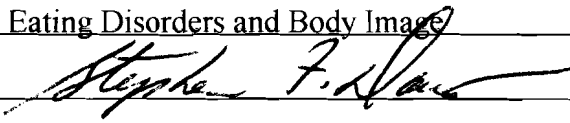


AN ABSTRACT OF THE THESIS OF

_____ Katherine G. Lamer _____ for the _____ Master of Science _____
in _____ Clinical Psychology _____ presented on _____ January 23, 1996 _____
Title: An Examination of the Relationship Between Excessive Exercise, Obsessive-
Compulsive Tendencies, Eating Disorders and Body Image
Abstract approved: _____  _____

This study sought to examine the relationship between the level of exercise a person engages in (low, medium, or high) based on the score of the Exercise Salience Scale (ESS) and the scores on the Eating Disorder Inventory-2 (EDI-2), the body dissatisfaction subscale of the EDI-2, and the Padua Inventory (obsessive-compulsive scale). It was hypothesized that high involvement exercisers would have more eating disorder behaviors, have more obsessive-compulsive tendencies, and be less satisfied with their body image. A sample of 60 men and 74 women aged 18 and older from the YMCA in Salina, Kansas participated in the study. Each person responded to a questionnaire containing the ESS, EDI-2, Padua Inventory, and a personal history form.

Analyses of variance (ANOVA) were conducted on the level of exercise versus the EDI-2 score, body dissatisfaction score and the Padua Inventory score. Further analysis was conducted to determine any gender differences.

A significant difference was found between the level of exercise and the EDI-2 score, body dissatisfaction score, and the Padua Inventory score for both men and women. The more involved the person was in exercise the more eating disorder items they endorsed on the EDI-2, the greater body dissatisfaction they experienced and the more obsessive-compulsive they were. It was also found women scored higher than men on the EDI-2, the body dissatisfaction subscale of the EDI-2 and the Padua Inventory on each level of exercise involvement (low, medium and high).

AN EXAMINATION OF THE RELATIONSHIP BETWEEN
EXCESSIVE EXERCISE, OBSESSIVE-COMPULSIVE TENDENCIES,
EATING DISORDERS AND BODY IMAGE

A Thesis

Presented to

the Division of Psychology and Special Education

EMPORIA STATE UNIVERSITY

In Partial Fulfillment

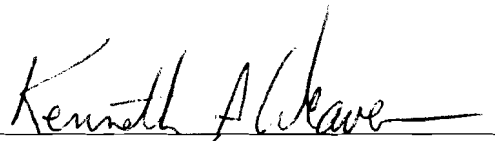
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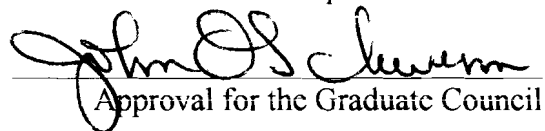
by

Katherine G. Lamer

May, 1996

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Approval for the Division of Psychology
and Special Education

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Approval for the Graduate Council

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CHAPTER 1

INTRODUCTION

A significant amount of attention has been given to the role of exercise in the enhancement of psychological and physical health. The popular notion that not only will exercise improve appearance and health but also enhance mood, self-concept, and general psychological well-being, has perpetuated the exercise craze. People commonly report a reliance on exercise as a means of maintaining a wealth of physical and psychological benefits. Many studies have evaluated the positive benefits of exercise, but little research has been done to examine psychological problems which may arise due to excessive exercise. Excessive exercise occurs when a person perceives, relates to or thinks about exercise in a way which becomes inflexible and/or maladaptive in a manner which causes subjective distress or results in problems in social/occupational functioning (Yates, 1991).

Many people exercise excessively to avoid gaining weight, but excessive exercise can be physically and mentally unhealthy (Sekules, 1994). For example, exercise may be a precipitator for an eating disorder such as anorexia nervosa and bulimia. Involvement in physical activity can increase persons' awareness of their physique, therefore, creating an overemphasis on appearance and the potential for an eating disorder. Anorexia nervosa is characterized by a relentless pursuit of thinness that is achieved through self-starvation. Bulimia involves episodes of binge-eating followed by some form of undoing behavior such as self-induced vomiting, laxative abuse, fasting, or excessive exercise (Johnson & Tobin, 1991). Eating disorders are the biggest health problem of women athletes (Noden, 1994).

Dissatisfaction with body image is thought to be a key factor in the etiology of eating disorders. Excessive exercise may also be related to dissatisfaction with body image. The common belief is that exercise will enhance body image and self-esteem. However, dedication to regular exercise may foster a heightened degree of body

narcissism, a distorted impression of body size, and an increased likelihood of developing an obsessive attitude toward weight control (Davis, 1990). Body narcissism is a preoccupation with one's body and an unrealistic view of one's ability to change his/her physical appearance (Yates, 1991). The degree to which people are satisfied with their bodies may have profound implications for their self-perceptions and behaviors.

Obsessive-compulsive tendencies are another aspect of eating disorders and excessive exercise on which little research has been done. The relationship between obsessive-compulsive disorder (OCD) and anorexia nervosa remains unclear. Davis, Brewer, and Ratusny (1993) found exercise was strongly related to weight preoccupation among women and men. Among men obsessive-compulsiveness was also positively related to weight preoccupation. These results support claims that exercising and dieting tend to coexist and that they may be associated with an obsessive-compulsive personality profile.

In our society, exercise is highly valued; professionals rarely mention that exercise can affect a person negatively. If the risks of exercise are addressed, it is because of the person's poor health condition. Very little is mentioned in research about the negative psychological consequences of exercise. It is important to examine personality characteristics that may predispose a person to excessive exercise, such as obsessive-compulsive tendencies. It is also important to know excessive exercise may lead to an eating disorder or an eating disorder may lead to excessive exercise. Exercise seems to be minimized as a criterion for eating disorders. Understanding body image and its role in eating disorders and excessive exercise will enhance psychologists' ability to do therapy with these individuals.

Individual personality characteristics, as they relate to reasons for engaging in excessive exercise, are relevant to psychology because they address the issue of internal motivation for a specific behavior. Exercise is of interest because it is a known behavior that enhances personal health. However, there is little information on the negative

tendencies have been related. However, there has been little research relating excessive exercise and obsessive-compulsive tendencies. The effect of exercise has also been minimized in relation to eating disorders.

The purpose of this review is to examine recent literature on the individual topics of exercise and psychological health; exercise and body image; eating disorders and body image; exercise and eating disorders; excessive exercise; and eating disorders and obsessive-compulsive tendencies. Evaluating the current research will show the necessary relationship that needs to be studied between excessive exercise, obsessive-compulsive tendencies, eating disorders, and body image.

Exercise and Psychological Health

A great deal of attention has been given to the association between exercise and psychological health. A study by Plante and Rodin (1990) reviewed four areas of enhancement of psychological functioning in a non-clinical population. They evaluated: (1) psychological well-being and mood, (2) personality and self-concept, (3) physiological stress responsivity, and (4) cognition. Exercise appears to improve mood and psychological well-being as well as enhance self-concept and self-esteem. It was found exercise does little for personality functioning. Furthermore, mixed empirical support exists to suggest exercise influences stress responsivity and cognitive functioning (Plante & Rodin, 1990). In addition, these authors suggest exercise is likely to decrease mild anxiety, depression, and stress, and may improve certain work-related behaviors.

