three EDI-2 subscales were administered to participants: Drive for Thinness (DT), which assessed excessive concern with dieting, preoccupation with weight, and the extreme pursuit of thinness (7 subscale items); the Bulimia subscale (B), which measured the tendency to engage in bingeing that may be followed by an impulse to vomit (7 subscale items); and the Body Dissatisfaction subscale (BD), which measured dissatisfaction with the shape of body parts, such as hips, buttocks, and the belief that these parts are too large or fat (9 subscale items). High scores on these subscales relative to published norms indicate that an individual may be at greater risk for developing eating disorders. The EDI-2 has demonstrated construct validity and internal consistency (Garner, 1991). Garner (1991) reported that alpha coefficients for the DT, B, and BD subscales range from .83 to .92.

**The Commitment to Exercise Scale (CES).** The CES (Davis et al., 1993) is an 8-item questionnaire used to assess psychological commitment to exercise. The CES assesses both obligatory (e.g., adherence to a fixed exercise routine and feelings of guilt associated with a missed exercise session) and pathological (e.g., continued exercise despite illness or injury) aspects of exercising by measuring the extent to which feelings of well-being are influenced by exercising, the degree to which adherence to exercise is maintained in the face of various adverse conditions, and the extent to which one’s exercise regimen interferes with social commitments. Participants indicated whether each scale item was self-descriptive by marking a point on a horizontal line (155 mm) anchored by bipolar adjectives (e.g., never to always). Consistent with scoring procedures used by Davis et al. (1993), the distance from the beginning of the line to the marked point constituted the score for each item. Scores were then summed and converted to a percentage ranging from 0 to 100% (i.e., sum of item scores/maximum possible score of 1,240 mm). Higher scores indicated a more pathological commitment to exercise.

The CES has acceptable internal consistency ($\alpha = .77$; Davis et al., 1993). Construct validity has been demonstrated in studies that determined an association
between CES scores and several related constructs, such as trait obsessionality and addictiveness (Davis et al., 1993, 1995). Recently, a study showed that CES scores differ between anorexic patients who are high exercisers and those who are moderate or nonexercisers (Davis, Kapstein, Kaplan, Olmstead, & Woodside, in press). Taken together, these findings support that CES is a valid measure of psychological commitment to exercise.

Procedure
As part of a larger study of aerobic instructors, data were collected at a fitness conference. Conference organizers granted permission to place study questionnaires (the two inventories listed above plus two others and a demographics sheet) in participants’ registration packages, along with a letter describing the study and requesting instructors’ voluntary participation. Questionnaires were completed at the participants’ leisure and placed in drop-off boxes at the conference site. Exactly 50% of conference attendees returned questionnaires. Given that data collection involving mass distribution and voluntary return without follow-up has low return rates, a 50% return is considered acceptable (Goyder, 1985; Lehman & Mehrens, 1979). Upon completing data analyses, participants were debriefed vis a vis a report published in the conference association newsletter.

Results

Measurement Reliability
As an index of internal consistency, Cronbach’s alpha coefficients were calculated for CES and EDI-2 subscales. The CES was found to have satisfactory internal consistency (α = .77). The B, BD, and DT subscales of the EDI-2 also demonstrated adequate internal consistency, with alpha coefficients of .86, .85, and .90, respectively.

Descriptive Statistics
Means and standard deviations were calculated for each study variable. Instructors’ mean score on the CES was 62.24 (SD = 19.16). Mean scores on the EDI-2 subscales were .78 (SD = 1.87) for B, 7.76 (SD = 7.4) for BD, and 3.24 (SD = 4.45) for DT.

