DISSERTATION

BODY IMAGE, MOOD, AND COPING STRATEGIES DURING EXERCISE ABSTINENCE FOR MALE AND FEMALE OBLIGATORY EXERCISERS

Submitted by

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ABSTRACT

BODY IMAGE, MOOD, AND COPING STRATEGIES DURING EXERCISE ABSTINENCE FOR MALE AND FEMALE OBLIGATORY EXERCISERS

Research has repeatedly demonstrated that regular physical activity may provide significant benefits for many aspects of psychological well-being (Walsh, 2011), including body image. Countless studies have shown that regular physical activity can have a positive impact on negative body image and body dissatisfaction. On the other hand, very few studies have examined the impact of exercise abstinence on body image in individuals that typically adhere to a consistent exercise routine. The purpose of the present study was to examine how abstaining from exercise may impact body image in college students that may be at risk for obligatory exercise behavior. The present study also investigated whether and how exercise abstinence may relate to self-reported changes in affect and body image or relate to compensatory behaviors, such as dietary restriction. Gender differences in reactions to exercise abstinence were also explored. Participants who achieved high scores on the Obligatory Exercise Questionnaire abstained from exercise for three consecutive days and each day completed an online questionnaire inquiring about their experiences each day. Data were analyzed using post-positivist grounded theory and constant comparative analysis. Results produced themes that fell into one of three categories: Body Image, Mood, and Behaviors/Coping Strategies. A theoretical model was developed to portray how the three categories related as well as how they varied by gender. Male and female participants exhibited both differences and similarities in their experiences of exercise abstinence with respect to body image, mood, and behaviors.

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For decades, body image has been a popular area of interest. Various predictors of negative body image have been identified, as well as multiple implications. Regular physical activity has been shown to significantly improve body image and decrease body dissatisfaction. However, little is known about the effect of abstaining from exercise for those who engage in obligatory exercise. In particular, there is surprisingly little research examining the impact of exercise abstinence on body image. There is also little research exploring how obligatory exercisers cope with exercise abstinence.

Body Image

The term, *body image*, refers to the complex psychological experience of embodiment, especially, but not exclusively, of one's physical appearance (Cash, 2004). Multiple variables have been found to be predictive of negative body image. Crafi and colleagues (2005) conducted a meta-analysis that identified three factors as predictive of negative body image. First, having an *awareness* of the Westernized thin ideal has been found to be associated with negative body image. Second, thin-ideal *internalization* refers to one's internalization of societal standards of attractiveness (Thompson & Stice, 2001; Stice & Whitenton, 2002; Crafi et al., 2005). Crafi and colleagues (2005) noted that thin-ideal internalization is a risk factor for negative body image and eating disturbance. The third factor was a *perceived pressure to be thin.* Thin-ideal internalization and perceived pressure to be thin were shown to exhibit stronger negative relationships with body image than awareness of idealization of thinness.

Slater and Tiggeman (2006) found that childhood experiences were associated with body image in adulthood. The researchers administered measures of current physical activity, media use, and body image as well as received retrospective reports of physical activity participation and media usage during childhood. Individuals who had been involved in two or more

competitive sports as a child reported more negative body image in adulthood than those who had only been involved in one sport. The authors speculated that this may be due to their bodies being on display more often through involvement in multiple sports. Type of childhood sports also influenced body image in adulthood. Time spent in aesthetic sports (i.e. gymnastics, ballet, diving) was associated with higher levels of body shame and drive for thinness than time spent in non-aesthetic sports (i.e. softball, basketball). Furthermore, a greater amount of exposure to the media as a child was associated with increased body mass index (Viner & Cole, 2005) and negative body image as an adult (Slater & Tiggeman, 2006). There is also a positive correlation between the amount of television (Harrison, 2000) and magazines (Jones, Vigfusdottir, & Lee, 2004) consumed by children and levels of body dissatisfaction.