Hinkle (1988) discussed the effect of aerobic running on psychological functioning and its adjunctive use in mental health counseling. Improved mood and decreased depressive symptoms have been the most consistently reported psychological benefits of running. Aerobic running yields positive benefits in management of anxiety. It also has been associated with subjective feelings of positive well-being and zest for life, which in turn enhances self-esteem. Cognitions associated with running may assist people in shaping and modifying their self-perceptions. Aerobic runners participating in survey

research have described unusual mental phenomena similar to trance-like states, including increased receptivity to internal events and vivid visual imagery (Callen, 1983). Participants in the survey also revealed the use of visualization and imagery to integrate the various working parts of the body and reported increased creativity, improvements in problem-solving, and the spontaneous creation of unique ideas while running. Hinkle (1988) also found that exercise regimens were more effective in promoting longevity and health when begun at a young age. Hinkle suggests the importance of mental health counselors realizing the significance of a holistic view of client care. Knowledgeable mental health counselors will consider physiological interventions when appropriate.

In a study by Bosscher (1993), depressed patients were assigned to short-term running therapy or to treatment-as-usual which mixed physical and relaxation exercises for eight weeks. Individuals treated as usual did not show any significant improvements. Patients in the running group improved significantly on depression, self-esteem, severity of psychoneurotic and somatic complaints and body satisfaction. These results seem to demonstrate the significance of exercise and psychological well-being.

Exercise and Body Image

Davis (1990) examined the relationships among certain personality characteristics and variables which assessed weight, diet, and appearance concerns of women who were avid exercisers and women who exercised only occasionally or not at all. Davis found that, as a group, exercising women and non-exercising women did not differ significantly on measures of body weight or self-perceived body shape, degree of weight and diet concerns, emotional reactivity, or any aspects of psychopathology associated with eating disorders; however, very different "patterns" of relations among these same variables between the two groups were observed.

First, Davis (1990) found emotional reactivity to be strongly related to weight and diet concerns in both groups. Among exercising women, actual body weight did not relate to a preoccupation with weight and diet, whereas, subjective body shape was

independently and strongly related. Davis suggested among physically active women, a concern with dieting and a critical approach to appearance is not influenced by actual body mass, but rather by how they think they look. Indeed, reality of the body and impression of the body are not closely related.

Second, Davis (1990) found greater weight and diet concerns and greater body dissatisfaction were related to poorer emotional well-being only in the exercise group; these women reported their physical appearance was important to their self-esteem. It was argued further that dedicated exercisers typically possess a single-minded compulsion to extend the limits of their minds or their bodies which may increase the likelihood of developing an obsessive attitude toward weight control. Davis noted this profile of results indicates a greater level of body narcissism and the possibility of some body image disturbance in the exercise group.

Silberstein, Striegel-Moore, Timko, and Rodin (1988) examined the relationships among body esteem, self-esteem, dieting, and exercise in women and men. Davis and Cowles (1991) also compared these same variables. Both groups of researchers found men and women displayed comparable amounts of body dissatisfaction but in different areas. Virtually no women wanted to be heavier than they were, whereas, men were as likely to want to be heavier as thinner. As expected, Silberstein et al. (1988) found women scored higher than men on a measure assessing behaviors and attitudes associated with disordered eating. More women than men reported they exercised for weight control; for women, exercising for weight control was significantly related to scores on the Eating Attitudes Test. Thus, it appeared body size dissatisfaction was related to the multiple dimensions of body esteem for men, but only to weight dissatisfaction for women. A man's self-esteem was affected by the degree of his dissatisfaction and was equally influenced by his being heavier or thinner than his body ideal, therefore weight may be a variable that is central to a man's sense of self (Silberstein et al.). A relationship was not found between women's self-esteem and perceived body image.

Silberstein et al. attribute the relationship between self-esteem and perceived body image to the fact our culture promotes an extremely thin female beauty ideal and thus creates a normative discontent with weight. The woman who experiences herself as dissatisfied with her weight resembles, rather than deviates from, her peers. For this reason, weight dissatisfaction may not be unique for a woman, and therefore does not play a major role in her self-esteem. However, Davis and Cowles (1991) found that women's feelings of well-being were greatly influenced by how they felt about their appearance.

Dissatisfaction with body image is thought to be a key factor in the etiology of eating disorders among women (Drewnowski & Yee, 1987). In contrast, men generally report satisfaction with their body weight and shape. Drewnowski and Yee (1987) examined the relative desire for thinness or weight gain among men and women. It was found men expressed conflicting views regarding desire for thinness. Almost half of the men wanted to lose weight and almost half of the men wanted to gain weight. Men and women who wished to lose weight shared negative body perceptions: both groups viewed themselves as overweight and both expressed dissatisfaction with body shape. However, men used exercise for weight control, whereas women resorted to restricted calorie diets. It is suggested that a key factor for eating disorders may be dieting itself (Drewnoski & Yee, 1987).

A study was done to assess men who engaged in recreational or persistent exercise (Davis, Elliott, Dionne, & Mitchell, 1991). It was found that neuroticism was a significant predictor of body dissatisfaction. Exercisers may have a greater degree of body focus and appearance concerns, therefore, emotionally reactive men are more critical of the degree to which their current body image deviates from their ideal body image. Results also indicated physical activity participation and body dissatisfaction were negatively related, although it is not clear whether exercise promoted body satisfaction or whether men who were satisfied with their appearance were likely to be physically active (Davis et al.).

adolescent athletes. A comparison was done between athletes and nonathletes. No significant differences were found between the two groups on maladaptive eating patterns, body image dissatisfaction, and social anxiety. It appeared participation in sports was not associated with an increased risk for eating disorders. Also, participation in athletics emphasizing lower body weight and fat did not place an adolescent at greater risk. Lemmon suggests that the failure to find significant differences between the groups of female adolescent athletes and nonathletes is apparently due to the fear of weight gain and dieting that have become so pervasive among females. Maladaptive dieting, fear of weight gain, body image disturbance, food phobias, binge eating, vomiting, laxative abuse, diuretic abuse, and excessive exercise are being found across the entire population of female adolescents regardless of their inclusion in various athletic groups (Lemmon, 1991).

Klemchuk, Hutchinson and Frank (1990) used the Eating Disorder Inventory (EDI) to assess a nonclinical sample of college undergraduate women. Very high rates of body dissatisfaction were reported. They identified two risk groups on the basis of extreme EDI factor scores: a body-dissatisfied group and a binge-purge group with poor psychological adjustment.

Research on eating disorders and body image indicate fear of weight gain among female adolescents is so pervasive it has become normative. Body dissatisfaction appears to be the norm but it still should be taken seriously. Klemchuk et al. (1990) found body dissatisfaction to be a key indicator of eating disorders on the EDI. Another area of research on eating disorders involves exercise. The following section discusses exercise and eating disorders.

Exercise and Eating Disorders

McDonald and Thompson (1992) assessed physically active men and women for eating disturbance, body dissatisfaction, self-esteem, and reasons for engaging in exercise. The results of this study indicated women's reasons for exercise were more

often related to weight and tone than were the men's reasons. Exercising for health benefits was associated positively for both men and women. Exercising for fitness was related to lower levels of eating disturbance and higher self-esteem for men. For women, overall activity level was related to greater eating difficulties. McDonald and Thompson suggest their findings indicate the importance of assessing gender differences in reasons for exercise activity and for detection of at-risk motivations in athleticism.

Krejci, Sargent, Forand, and Ureda (1992) investigated behavioral and psychological parameters concerning perceived body image, weight management, dieting intention, and nutrition habits in women displaying obligatory exercise behavior, women with symptoms of bulimia, and normal female controls. As opposed to individuals with symptoms of bulimia, exercisers were not dissatisfied with their body, did not have the same degree of drive to be thin, did not have a distorted image of their body, were not overly intent on restricting sugar and fat in their diet, and were not depressed. However, exercisers had significantly higher scores than non-exercising females on eating attitudes, dieting behavior, drive for thinness, and perfectionism. The authors suggest excessive exercisers and individuals with bulimia struggle with different issues, but these issues are similar because they involve the need for control over the body.