Interpreting Instructors’ CES Scores
To determine whether aerobic instructors have an unhealthy or excessive commitment to exercise, CES scores were compared to scores for other high-exercising (≥ 5 hr of exercise/week; Davis et al., 1995) and moderate-exercising groups (< 5 hr of exercise/week; Davis et al., 1995). Data for three comparison groups were obtained from Davis et al.’s (1995) study. Groups were high-exercising female anorexia nervosa patients (M age = 24.2, SD = 4.7), high-exercising non-eating-disordered women, and moderate-exercising non-eating-disordered women (M age = 23.3, SD = 3.8 for both non-eating-disordered groups). Single sample t tests indicated that aerobic instructors’ CES scores were significantly lower than those for high-exercising anorexia nervosa patients (M = 71.7, SD = 18.9), t(330) = 3.10, p < .01, and high-exercising non-eating-disordered women (M = 69.3, SD = 13.9),
The effect sizes (ES) for these comparisons were .38 and .49, respectively (i.e., small to medium effect sizes; Cohen, 1988). Thus, despite engaging in high levels of exercise, instructors did not display the obligatory and pathological aspects of exercise commitment that are evident in other high-exercising populations. However, instructors had significantly higher CES scores than moderate exercisers (M = 57.9, SD = 14.9), t(339) = 2.00, p < .05 (ES = .73, medium effect size).

**Interpreting Instructors’ EDI-2 Scores**

To determine whether aerobic instructors displayed eating disorder symptoms, their EDI-2 subscale scores were compared to published normative scores for women with and without eating disorders (Garner, 1991; see Table 1). Single sample t tests revealed that aerobic instructors scored significantly lower on all three subscales (B, BD, and DT) relative to women with eating disorders (large ESs) and those without (small to medium ESs) (ps < .05).

Using Garner’s (1991) established criteria, 14 participants (4.89%) were identified as at risk for an eating disorder (i.e., they reported DT scores >14). Because clinical interviews and medical exams are required to accurately diagnose an eating disorder, we do not know whether those at risk actually had an eating disorder.

**Correlations Between the Study Measures**

To examine the relationship between exercise frequency, commitment to exercise, and eating disorder symptomatology, bivariate correlations were calculated among the study variables (see Table 2). We did not find a correlation between exercise frequency and CES scores nor between exercise frequency and EDI-2 subscale scores. However, CES was significantly related to all three EDI-2 subscales (rs ranged from .18 to .30, p < .01). Thus, instructors with a greater commitment to exercise generally reported greater eating disorder symptomatology.

**Discussion**

The present study produced several important findings regarding aerobic instructors’ commitment to exercise, their eating disorder symptomatology, and the relationship between these variables. First, instructors did not display the obligatory and pathological aspects of commitment to exercise that are typical of other high-exercising groups (e.g., Davis et al., 1995). These findings are noteworthy, given that aspects of the aerobic instructor’s job could contribute to higher scores on some CES items. For example, Item 8 of the CES asks, “Are there times when you turn down an invitation to an interesting social event because it interferes with your exercise schedule?” Instructors must teach at specific times; consequently, exercise class schedules may force them to miss social events. Similarly, Items 5 and 6 assess whether an individual exercises when sick or injured. If instructors are unable to find substitutes, they may be forced to teach (i.e., exercise) even when sick. Although the nature of the aerobic instructor’s job could lead to inflated scores on some CES items, instructors still scored lower on the CES relative to other high-level exercisers. These findings suggest that aerobic instructors are not excessive exercisers as defined by their psychological commitment to exercise.
Table 1 Descriptive Statistics, $t$ Values, and Effect Sizes for Aerobic Instructors Compared With Normative Data for Eating Disordered and Control Groups for the BD, DT, and B Subscales of the EDI-2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Eating disordered</th>
<th>Control</th>
<th>Instructors vs. eating disordered</th>
<th>Instructors vs. control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>BD</td>
<td>7.8</td>
<td>(7.4)</td>
<td>16.6</td>
<td>(8.3)</td>
<td>12.2</td>
</tr>
<tr>
<td>DT</td>
<td>3.2</td>
<td>(4.5)</td>
<td>14.5</td>
<td>(5.6)</td>
<td>5.5</td>
</tr>
<tr>
<td>B</td>
<td>.78</td>
<td>(1.9)</td>
<td>10.5</td>
<td>(5.5)*</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Note. BD = Body Dissatisfaction; DT = Drive for Thinness; B = Bulimia. Mean scale scores for eating disordered ($N = 899$) and control (i.e., non-eating disordered; $N = 205$) groups are from Garner (1991).