Peer influences may also play an important role in body dissatisfaction and dieting behaviors as girls develop into adolescents (Dohnt & Tiggemann, 2005). Eighty-one girls (age 5-8 years) were interviewed. Results indicated that drive for thinness emerged between the age of 5 and 7 years, and was based on norms set by peers. This influence of peers has been shown to be particularly strong in conversations with peers regarding physical appearance (Jones, Vigfusdottir, & Lee, 2004). Parental influences have been demonstrated to be influential in body image. Lowes and Tiggemann (2003) found that girls who perceived their mothers to have higher body dissatisfaction were more likely to develop negative body image as adults.

Experiencing trauma as a child, such as physical and sexual abuse, has also been shown to be a risk factor for the development of negative body image (Wenninger & Helman, 1998; Wonderlich, et al., 2000; Didie et al., 2006). Wenninger and Helman (1998) conducted a study in which they compared levels of body esteem and body-self relations between female child sexual abuse survivors and female controls. They found that survivors of childhood sexual abuse

reported less body esteem regarding physical attractiveness and rated their physical health more negatively. Sexual abuse has also been associated with distorted body perception and body dysmorphic disorder (Didie, et al., 2006). Children who have been sexually abused are more likely than those not sexually abused to prefer thinner body types (Wonderlich, et al., 2000), and women who were sexually abused in childhood were more likely to exhibit body size overestimation (Bryam, Wagner, & Waller, 1995).

Research has consistently demonstrated that gender is influential in the experience of body dissatisfaction. In general, women have been shown to have higher levels of negative body image than men (Pingitore, Spring, & Garfield, 1997; Lokken, Ferraro, Kirchner, & Bowling, 2003) regardless of ethnicity (Demarest & Allen, 2000). Women tend to report greater concern about weight, and associate weight with self-esteem to a greater extent than do men (Grossbard, Lee, Neighbors, & Larimer, 2009). The incidence of negative body image in women has been increasing over time (Feingold & Mazzella, 1998).

Overall, women of all ages appear to have lower rates of obesity than men and are more likely to be underweight than men, although women consistently have higher levels of body dissatisfaction than men (Olmsted & McFarlane, 2004). Barreto and colleagues (2011) conducted a study examining body image in adults aged 60 and over. The study showed that both men and women linked body satisfaction to BMI scores. However, results also demonstrated that men linked body satisfaction with appearance, while older women's body satisfaction was predicted by body functioning, meaning the way in which they perceive their level of fitness, endurance, and suppleness.

There have been a handful of studies examining body image that have utilized qualitative methodologies. Ziebland, Robertson, Jay, and Neil (2002) used qualitative methods to explore

participants' experiences of weight change in adulthood, body image preferences, and beliefs about the health consequences of being overweight; results were used to inform the development of the primary care intervention to prevent obesity. Analyses showed that for people who have gained weight in middle age, pessimism about the required effort might deter them from trying to prevent further gain. Another qualitative study conducted by Bredin (1999) researched women following a mastectomy. Questions explored the women's' experience of their changed bodies, the effects of breast loss on sense of self, the effects of breast loss on social identity, and the experiences of massage as an intervention. Participants' reports and descriptions of negative body image suggested that this population might be in need of more body-centered therapy to help with the adjustment following a mastectomy.

There have been few qualitative studies examining body image in men, or gender differences in body image. Hargreaves and Tiggemann (2006) explored body image in boys aged 14 to 16 years old. Findings revealed that boys were satisfied with their appearance, but some conceded that physical appearance was more important than they liked to acknowledge. They also indicated that they did not believe that the mass media influences their body image and said they do not talk about body image because it is a feminine or gay issue.

With regard to gender differences, Halliwell and Dittmar (2003) explored men's and women's (aged 22-62 years) relationships with their bodies with a focus on age-related changes in body image and attitudes toward body aging. Analyses indicated that men viewed their bodies as a holistic entity, whereas women had a tendency to view their bodies as many distinct parts. Men also focused on the functionality of their bodies, while women focused on display. Women viewed aging most negatively in terms of impact on appearance, whereas men reported feeling a neutral or positive impact of aging on appearance.