Katz (1986) researched two case histories of men who developed a manifest eating disorder only after they had become serious long-distance runners. Four features of anorexia nervosa were examined: increased level of physical activity, restricted food intake, depressive symptomology, and episodes of binge-eating (bulimia). Katz believes these cases suggest extreme exercise, such as long-distance running, can serve as a trigger for eliciting anorexia nervosa in persons who are at risk, psychologically and biologically, for developing an eating disorder. In both histories, anorexia nervosa developed after a substantial increase in exercise level and a weight loss consequent to this behavioral change. Thus, the conscious preoccupation with diet and weight, and the morbid fear of becoming fat, appear to have evolved following the increased physical

activity or the initial weight loss itself or a combination of these two circumstances.

These reported cases extend our knowledge by suggesting extreme exercise can serve to initiate, and possibly also sustain, an eating disorder (Katz, 1986).

Research on exercise and eating disorders has found exercise level to be related to greater eating difficulties. Excessive exercisers and individuals with an eating disorder are similar in that they both have a need to control their body. With the growing population of exercisers, it is important to understand problems associated with excessive exercise. The next section discusses research on excessive exercise.

Excessive Exercise

Although research has often focused on the proposed mental health benefits of exercise, a condition of exercise addiction or dependence has been identified (Biddle & Fox, 1989). Veale (1987) makes a distinction between primary and secondary exercise dependence. He suggests in diagnosing exercise dependence, anorexia nervosa and bulimia nervosa should first be excluded and then primary exercise dependence may be diagnosed. It has been suggested these two eating disorders and exercise dependence have similarities. A variety of researchers have identified forms of exercise dependence (Dishman, 1985); they appear to be characterized by obsessive involvement in exercise often leading to problems with behaviors at home and work, physical injury, and feelings of irritability and negative affect when forced to stop exercising (Biddle & Fox, 1989).

Yates (1991) believes certain individuals who demonstrate the propensity to become caught up in various activities tend to be exceptionally active, independent, persistent, and perfectionistic. Such individuals are high achievers; good workers, good students, and good athletes who work and play hard. Persons with these characteristics could be called "obligatory individuals" (Yates, 1991). When they engage in diet or exercise, they attack the activity with exceptional vigor and persistence. A few of these persons may, under certain circumstances, become activity disordered.

Sports such as gymnastics, bodybuilding, and distance running tend to enhance the obligatory qualities of the persons who engage in these activities (Yates, 1991). This author suggests that perhaps obligatory qualities develop because of the competitiveness of the sport, the degree of stress placed on the body, the emphasis on form or appearance, the reliance on individual excellence rather than on team performance, and the need for the participants to be small and/or lean in order to do well. Sports activities fitting most of these criteria (in addition to those already discussed) are aerobic exercise, figure skating, wrestling, skiing, and diving. In most instances, the characteristics of the sport seem to interact with the characteristics of the individual to determine the risk of an activity disorder (Yates).

A British physician, John Little (1969), was the first to articulate a concern about the adverse psychological effects of extreme exertion. He described the athlete's neurosis as an affliction of middle aged men who continued to run in spite of injuries and other complications. These runners were high achieving, hard driving individuals, such as doctors, lawyers, and other professionals. They tended to make running a compulsive ritual and they often used running as a magic potion against problems such as growing old.

Several studies have devised instruments to evaluate some of the complexities of obligatory running. Pasman and Thompson (1988) used the Obligatory Exercise Questionnaire and the Eating Disorder Inventory to compare runners, weight lifters, and sedentary controls. They found that runners and weight lifters had significantly more eating disturbances than controls, but they scored in a less pathological range than the majority of anorexic patients. A study by Nudelman, Rosen, and Leitenberg (1988) compared "obligatory" male runners to diagnosed bulimic patients and found the bulimic patients were sicker and more eating disordered than the male runners.

Instead of searching for signs of an eating disorder in athletes, other investigators (Touyz, Beumont & Hook, 1987) have assessed the exercise habits of anorexic patients.

validity was indicated by a high correlation between the participants' self-ratings of exercise dependent and the ESS scores. Factor analysis produced a two-factor solution corresponding to the attributes of exercise dependence. The two factors were labeled Response Omission Anxiety and Response Persistence.

Research on excessive exercise has found that exercise is negative when it causes problems at home or work, causes physical injury or causes a negative emotional state when forced to stop exercising. Eating disorders have been found in excessive exercisers as well as compulsiveness. Obsessive-compulsive behavior has also been associated with eating disorders. The next section discusses this topic.

Eating Disorders and Obsessive Compulsive Tendencies

Davis et al. (1993) established the factor structure of the Commitment to Exercise Scale, a questionnaire developed to assess the core features believed to characterize excessive exercisers. They assessed frequency of physical activity, weight preoccupation, addictiveness, obsessive-compulsive personality, and percentage of body fat. Exercise was strongly related to weight preoccupation among women and men. Obsessive-compulsiveness was positively related to only the men (Davis, et al.). The results of this study supported claims that exercising and dieting tend to exist together and, in turn, are associated with an obsessive-compulsive personality profile.

The prevalence of eating disorders is substantially higher than would be expected in the normal population or in patients with other neurotic disorders (Kasvikis, Tsakiris, Marks, Basoglu, & Noshirvani, 1986). Fahy, Osacar, and Marks (1993) assessed the prevalence of eating disorders in a casenote study of female patients with obsessive-compulsive disorder (OCD). This study found that 11% of female patients with OCD had a past history of anorexia nervosa. Fahy et al. suggest it is plausible that the psychological characteristics of OCD patients facilitate the development of anorexia nervosa. Female OCD patients resemble eating disorder patients in their higher-than-normal body dissatisfaction, perfectionism, and ineffectiveness scores on the EDI (Pigott

et al., 1991). Perhaps conceptually simple cognitive distortion, including rigid weight related beliefs, that are the focus of cognitive-behavioral interventions, are facilitated by obsessive-compulsive traits (Fahy et al.). Fahy et al. report clients with eating disorders had more obsessional symptoms and more concreteness, rigidity, and dichotomous thinking than the normal individuals.

After excluding core anorectic symptoms (disturbances of body image, feeding, and exercise), anorectics had significantly elevated scores on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) compared to matched, healthy volunteer women (Kaye et al., 1992). Every anorectic patient had OCD-like symptoms even when the core symptoms of anorexia nervosa were excluded. Kaye et al. found no difference in Y-BOCS scores between underweight and weight-restored anorectics. This finding suggests obsessive-compulsive symptoms are ingrained and not related to weight. Anorectics also had particular concerns with ordering and cleanliness or obsessions with perfectionism or things going wrong. This result suggests individuals with anorexia nervosa show considerable obsessive symptomatology, above and beyond those symptoms directly related to the eating disturbance. This study supports other studies suggesting anorexia nervosa may be related to OCD.

Summary and Rationale for Present Study

Exercise can be a beneficial method of obtaining good health. However, since exercise is viewed positively in society, it is often overlooked as a symptom of eating disorders. Research conducted on eating disorders suggests there is a link between disruptive eating and excessive exercise; exercise makes people more aware of their physique. When people become more body focused, they may be more critical of themselves. Because exercise increases psychological well-being, it is predictable as one becomes more body focused, one will also increase the level of exercise. Hence, people who exercise should have a better body image. However, people who become overly

concerned with imperfections in their body may resort to excessive exercise and excessive exercise does not correlate positively with good psychological well-being.

In our society, women learn through the socialization process appearance is of more value than accomplishment (Grubb, Sellers, & Waligroski, 1993). An almost unattainable body image is idealized by American society to such an extent young women trying to duplicate it may be subconsciously pressured into eating-disordered behaviors (Grubb et al., 1993). Hence, body dissatisfaction is a major symptom of eating disorders. One conceivable way to attain the desired body image is thought to be through excessive exercise.