* $N = 760$.

*p < .05. **p < .01.
Table 2  Bivariate Correlations Among Frequency of Exercise, CES, and the BD, B, and DT Subscales of the EDI-2

<table>
<thead>
<tr>
<th></th>
<th>Freq</th>
<th>CES</th>
<th>BD</th>
<th>B</th>
<th>DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq</td>
<td>—</td>
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<td>—</td>
<td>—</td>
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<tr>
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<td>.01</td>
<td>.30*</td>
<td>.66*</td>
<td>.43*</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. Freq = Number of bouts of exercise per week; CES = Commitment to Exercise Scale; BD = Body Dissatisfaction; B = Bulimia; DT = Drive for Thinness.
*p < .01.

Second, relative to norms for women with and without eating disorders, aerobic instructors scored significantly lower on the B, DT, and BD subscales of the EDI-2. Dissatisfaction with personal body size and shape (as measured by the BD subscale) and an intense pursuit of thinness (as measured by the DT subscale) are central features of both anorexia and bulimia nervosa, and bingeing and purging (as measured by the B subscale) are defining features of bulimia nervosa (DSM-IV; American Psychiatric Association, 1994). Thus, given the low scores on EDI-2 subscales, the results of this study suggest that aerobic instructors generally do not display the behavioral and attitudinal correlates of eating disorders.

What could account for instructors’ healthy attitudes toward exercise and eating despite high levels of exercise and participation in an activity that emphasizes leanness and the physique? Health education may be an important factor. Knowledge regarding nutrition, body weight and composition, and physical performance can reduce the risk of engaging in unhealthy practices—such as eating disordered behaviors and excessive exercise—to attain fitness or physique-related goals (see Garner, 1985; Hsu, 1990). Certified aerobic instructors are educated in the physical components of aerobics as well as nutrition and holistic well-being (e.g., Canadian Aerobic Instructors Association, 1994). If education is essential to keeping aerobic instructors healthy, then proper training is paramount. Training and certification programs for fitness leaders have been advocated (NFLAC, 1989), and a majority of fitness facilities require aerobic instructors to have certification training for insurance liability reasons. However, certification is not a prerequisite for hiring in some fitness centers (Aerobics and Fitness Association of America, personal communication, March 19, 1997). Uncertified instructors may be at greater risk for eating disorder symptomatology and excessive exercise behavior.

A third relevant finding of this study was that commitment to exercise was unrelated to behavioral exercise frequency. This confirms Davis and colleagues’ observations (Davis et al., 1993; Davis, Kennedy, Ralevski, & Dionne, 1994) in another high-exercising population and indicates that high exercise levels do not necessarily cause a psychologically unhealthy approach to exercise (i.e., high CES). Polivy (1994) has recommended that researchers examine why some individuals appear able to exercise vigorously over several years without developing negative
psychological reactions. Aerobic instructors may be an ideal population in which to examine factors that buffer high-level exercisers from the negative psychological consequences of frequent strenuous exercise.

Finally, although the correlations observed in the present study were smaller than those reported by Davis et al. (1993, 1995), they do support a relationship between excessive commitment to exercise and eating disorder symptomatology. The magnitude of the correlations between the CES and EDI-2 may have been smaller in this study because the sample was predominantly nonpathological. That is, aerobic instructors’ EDI-2 scores were in a restricted range at the low end of possible scores. When a sampling distribution range is restricted, correlations may be considerably lower than when sampling distributions represent the entire range of normally distributed values (Sprinthall, 1997). Refer to other studies where the relationship between exercise commitment and eating disorders has been examined in samples with a broader distribution of EDI-2 subscale scores (e.g., Davis et al., 1995).

Recommendations for Future Research

The present results were obtained from a sample of experienced certified instructors. The generalizability of these findings should be examined among less experienced, younger, and less knowledgeable (i.e., uncertified) groups. In addition, the instructors in the present study were older than the high and moderate exercisers in Davis et al.’s (1995) study. Further research should determine whether age is related to exercise commitment. We suspect, however, that health education more strongly determines exercise commitment. In this regard, the preventive role of education for aerobic instructors should be examined using a randomized control design. Additionally, the 50% return rate for the questionnaires is a possible limitation of this study. Further research should aim to verify the results of this study, using sampling methods that reach a larger proportion of aerobic instructors.