Body Image & Well-Being

Body image has also been shown to relate to one's personal well-being. Positive body image has been associated with more positive reports of sexual functioning (Sinyore, et al., 1986; Blumenthal & Maddem, 1988; Steege & Blumenthal, 1993). Werlinger and colleagues (2008) discovered that women who developed a more positive body image after participating in a weight-loss program experienced an improvement in sexual functioning and increased frequency in sexual activity. Body image appears to be related to sexual functioning beyond the effects of actual body size and level of exercise (Weaver & Byers, 2006). This effect has also been demonstrated in male populations. Davidson and McCabe (2005) found that middle-aged men with negative body image disturbance experienced more sexual dysfunction.

Body image has also been related to self-esteem. Low self-esteem, frequently experienced during adolescence, coincides with a downward trend in body satisfaction during adolescence (Clay, Vignoles, & Dittmar, 2005). This effect has been found in both adolescent boys and girls (Paxton, et al., 2006). Grossbard and colleagues (2009) found that much of women's self-esteem is based on body weight and perceived size. On the other hand, men's self-esteem has been predicted by drive for muscularity (Grossbard, et al., 2009).

The relationship between body image and mood has also been the focus of several studies. Negative body image has been significantly associated with depressed mood (Stice, Hayward, Cameron, Killen & Taylor, 2000; Holson, Kraft, & Røysamb, 2001; Paxton, et al., 2006). Negative body image predicted the onset of depression among female adolescents (Stice, Hayward, Cameron, Killen, & Taylor, 2000). Holson and colleagues (2001) supported this finding in a 5-year longitudinal study that also examined adolescents. Negative body image has also been shown to predict negative mood and affect. Harper and Tiggemann (2008) showed

women images, which idealized thinness in order to induce negative body image. The manipulation proved effective and negative body image was associated with negative mood.

Research has consistently demonstrated that negative body image is a risk factor for the development of disordered eating patterns and eating disorders (Attie & Brroks-Gunn, 1989; Fabian & Thompson, 1989; Cash & Deagle, 1997; Cargil, et al., 1999; Cooley & Toray, 2001; Tylka, 2004; Stice, 2002). Studies have shown that adolescents experiencing negative body image are more likely to develop eating disorders (Attie & Brooks-Gunn, 1989). This has been found to be the case in both premenarchal and postmenarchal adolescent girls (Fabian & Thompson, 1989). Further, body dissatisfaction has been implicated as a contributor to the maintenance of eating disorders and is a barrier to recovery, indicating that disordered eating may be a coping strategy for body dissatisfaction (Stice, 2002).

Negative body image has been associated with the occurrence of specific types of eating disorders, including binge eating disorder, bulimia nervosa, and anorexia nervosa. Cargill and colleagues (1999) showed that poor body image, particularly when characterized by shame and concern about public appearance, was significantly related to binge eating. In addition, Stice and colleagues (2002) discovered that negative body image, in addition to other factors such as depressive symptoms and low social support, predicted binge eating disorder onset with 92% accuracy. Poor body image, when interacting with neuroticism (Cooley & Toray, 2001) and acculturation stress (Perez, Voelz, Pettit, & Joiner, 2002) was also associated with the onset of bulimia nervosa (Weiderman & Pryor, 2000) as well as anorexia nervosa (Cash & Deagle, 1997).

Exercise

"Physical activity" and "exercise" are terms that describe different concepts. However, they are often confused with one another. Physical activity refers to bodily movement produced by skeletal muscles that results in energy expenditure (kilocalories), and may include sports, conditioning, household or other activities. On the other hand, exercise is defined as a subset of physical activity that is planned, structured, and repetitive and has a final or immediate objective to improve health, physical fitness, and weight control (Caspersen, Powell, & Christenson, 1985). There are various aspects of exercise, including the type and intensity. Aerobic exercise, or "cardio," includes any activity that uses large muscle groups, can be maintained continuously, and is rhythmic in nature (American College of Sports Medicine, 2013). Aerobic exercise is categorized into moderate and vigorous intensity. Moderate intensity is achieved with a target heart rate between 50-70% of one's maximum heart rate. Examples of moderate-intensity exercise are walking briskly, water aerobics, or bicycling slower than 10 miles per hour. Vigorous intensity is achieved at 70-85% of ones maximum heart rate. Examples of vigorous-intensity exercise are running, swimming laps, and hiking uphill (Centers for Disease Control and Prevention, 2013).