A personality characteristic that may drive people to become excessive exercisers or eating disordered is obsessive-compulsiveness. In the research reviewed, OCD has been linked to eating disorders. Little is known about the relationship between obsessive-compulsive tendencies and excessive exercise.

The focus of this study, then, is to examine the relationship between level of exercise involvement, obsessive-compulsive tendencies, eating disorders and body dissatisfaction. Excessive or high involvement exercisers will be predicted to demonstrate obsessive-compulsive and eating-disordered behaviors, more than moderate to low involvement exercisers. High involvement exercisers are hypothesized to have greater body dissatisfaction than moderate to low involvement exercisers. By demonstrating a relationship between these variables, clinical psychologists, sports psychologists and coaches will be more effective in working with the growing population of athletes.

CHAPTER 2

METHODS

Population and Sampling

The population for this study was both men and women who engage in low, moderate and high levels of exercise. The accessible population for this study came from YMCA members of Salina, Kansas. A questionnaire was mailed to 300 men and 300 women aged 18 and older who were randomly selected from a mailing list of YMCA members. Of the 600 questionnaires mailed, 60 men and 74 women responded for a total of 134 participants. Approximately 22 % of the questionnaires mailed out were returned which was sufficient to conduct this study. The Institutional Review Board for Treatment of Human Subjects of Emporia State University evaluated and approved the current research project.

Validity of Instrumentation

Exercise Saliency Scale. The Exercise Saliency Scale (ESS) is an instrument designed to assess exercise dependence. Kline et al. (1994) investigated the psychometric properties of the ESS by administering the scale to 74 university students between the ages of 18-45 years who had previously rated themselves as exercise dependent. Indicative of the scale's construct validity, a high correlation between self-ratings and ESS scores was observed. Factor analysis produced a two-factor solution, instead of a six-factor solution corresponding to the six a priori defined attributes of exercise dependence. The two factors found were labeled Response Omission Anxiety and Response Persistence. While the validity of the ESS has been addressed, further information is needed to determine its reliability.

Padua Inventory. The Padua Inventory (PI) is a 60-item self-report inventory measuring obsessions and compulsions. Each item, rated on a five-point scale, measures the degree of disturbance caused by a thought or behavior. Previous research has demonstrated the measure's internal consistency and stability as well as

convergent/divergent and discriminative validity in clinical and nonclinical populations (Sanavio, 1988; Sternberger & Burns, 1990). The PI was selected for use in the study because it currently is the most comprehensive self-report measure of OCD (Sternberger & Burns, 1991).

Eating Disorder Inventory-2. The Eating Disorder Inventory-2 (EDI-2) is a measure of eight attitudinal and behavioral dimensions associated with anorexia nervosa and bulimia. It also measures three provisional dimensions that were not part of the original version (Garner, 1991). The first three subscales (Drive for Thinness, Bulimia, Body Dissatisfaction) evaluate the attitudes and/or behaviors corresponding to eating and body image. Disturbances in these areas are characteristic of people with eating disorders, but can also be characteristic of other dieters. The last five subscales of the EDI-2 (Ineffectiveness, Interpersonal Distrust, Perfectionism, Interoceptive Awareness, and Maturity Fears) measure traits which have been classified as primary aspects of the psychopathology of anorexia nervosa. The three new provisional subscales (Asceticism, Impulse Regulation, and Social Insecurity) measure the virtue of oral restraint, the tendency toward poor impulse control, and the tendency for social self-doubt, respectively. The EDI-2 has been useful in identifying subtypes of anorexia nervosa in clinical populations. In non-clinical populations, the EDI-2 has been used as a screening instrument to indicate which individuals are likely to be preoccupied with their weight (Garner & Olmstead, 1984).

Validation of the EDI-2 was a continuation of the research done on the EDI which involved the use of two groups of participants. The criterion group consisted of three different samples of females: primary anorexia nervosa (AN) patients, restricters, and bulimics. The female comparison (FC) group contained three independent subsamples of female university students from first- and second-year psychology courses. Garner, Olmstead, and Polivy (1983) showed no significant mean subscale score differences

within the AN group, the restriction group, and the bulimic group across the subsamples of university students.

It was required that the final version of each subscale have a coefficient of internal consistency (Cronbach's alpha) above .80 for the AN samples. The average item-total correlation was .63 (SD = .13) indicating substantial within-scale common variance among items. Criterion-related validity was established by comparing the self-report EDI patient profiles with the clinical judgements of experienced clinicians familiar with the patient's psychological presentation (Garner et al., 1983). Normative data for four different groups, anorexic patients, female college students, female high school students, and male college students, have been reported (Garner & Olmstead, 1984).

The item-total scale correlations for two of the provisional subscales, Asceticism and Impulse Regulation, tend to be lower than those reported for the original EDI subscales. Both of these subscales produced a restricted response range on the items for both the eating disorder and the FC samples. Nevertheless, further analyses indicated a subgroup of eating disorder patients who had high scores on each subscale. The provisional subscales were retained because of this empirical observation and the perceived theoretical relevance of these constructs for a subgroup of eating disorder patients (Garner, 1991).

When using any psychometric measurement, it is inappropriate to make inferences based solely on a single assessment instrument. This includes the use of the EDI-2, therefore, it is inappropriate to infer strictly from EDI-2 scores that an individual meets the criteria for diagnosis of an eating disorder. The EDI-2 may be useful as a prognostic or screening instrument, but several cautions must be considered. First, since the EDI-2 is a self-report instrument it is susceptible to distortion due to response style bias and inaccurate reporting by the respondent. Also, if the individual is defensive, self evaluation data may be invalidated or distorted. Second, the EDI-2 was empirically refined based on its ability to differentiate between a criterion group and non-clinical

samples. Therefore, it may lack external validity. It may be good for identifying eating disorders in the clinical population, but not for identifying individuals with eating disorders in the general population. Third, the EDI-2 should not be thought of as a representatively exhaustive sampling of psychopathological characteristics of AN. Fourth, although some of the psychological dimensions assessed by the EDI-2 may have major significance, the presence or magnitude of other psychological dimensions may simply be by-products of the disorder. For example, depressive symptoms may actually be a by-product of malnutrition due to self-starvation. Fifth, the EDI-2 should not be employed as the single means of screening or diagnosing AN; clinical diagnosis must confirm the EDI-2 score (Garner & Olmstead, 1984).

The Body Dissatisfaction scale is one of the eight attitudinal and behavioral dimensions measured by the EDI-2. The Body Dissatisfaction subscale measures an individual's body-esteem and will be used as a body image measure in the current study. Garner and Olmstead (1984) indicate, of the eight scales of the EDI-2, Drive for thinness, Bulimia, and Body dissatisfaction are most useful in the assessment of eating and body attitudes in "normal" dieters. Scale items (e.g., "I think about dieting") are rated on a six-point scale from "always" to "never." Higher scores reflect greater preoccupation with thinness, food control, and the size and shape of body parts (Waddell-Kral & Thomas, 1990).

Procedures and Methodology of Data Collection

A mailing list of all Salina, Kansas YMCA members aged 18 and older was obtained from the YMCA director. A random sample of 300 men and 300 women were mailed a questionnaire packet containing a cover letter (see Appendix A), an informed consent document (see Appendix B), formal instructions (see Appendix C), a personal data form (see Appendix D), the Exercise Saliency Scale (see Appendix E), the Padua Inventory (see Appendix F), and the Eating Disorder Inventory-2 (see Appendix G).