Research is also needed to address whether exercise class participants perceive that instructors have a balanced and healthy approach to exercise. For example, do participants perceive that instructors are excessive exercisers? Instructors can only serve as healthy role models when they are perceived as such. If the public perceives that high-exercising individuals, such as aerobic instructors, are excessively committed (e.g., Olson et al., 1996; Thompson & Sherman, 1993), this issue must be addressed through education. People who believe that a highly active lifestyle is associated with addiction or compulsion may be deterred from becoming physically active. The general population must understand that engaging in high levels of physical activity does not necessarily equate with fanaticism.

In addition, researchers should examine the positive motivational effects of the aerobic instructor’s image. Gibbons and Gerrard (1997) have suggested that very fit people, such as fitness leaders, represent health images—prototypical representations of an ideal healthy self. Desire to attain the ideal self is often the primary reason for initiating an exercise program. Hence, the health image of the aerobic instructor could have a motivating influence on other people’s exercise behavior (Gibbons & Gerrard, 1997). This possibility warrants further investigation.

Practical Implications for the Sport Psychologist

As health care professionals, sport psychologists can take a leading role in preventing unhealthy dieting and exercise behaviors (Swoap & Murphy, 1995). Each year, fitness associations, such as the Canadian Aerobic Instructor’s Association,
hold numerous conferences and workshops—ideal forums for the sport psychologist to inform aerobic instructors about protecting their own health as well as that of class members. Several recommendations are offered for sport psychologists who work with aerobic instructors and other fitness professionals.

First, as role models, aerobic instructors must be aware of how their behavior influences other people. Exercising when ill or spending exorbitant amounts of time at the gym only endorses unhealthy practices among class members. Sport psychologists should emphasize both moderation in exercise and the physical and psychological consequences of overtraining. CES items can be used to promote awareness of the signs and symptoms of unhealthy exercise commitment.

Second, instructors must learn how to use their influence to promote healthy exercise and weight management. They can accomplish this in part by emphasizing fitness, good nutrition, and fun during aerobic classes rather than stressing body weight ideals (Canadian Association for the Advancement of Women and Sport and Physical Activity [CAAWS], 1994; Swoap & Murphy, 1995). For example, instead of encouraging exercise class members to strive for “buns of steel” and “washboard abs,” instructors should encourage realistic fitness and weight loss goals. As such, instructors should reinforce participants for improved exercise ability (e.g., increased intensity and duration) and regular program attendance. For some individuals, a fitness leader’s praise is a powerful reinforcement that can make the difference between adhering to and discontinuing an exercise program (Sotile, 1996).

Third, dieting risks, along with the prevalence, characteristics, warning signs, and health consequences of eating disorders, should be discussed with aerobic instructors. Sport psychologists should also provide specific information on how instructors and their students can receive treatment for eating disorders. Aerobic instructors are not expected to diagnose and treat illness, but they can help prevent eating disorders and encourage at-risk individuals to seek professional help. For tips on how to broach this delicate topic and develop an eating disorders workshop for physical educators, see Lindsey and Janz (1985).

Fourth, sport psychologists should emphasize the importance of the aerobic instructor’s image and provide appropriate impression management strategies. For example, instructors should be aware of what their personal exercise attire represents. Thongs and leotards accentuate the image of thinness and may convey the inaccurate message that thinness is a prerequisite for aerobics participation (CAAWS, 1994). Aerobic instructors should make a point of wearing baggy clothing from time to time and encourage class members to do the same.

The results of the present study suggest that despite engaging in high levels of activity, aerobic instructors do not have an unhealthy commitment to exercise and do not display eating disorder symptomatology. Hence, they represent positive role models of a physically active lifestyle. As health professionals, sport psychologists can actively prevent unhealthy exercise and eating behaviors among aerobic instructors and can facilitate the instructor’s positive influence on aerobic class participants.

References


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