The Centers for Disease Control and Prevention (2008) provides recommendations for regular physical activity. It is recommended that children and adolescents (ages 6-17) should do 60 minutes or more of physical activity each day. Aerobic activity should constitute most of the time spent exercising each day, with three times per week of vigorous-intensity activity. In addition, children and adolescents should include strength training at least three times per week.

For adults aged 18-64 years old, as well as older adults (65 years and older) with no limiting health conditions, it is recommended that they engage in at least two hours and thirty

minutes of moderate-intensity aerobic activity every week and muscle training on two or more days per week. An additional option may be one hour and fifteen minutes of vigorous-intensity activity each week with muscle-strengthening activities on two or more days per week. Adults may also consider an equivalent mix of moderate- and vigorous-intensity aerobic exercise with muscle-strengthening exercise two more days per week. For even greater health benefits, the Center for Disease Control and Prevention recommends that adults engage in either five hours of moderate-intensity aerobic exercise or two hours and thirty minutes of vigorous intensity aerobic exercise per week, with two or more days of muscle-strengthening exercise.

Exercise & well-being. Exercise, and its effect on mental health, has been widely examined within the field of psychology. It appears to be highly effective in the promotion and enhancement of psychological well-being as measured by various constructs including self-concept, satisfaction, and self-actualization (Courneya, Freidenreich, Sela, Quinney, Rhodes & Handman, 2003; Walsh, 2011; Wilfley & Kunce, 1986). Courneya and colleagues (2003) attempted to discover how to improve quality of life in survivors of cancer. By comparing patients participating in group therapy with patients participating in group therapy plus a home-based exercise program, they found that the group of patients who exercised scored higher on scales measuring physical well-being, functional well-being, and satisfaction with life.

Similar results have been found in "normal" populations, or populations not exhibiting a physical disease or illness (Walsh, 2011). Wilfley and Kunce (1986) conducted an eight-week study involving "normal" adults participating in an exercise program. The eight-week exercise program consisted of three elements: a complete laboratory assessment of physical fitness, an individualized exercise program formulated based upon the initial assessment, and professional supervision of exercise. By the end of the study, participants experienced significant

improvement not only in physical fitness, but also self-concept. There was also a significant reduction in psychological tension and stress (Wilfley & Kunce, 1986). Dunn and Jewell (2010) stated that that there was sufficient evidence to support physical activity as an effective way to prevent mental disorders. Furthermore, using exercise and physical activity has been recommended as a treatment for mental disorders, and as an adjunctive treatment to psychotherapy and/or antidepressant medications (Dunn & Jewell, 2010).

The benefits of exercise for enhancing personal well-being were reviewed by Otto and Smits (2007), indicating that those with low levels of mood can return to normal levels and even elevated levels of mood with exercise. Furthermore, exercise is effective in combating overall psychological and physical stress.

The effect of exercise on vitality has also been examined (Ryan et al., 2010; Thayer, 1987; Vlachopoulos and Karavani, 2009). Vitality, which is defined as having physical and mental energy, has been found to be positively related to physical activity, such as light walking, when active individuals are compared to those who are sedentary (Ryan et al., 2010). Exercise is also a more powerful means of improving vitality than eating foods that contain sugar (Thayer, 1987). Vlachopoulos and Karavani (2009) found that the relationship between physical activity and vitality was mediated by a sense of autonomy, competence, and social relatedness, aspects of self-determined motivation.