The participants read and signed an informed consent document if they chose to participate. The written instructions indicated how the confidentiality would be maintained: names were not to be put on the questionnaires and the information would be tabulated based on code numbers; the only written signature required was on the informed consent form. Participants were asked to respond to each question honestly and were given a phone number to call if they needed assistance. They also were instructed to contact the researcher or attach a note to the questionnaire if they were interested in the results and purpose of this study. Individuals who chose to participate, returned the questionnaire and the informed consent form in a postage paid and pre-addressed envelope to the researcher.

CHAPTER 3

RESULTS

Prior to data analysis the participants were divided into three groups based on the level of exercise dependence score on the Exercise Salience Scale (ESS): high (40 and above), medium (20-39), and low (19 and below). Other than combining the high, very high, and extremely high designations into one category in order to have a sufficient sample of high exercisers, these score ranges are in accord with the ones employed by Kline et al. (1994).

Group Similarities and Differences

In order to ascertain group similarities and differences, a series of 2 x 3 factorial analyses of variance (ANOVA) incorporating sex (men vs. women) and level of exercise (low, medium, and high) was performed on the age, height, weight, days of exercise, hours of exercise, and percent of aerobic exercise data. Group means for these demographic factors are presented in Tables 1 and 2.

Note. In all instances an alpha level of 0.05 was employed to determine significance. The results of these analyses are summarized below.

Age. No significant age differences were found for the sex, $F(1, 128) = .43, p > .05$, level of exercise, $F(2, 128) = 1.61, p > .05$, and sex x level of exercise, $F(2, 128) = .74, p > .05$, factors.

Height. Analysis of the height data yielded significance for the sex factor, $F(1, 128) = 176.47, p < .001$; men were taller than women. The level of exercise, $F(2, 128) = 1.07, p > .05$, and sex x level of exercise, $F(2, 128) = .35, p > .05$, factors failed to achieve significance.

Weight. As in the height analysis, the weight analysis also yielded significance for the sex, $F(1, 128) = 55.85, p < .001$, factor; men were heavier than women. The level of exercise, $F(2, 128) = .22, p > .05$, and sex x level of exercise, $F(2, 128) = .73, p > .05$, factors were not significant.

Table 1
Group Mean Age, Height, and Weight By Sex and Level of Exercise

<u>Men</u>	<u>Level of Exercise Involvement</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
N	15	26	19
Age (years)	45.50	38.77	39.11
Height (inches)	71.73	70.77	72.11
Weight (pounds)	195.13	192.08	190.26
<u>Women</u>			
N	19	35	20
Age (years)	45.58	39.00	39.70
Height (inches)	64.53	64.54	65.05
Weight (pounds)	139.84	152.74	149.80

Table 2

Group Mean Days of Exercise, Hours of Exercise, and Percent Aerobic Exercise by Sex and Level of Exercise

<u>Men</u>	<u>Level of Exercise Involvement</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
N	15	26	19
Days (per week)	3.27	3.42	3.74
Hours (per period)	1.23	1.24	1.38
Percent aerobic	69.33	61.92	78.95
<u>Women</u>			
N	19	35	20
Days (per week)	2.32	3.66	4.70
Hours (per period)	0.72	0.99	1.24
Percent aerobic	70.00	81.29	84.35

Days of exercise. Analysis of the days of exercise data yielded significance for the levels of exercise factor, $F(2, 128) = 15.91, p < .001$. Subsequent Newman Keuls tests indicated that the high exercise participants exercised significantly ($p < .05$) more than the medium and low exercise participants. In turn, the medium exercise participants exercised significantly ($p < .05$) more than the low exercise participants. The sex, $F(1, 128) = .47, p > .05$, and sex \times level of exercise, $F(1, 128) = 2.11, p > .05$, factors were not significant.

Hours of exercise. Analysis of the hours of exercise data yielded significance for the sex, $F(1, 128) = 7.12, p < .01$, factor; men exercised longer than women. The level of exercise factor achieved marginal significance, $F(2, 128) = 2.87, p = .058$. As with the days of exercise analysis, there was a trend for hours of exercise to increase from the low to medium to high level of exercise category. The sex \times level of exercise factor was not significant, $F(2, 128) = .91, p > .05$.

Percent aerobic exercise. No factors achieved significance with this analysis: sex, $F(1, 128) = 2.66, p > .05$; level of exercise, $F(2, 128) = 2.05, p > .05$; and sex \times level of exercise, $F(2, 128) = 1.17, p > .05$.

In summary, men and women differed only in terms of height, weight, and the number of hours of exercise engaged in per workout session. The low, medium, and high exercise groups differed only in terms of days of exercise; increased days of exercise were associated with the more intensely dedicated exercisers.

Analysis of Eating Disorders, Body Image, and Obsessive-Compulsive Data

A similar series of 2×3 factorial ANOVAs was conducted to evaluate the eating disorder, body image, and obsessive-compulsive data. Group means for these factors are presented in Table 3.

Eating disorder data. Analysis of the EDI-2 scores yielded significance for the sex, $F(1, 128) = 10.12, p < .01$, and level of exercise, $F(2, 128) = 7.85, p < .001$, effects. The women had significantly higher eating disorder scores than the men.

Table 3
Group Mean Eating Disorder (EDI-2), Body Image (Body Dissatisfaction Subscale of the EDI-2), and Obsessive-Compulsive (PI) Scores By Sex and Level of Exercise.

<u>Men</u>	<u>Level of Exercise Involvement</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
N	15	26	19
EDI-2	22.47	25.69	40.42
Body Image	3.27	4.81	6.42
PI	10.20	18.58	30.84
<u>Women</u>			
N	19	35	20
EDI-2	34.50	39.51	61.45
Body Image	10.47	12.77	15.15
PI	16.05	19.80	43.05

Newman-Keuls tests were used to probe the significant level of exercise factor and indicated that the EDI-2 scores of the high exercise participants were significantly ($p < .05$) higher than those of the low and medium exercise participants. The low and medium exercise participants did not differ significantly. The sex \times level of exercise factor was not significant, $F(2, 128) = .31, p > .05$.

Body image data. Analysis of the Body Dissatisfaction subscale of the EDI-2 yielded significance for the sex, $F(1, 128) = 45.56, p < .001$, and level of exercise, $F(2, 128) = 3.67, p < .03$, factors. Women had higher body dissatisfaction scores than did men. Newman-Keuls tests indicated that the high exercise participants had significantly ($p < .05$) body dissatisfaction scores than did the low and medium exercise participants, which, in turn, did not differ significantly. The sex \times level of exercise factor was not significant, $F(2, 128) = .14, p > .05$.

Obsessive-compulsive data. Analysis of the PI scores also yielded significance for the sex, $F(1, 128) = 4.58, p < .04$, and level of exercise, $F(2, 128) = 22.64, p < .001$, factors. Women reported higher obsessive-compulsive concerns than did men. Newman-Keuls tests indicated that the high exercise participants had significantly ($p < .05$) higher obsessive-compulsive scores than did the low and medium exercise participants, which, in turn, did not differ significantly. The sex \times level of exercise factor was not significant, $F(1, 128) = 1.12, p > .05$.

CHAPTER 4

DISCUSSION

A significant amount of positive attention has been given to the relationship between exercise and psychological and physical health. Professionals rarely mention the negative effects of exercise; hence, exercise is seen as socially acceptable, therefore, it is rarely seen as a problem by society. However, excessive exercise or exercise dependence can be physically and mentally unhealthy (Sekules, 1994). Exercise may be a precipitator for an eating disorder. Eating disorders are the biggest health problem of women athletes (Noden, 1994). A heightened degree of body narcissism, distorted impression of body size, and an obsessive attitude toward weight control can be fostered by a regular exercise program (Davis, 1990).

The present study attempted to demonstrate a relationship between excessive exercise, eating disorders, obsessive-compulsive tendencies, and body dissatisfaction in men and women. It was hypothesized that individuals who score higher on Exercise Salience Scale (ESS) would score higher on eating disordered characteristics, have greater obsessive-compulsive tendencies, and have greater body dissatisfaction.

As hypothesized, when the level of exercise dependence increased so did the amount of eating disordered characteristics, body dissatisfaction scores, and obsessive compulsive behaviors. This increase occurred for both men and women. However, the women scored significantly higher than the men on the Eating Disorder Inventory-2 (EDI-2), the body dissatisfaction subscale of the EDI-2, and on the Padua Inventory (obsessive-compulsive inventory). The latter result corroborates previous research showing that anorexia nervosa and bulimia are eating disorders that affect predominantly adolescent and young adult women (Johnson & Tobin, 1991). Because dissatisfaction with body image is thought to be a key factor in the etiology of eating disorders, the higher body dissatisfaction scores shown by the women is understandable.

Newman-Keuls tests were done to probe any significant level of exercise effects. Results found in this study suggest that high involvement exercisers scored significantly higher than low and medium involvement exercisers on eating disorder, body image, and obsessive-compulsive scores. Previous research supports these findings. Past studies have suggested that excessive exercise can initiate, and possibly sustain, an eating disorder (Katz, 1986). Also research suggests excessive exercisers have poorer body image (Davis & Fox, 1993) and men exercisers display obsessive-compulsiveness (Davis, Brewer, & Tatusny, 1993). Further research separating the Very High from the High involvement exercisers would be beneficial to help determine the point at which exercise becomes psychologically and physically detrimental.

Unlike Davis, Brewer, and Tatusny (1993) who reported exercise to be positively related to obsessive-compulsiveness only among men; the present study found that obsessive-compulsiveness increased for both men and women as the level of exercise increased. Moreover, women displayed significantly higher obsessive-compulsive scores than men. Some studies suggest anorexia nervosa may be related to Obsessive-Compulsive Disorder (Kaye et al.). Since eating disorders seem to be one of the biggest health problems for women athletes (Noden, 1994), it is understandable for women to display significantly higher obsessive-compulsive scores than men in the present study. The relationship between level of exercise and obsessive-compulsiveness is an area deserving further attention.

For future research in the area of exercise, eating disorders, body dissatisfaction and obsessive-compulsive behaviors three different suggestions can be made. First, a larger sampling of excessive exercisers need to be studied. The Exercise Salience Scale divides exercisers into the following five areas of exercise involvement: Extremely high involvement, Very high involvement, High involvement, Moderate involvement and Low involvement. In order to obtain an adequate number of participants in each level, the present study combined the Extremely high, Very high and High involvement into one

category: High involvement exercisers. Future studies should attempt to obtain a significantly larger sample to allow separate investigation of Extremely high, Very high and High involvement exercisers.

Second, this research project used participants in only one workout facility. To enhance generalizations of these results is recommended to obtain samples of participants in different regions of the United States. It is also recommended that different ethnic groups be analyzed to determine any cultural differences.

Third a different testing procedure is suggested. This researcher mailed out 600 questionnaires with stamped return envelopes. This procedure was not only very expensive, but yielded a low return rate. Going to a health club and soliciting volunteers is another approach that might be attempted to increase sample size, especially among the underrepresented exercise categories.

The focus of this study was to examine the relationship between excessive exercise, obsessive-compulsive tendencies, eating disorders and body dissatisfaction. As hypothesized high involvement exercisers demonstrated more obsessive-compulsive tendencies, eating disordered behaviors and greater body dissatisfaction than low and moderate involvement exercisers. Further, women in all levels of exercisers scored higher on obsessive-compulsive tendencies, eating disordered behaviors, and body dissatisfaction than did the men. By demonstrating a relationship between these variables, clinical psychologists, sports psychologists, and coaches may be more effective in working with the growing population of athletes. Individuals who exercise will also benefit by being able to better understand their behavior and what drives them to exercise.

Morrow and Harvey (1990) explain exercise dependence the best when they write, "Exercise dependence isn't a function of the time or effort spent working out. For example, you could run 70 miles a week and still not be addicted to running, while someone who compulsively runs far fewer miles might irrationally believe his or her

health is endangered by missing two days of running. The trick is not to change your mileage, but to change your mind" (p. 33).

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APPENDIX A
Cover Letter

Dear YMCA Member,

My name is Kathy Ray-Lamer. I have been a resident of Salina for most of my life, but am now living in Texas. I received by bachelor's degree in psychology from Kansas State University. I am now working on my thesis to complete my Master's degree in clinical psychology from Emporia State University.

To complete my thesis I need to perform a research project. I am asking you to please help me by filling out the enclosed questionnaire. It may seem quite lengthy, but hopefully you will find the questions interesting. Your participation in my research project would be greatly appreciated!

The questions you will be answering are designed to measure certain personality variables related to exercise and eating habits. You were chosen for this study because of your membership to the YMCA.

Please take a moment to look over the instructions and the questions. By completing the questionnaire you will be helping me tremendously and may learn some facts about your own exercise and eating habits.

Thank you so much for your time.

Sincerely,

Kathy Ray-Lamer

P.S. Your responses will be grouped with responses from other YMCA members who were also randomly selected to participate in my study. Your response will remain totally confidential. Thanks for your help.

APPENDIX B
Informed Consent Document

INFORMED CONSENT DOCUMENT

The Department of Psychology and Special Education at Emporia State University supports the practice of protection for human subjects participating in research and related activities. The following information is provided so that you can decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time, and that if you do withdraw from the study, you will not be subjected to reprimand or any other form of reproach.

I, Kathy Lamer, am conducting a research project for partial fulfillment of my Masters of Science Degree in Clinical Psychology. The current study involves the administration of a questionnaire involving three different scales designed to measure certain personality variables related to exercise and eating habits. An additional form will ask you for certain personal data. I appreciate your participation. If you choose to participate in this study, please answer the questions honestly. If you do not answer the questions honestly, the results of the study will be invalid. If at any time you feel uncomfortable with the procedure, feel free to terminate the testing. Also, feel free to ask any questions that you might have during the process. My phone number is (817) 559-7190.

"I have read the above statement and have been fully advised of the procedures to be used in this project. I have been given sufficient opportunity to ask questions I had concerning the procedures. I likewise understand that I can withdraw from the study at any time without being subjected to reproach."

Participant's signature

Date

Please detach this form from the questionnaire so your confidentiality can be secured. This form will be kept separate from the other information you complete, but it does need to be returned.

APPENDIX C

Formal Instructions

FORMAL INSTRUCTIONS TO THE PARTICIPANTS

To ensure confidentiality, please do not put your name on the questionnaire. I need you to read each statement carefully and then record the appropriate response on the blank space next to each item. There are no right or wrong answers. Each response is based on your own personal opinion. Please respond honestly so the results of this study will be valid. Feel free to ask any questions you might have during the process by calling Kathy Lamer at (817) 559-7190. Please return the questionnaire with the signed consent form in the stamped return envelope. To receive information about this study, write a note and mail it in the return envelope or contact me at (817) 559-7190.

APPENDIX D
Personal Data Form

PERSONAL DATA

1. How old are you? _____
2. How tall are you? (Use feet and inches) _____
3. How much do you weigh? (Use pounds) _____
4. Are you male or female? _____
5. How many years of education have you had? _____
6. What is your occupation? _____
7. How long have you exercised regularly? _____
8. How many days do you usually exercise a week? _____
9. On the days you exercise, how much time do you usually spend exercising? _____
10. What percentage of your exercise time is devoted to the following? (out of 100%)
 - Running _____
 - Aerobics classes _____
 - Bicycling (including stationary bikes) _____
 - Resistance training (free weights, Nautilus) _____
 - Aerobics machines (Nordic Track, StairMaster) _____
 - Other (Specify) _____
11. Do you compete in athletic events? (Yes or No) _____
12. Do you generally consider your workouts LIGHT, MODERATE, or INTENSE? _____
13. Did you or do you participate in organized sports in high-school? (Yes or No) _____
14. Did you or do you participate in organized sports in college? (Yes or No) _____
15. In which sport(s) did you or do you compete? _____

APPENDIX E
Exercise Salience Scale

Answer the next 40 items according to how accurately they reflect your actions, thoughts and emotions. Place an A, B, C, or D in front of each statement based on the following categories:

- A = Extremely Accurate
- B = Fairly Accurate
- C = Only Slightly Accurate
- D = Not Accurate

- 1. I have often exercised in risky conditions (such as electrical storms) to avoid missing a workout. _____
- 2. Family members or friends comment on or complain about the negative effect my exercise routine has on them. _____
- 3. I get anxious when upcoming social events conflict with my exercise regimen. _____
- 4. My physical appearance depends on my exercise. _____
- 5. I exercise at least four days every week. _____
- 6. I handle life's frustrations and make decisions more easily after exercise. _____
- 7. I feel better if I stick to certain types of exercise (running, for example). _____
- 8. Few things in life give me the satisfying sense of accomplishment I get from a good workout. _____
- 9. I feel I need to workout more than others to maintain my level of fitness. _____
- 10. I get edgy and frustrated if work interferes with my exercise. _____
- 11. I would end a relationship if it prevented me from exercising. _____
- 12. If I have a bad workout I feel lethargic or depressed. _____
- 13. I often exercise despite injury, fatigue or mild illness. _____
- 14. It's hard for me to work out with others because I have my own exercise preferences and my own routines. _____
- 15. I get upset when I hear about bad weather conditions (such as extreme heat) that could jeopardize my exercise plans. _____
- 16. I feel I have an advantage in my career over those people who don't exercise. _____
- 17. I am more concerned about aging than my peers are. _____
- 18. I need to exercise to get my digestive tract and metabolism to function effectively. _____
- 19. I am aware of my size and shape and gaze at my reflection in mirrors and windows more frequently than most people do. _____
- 20. I feel like punishing myself if I intentionally skip a workout. _____
- 21. I fear that I won't be motivated to exercise again if I take more than a day or so off. _____

A = Extremely Accurate
B = Fairly Accurate
C = Only Slightly Accurate
D = Not Accurate

22. I would choose exercise over social activities with family or friends.
23. To recover more quickly from an injury, I would take medication even if it caused side effects such as stomach irritation or bad breath.
24. I feel more self-conscious if I fail to exercise.
25. I feel that I have to keep increasing my exercise to maintain my desired level of fitness.
26. On days when I don't workout, I feel disoriented and sluggish.
27. I can't stop thinking about exercise if I miss a workout.
28. I would seriously consider refusing a new job, raise or promotion if it meant the end of my exercise routine.
29. I feel that having a fit and attractive body is a better predictor of social success than loyalty or a sense of humor.
30. I think more about my problems and worries when I cannot exercise.
31. I feel fat and bloated if I miss two days of exercise.
32. There is a significant difference in my mood before and after I exercise.
33. I would continue to exercise with an injury even against the advice of a medical specialist.
34. When things are going badly in my life, I devote more time and thought to my workouts.
35. I avoid people if I miss my workouts.
36. If I miss a day of exercise, I feel as if my muscles have atrophied.
37. Since increasing my workout intensity has a beneficial effect on me, I try to exercise extra hard on special occasions such as my birthday so I'll be in a good mood.
38. Exercise is frequently on my mind.
39. I would consider using a potentially dangerous medication such as steroids if I knew it would enhance my physique or athletic ability.
40. If I sense an injury developing, I worry about not being able to exercise.

APPENDIX F
Padua Inventory

Instructions: The following statements refer to thoughts and behaviors which may occur to everyone in everyday life. For each statement, choose the reply which best seems to fit you and the degree of disturbance which such thoughts or behaviors may create. Rate your replies as follows:

0 = Not at all

1 = A little

2 = Quite A lot

3 = A lot

4 = Very much

- | | |
|---|-------|
| 1. I feel my hands are dirty when I touch money. | _____ |
| 2. I think even slight contact with bodily secretions (perspiration, saliva, urine, etc.) may contaminate my clothes or somehow harm me. | _____ |
| 3. I find it difficult to touch an object when I know it has been touched by strangers or by certain people. | _____ |
| 4. I find it difficult to touch garbage or dirty things. | _____ |
| 5. I avoid using public toilets because I am afraid of disease and contamination. | _____ |
| 6. I avoid using public telephones because I am afraid of contagion and disease. | _____ |
| 7. I wash my hands more often and longer than necessary. | _____ |
| 8. I sometimes have to wash or clean my self simply because I think I may be dirty or "contaminated." | _____ |
| 9. If I touch something I think is "contaminated," I immediately have to wash or clean myself. | _____ |
| 10. If an animal touches me, I feel dirty and immediately have to wash or change my clothing. | _____ |
| 11. When doubts and worries come to my mind, I cannot rest until I have talked them over with a reassuring person. | _____ |
| 12. When I talk, I tend to repeat the same things and the same sentences several times. | _____ |
| 13. I tend to ask people to repeat the same things to me several times consecutively, even though I did understand what they said the first time. | _____ |
| 14. I feel obliged to follow a particular order in dressing, undressing and washing myself. | _____ |
| 15. Before going to sleep, I have to do certain things in a certain order. | _____ |
| 16. Before going to bed, I have to hang up or fold my clothes in a special way. | _____ |
| 17. I feel I have to repeat certain numbers for no reason. | _____ |

0 = Not at all
1 = A little
2 = Quite a lot
3 = A lot
4 = Very much

- 18. I have to do things several times before I think they are properly done. _____
- 19. I tend to keep on checking things more often than necessary. _____
- 20. I check and recheck gas and water taps and light switches after turning them off. _____
- 21. I return home to check doors, windows, drawers, etc., to make sure they are properly shut. _____
- 22. I keep on checking forms, documents, checks, etc. in detail to make sure I have filled them in correctly. _____
- 23. I keep on going back to see that matches, cigarettes, etc. are properly extinguished. _____
- 24. When I handle money, I count and recount it several times. _____
- 25. I check letters carefully many times before posting them. _____
- 26. I find it difficult to make decisions, even about unimportant matters. _____
- 27. Sometimes I am not sure I have done things which in fact I know I have done. _____
- 28. I have the impression that I will never be able to explain things clearly, especially when talking about important matters that involve me. _____
- 29. After doing something carefully, I still have the impression I have either done it badly or not finished it. _____
- 30. I am sometimes late because I keep on doing certain things more often than necessary. _____
- 31. I invent doubts and problems about most things I do. _____
- 32. When I start thinking of certain things, I become obsessed with them. _____
- 33. Unpleasant thoughts come into my mind against my will and I cannot get rid of them. _____
- 34. Obscene or dirty words come into my mind and I cannot get rid of them. _____
- 35. My brain constantly goes its own way, and I find it difficult to attend to what is happening around me. _____
- 36. I imagine catastrophic consequences as a result of absent-mindedness or minor errors which I make. _____
- 37. I think or worry at length about having hurt someone without knowing it. _____
- 38. When I hear about a disaster, I think it is somehow my fault. _____
- 39. I sometimes worry at length for no reason that I have hurt myself or have some disease. _____

0 = Not at all
1 = A little
2 = Quite a lot
3 = A lot
4 = Very much

- 40. I sometimes start counting objects for no reason. _____
- 41. I feel I have to remember completely unimportant numbers. _____
- 42. When I read, I have the impression I have missed something important and must go back and reread the passage at least two or three times. _____
- 43. I worry about remembering completely unimportant things and make an effort not to forget them. _____
- 44. When a thought or doubt comes into my mind, I have to examine it from all points of view and cannot stop until I have done so. _____
- 45. In certain situations, I am afraid of losing my self-control and doing embarrassing things. _____
- 46. When I look down from a bridge or a very high window, I feel an impulse to throw myself into space. _____
- 47. When I see a train approaching, I sometimes think I could throw myself under its wheels. _____
- 48. At certain moments, I am tempted to tear off my clothes in public. _____
- 49. While driving, I sometimes feel an impulse to drive the car into someone or something. _____
- 50. Seeing weapons excites me and makes me think violent thoughts. _____
- 51. I get upset and worried at the sight of knives, daggers, and other pointed objects. _____
- 52. I sometimes feel something inside me which makes me do things which are really senseless and which I do not want to do. _____
- 53. I sometimes feel the need to break or damage things for no reason. _____
- 54. I sometimes have an impulse to steal other people's belongings, even if they are of no use to me. _____
- 55. I am sometimes almost irresistibly tempted to steal something from the supermarket. _____
- 56. I sometimes have an impulse to hurt defenseless children or animals. _____
- 57. I feel I have to make special gestures or walk in a certain way. _____
- 58. In certain situations, I feel an impulse to eat too much, even if I am then ill. _____
- 59. When I hear about a suicide or a crime, I am upset for a long time and find it difficult to stop thinking about it. _____
- 60. I invent useless worries about germs and diseases. _____

APPENDIX G
Eating Disorder Inventory-2

Instructions: The next items ask about your attitudes, feelings and behavior. Some of the items relate to food or eating and other items about your feelings about yourself. For each item decide if the item is true based on the following ratings:

- A = Always
- U = Usually
- O = Often
- S = Sometimes
- R = Rarely
- N = Never

Circle the letter that corresponds to your rating that is true about you. Please respond to all items.

1. I eat sweets and carbohydrates without feeling nervous.	A U O S R N
2. I think that my stomach is too big.	A U O S R N
3. I wish that I could return to the security of childhood.	A U O S R N
4. I eat when I am upset.	A U O S R N
5. I stuff myself with food.	A U O S R N
6. I wish that I could be younger.	A U O S R N
7. I think about dieting.	A U O S R N
8. I get frightened when my feelings are too strong.	A U O S R N
9. I think that my thighs are too large.	A U O S R N
10. I feel ineffective as a person.	A U O S R N
11. I feel extremely guilty after overeating.	A U O S R N
12. I think that my stomach is just the right size.	A U O S R N
13. Only outstanding performance is good enough in my family.	A U O S R N
14. The happiest time in life is when you are a child.	A U O S R N
15. I am open about my feelings.	A U O S R N
16. I am terrified of gaining weight.	A U O S R N
17. I trust others.	A U O S R N
18. I feel alone in the world.	A U O S R N
19. I feel satisfied with the shape of my body.	A U O S R N
20. I feel generally in control of things in my life.	A U O S R N
21. I get confused about what emotion I am feeling.	A U O S R N
22. I would rather be an adult than a child.	A U O S R N
23. I can communicate with others easily.	A U O S R N
24. I wish I were someone else.	A U O S R N
25. I exaggerate or magnify the importance of weight.	A U O S R N
26. I can clearly identify what emotion I am feeling.	A U O S R N

A = Always
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- | | |
|---|-------------|
| 27. I feel inadequate. | A U O S R N |
| 28. I have gone on eating binges where I felt that I could not stop. | A U O S R N |
| 29. As a child, I tried very hard to avoid disappointing my parents and teachers. | A U O S R N |
| 30. I have close relationships. | A U O S R N |
| 31. I like the shape of my buttocks. | A U O S R N |
| 32. I am preoccupied with the desire to be thinner. | A U O S R N |
| 33. I don't know what's going on inside of me. | A U O S R N |
| 34. I have trouble expressing my emotions to others. | A U O S R N |
| 35. The demands of adulthood are too great. | A U O S R N |
| 36. I hate being less than best at things. | A U O S R N |
| 37. I feel secure about myself. | A U O S R N |
| 38. I think about bingeing (overeating). | A U O S R N |
| 39. I feel happy that I am not a child anymore. | A U O S R N |
| 40. I get confused as to whether or not I am hungry. | A U O S R N |
| 41. I have a low opinion of myself. | A U O S R N |
| 42. I feel that I can achieve my standards. | A U O S R N |
| 43. My parents have expected excellence of me. | A U O S R N |
| 44. I worry that my feelings will get out of control. | A U O S R N |
| 45. I think my hips are too big. | A U O S R N |
| 46. I eat moderately in front of others and stuff myself when they're gone. | A U O S R N |
| 47. I feel bloated after eating a normal meal. | A U O S R N |
| 48. I feel that people are happiest when they are children. | A U O S R N |
| 49. If I gain a pound, I worry that I will keep gaining. | A U O S R N |
| 50. I feel that I am a worthwhile person. | A U O S R N |
| 51. When I am upset, I don't know if I am sad, frightened, or angry. | A U O S R N |
| 52. I feel that I must do things perfectly or not do them at all | A U O S R N |
| 53. I have the thought of trying to vomit in order to lose weight. | A U O S R N |
| 54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close). | A U O S R N |
| 55. I think that my thighs are just the right size. | A U O S R N |
| 56. I feel empty inside (emotionally). | A U O S R N |
| 57. I can talk about personal thoughts or feelings. | A U O S R N |
| 58. The best years of your life are when you become an adult. | A U O S R N |
| 59. I think my buttocks are too large. | A U O S R N |
| 60. I have feelings I can't quite identify. | A U O S R N |

A = Always
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61. I eat or drink in secrecy.	A U O S R N
62. I think that my hips are just the right size.	A U O S R N
63. I have extremely high goals.	A U O S R N
64. When I am upset, I worry that I will start eating.	A U O S R N
65. People I really like end up disappointing me.	A U O S R N
66. I am ashamed of my human weaknesses.	A U O S R N
67. Other people would say that I am emotionally unstable.	A U O S R N
68. I would like to be in total control of my bodily urges.	A U O S R N
69. I feel relaxed in most group situations.	A U O S R N
70. I say things impulsively that I regret having said.	A U O S R N
71. I go out of my way to experience pleasure.	A U O S R N
72. I have to be careful of my tendency to abuse drugs.	A U O S R N
73. I am outgoing with most people.	A U O S R N
74. I feel trapped in relationships.	A U O S R N
75. Self-denial makes me feel stronger spiritually.	A U O S R N
76. People understand my real problems.	A U O S R N
77. I can't get strange thoughts out of my head.	A U O S R N
78. Eating for pleasure is a sign of moral weakness.	A U O S R N
79. I am prone to outbursts of anger or rage.	A U O S R N
80. I feel that people give me the credit I deserve.	A U O S R N
81. I have to be careful of my tendency to abuse alcohol.	A U O S R N
82. I believe that relaxing is simply a waste of time.	A U O S R N
83. Others would say that I get irritated easily.	A U O S R N
84. I feel like I am losing out everywhere.	A U O S R N
85. I experience marked mood shifts.	A U O S R N
86. I am embarrassed by bodily urges.	A U O S R N
87. I would rather spend time by myself than with others.	A U O S R N
88. Suffering makes you a better person.	A U O S R N
89. I know that people love me.	A U O S R N
90. I feel like I must hurt myself or others.	A U O S R N
91. I feel that I really know who I am.	A U O S R N

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Katherine G. Lamer

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3-24-96

Date an Examination of the R
Between Excessive Exercise, Obs
Compulsive Tendencies, Eating
Title of Thesis and Body Image

Wiley Cooper

Signature of Graduate Office Staff

April 1, 1996

Date Received