Exercise & body image. The evidence supporting regular exercise in both the alleviation and prevention of negative body image is longstanding (Lewis & Scannell, 1995; Tiggeman & Williamson, 2000; Williams & Cash, 2001; Gaspar, Amaral, Oliveira, & Hanson, 2002; Hausenblas & Fallon, 2006; Vocks, Hechler, Rohrig, & Legenbauer, 2009). A meta-analysis that included 121 studies found that exercise was consistently associated with improved

body image (Hausenblas & Fallon, 2006). Various types of exercise have been shown to be effective, including creative dance movement (Lewis & Scannell, 1995) and circuit weight training (Williams & Cash, 2001). Lewis and Scannell (1995) discovered that women who were more experienced with creative dance movement were more satisfied with their appearance, fitness and body parts than women who had less than five years of dance experience. Williams and Cash (2001) conducted a study in which participants were randomly assigned to either a weight-training program or a control group. They were pre- and post-tested for body self-relations, social physique anxiety, and physical self-efficacy. Participants who participated in the weight-training program demonstrated a significantly improved evaluation of their appearance, greater body satisfaction, reduced social physique anxiety, and increased physical self-efficacy. Vocks and colleagues (2009) found that state body image was improved after a single session of exercise.

Physical activity may also be effective in preventing body image issues. Gaspar and colleagues (2011) conducted a cross-sectional study in which 234 children (10-17 years) were evaluated for body dissatisfaction, body image distortion and physical activity. They discovered that physical activity may have a protective effect on dissatisfaction with body image in children. Another study by Kirkaldy, Shephard and Siefen (2002) administered comprehensive questionnaires assessing anxiety-depression, trait addiction, smoking and drinking behavior, physical ill-health reports, and self-perception of self-image to nearly 1000 adolescents. Results revealed that participation in regular physical activity has also been associated with more favorable self-perception and self-image (Kirkcaldy, Shephard, & Siefen, 2002).

Researchers have attempted to investigate the mechanisms at play in the relationship between physical activity and improved body image. Tiggeman and Williamson (2000) found

evidence that exercise was beneficial for body image; however, this effect was only found in participants who exercised for reasons of health and fitness rather than those motivated by weight control and tone. Another study found that participants experienced the most benefits related to body image based on their perceived physical change due to exercise rather than their actual exercise (Martin Ginis, et al., 2012).

Exercise and eating disorders. While many studies have shown that exercise may be beneficial for body image, others have found that those with negative body image and eating disorders may actually abuse exercise. Pasman and Thompson (1988) evaluated body image and eating disorder disturbance in obligatory runners, weightlifters, and sedentary controls. Obligatory runners were defined as those who ran 15 miles or more per week and for 2 or more hours per week. Obligatory weightlifters were defined as those who spend time engaged in weightlifting three or more times per week and spent 3 or more hours doing so per week. Obligatory exercisers also obtained scores of 50 or higher on the Obligatory Exercise Questionnaire, particularly with regard to items assessing anxiety following inability to exercise and probability of continuing to exercise following a painful injury. Results indicated that weightlifters were significantly more accurate in estimating body size than runners and controls, and overall, women were more dissatisfied with their bodies than males. Furthermore, obligatory runners and weightlifters had greater eating disturbance than controls, and females evidenced great eating psychopathology than males.

Davis and colleagues (1995) investigated the association between physical exercise and obsessive-compulsive disorder in women with anorexia nervosa. Results indicated that obsessive compulsiveness, weight preoccupation, and pathological aspects of physical activity were significantly related to exercise behaviors in patients with anorexia nervosa. The authors

argued that the relationship between physical activity, starvation, and obsessive compulsiveness are reciprocal and dynamic, which may significantly influence the development and maintenance of eating disorders.

Bamber and colleagues (2000) conducted a qualitative study that consisted of semi-structured interviews with subjects screened for eating disorders and exercise dependence. Analyses revealed that participants who exhibited traits of exercise dependence (e.g. exercise daily, continuous vigorous exercise, inability to interrupt pattern) also exhibited eating disorder behaviors (e.g. rigid dietary restriction, irrational fear of weight gain, extreme body dissatisfaction). These findings were later supported by a research study using quantitative methods, in which it was found that a group of women who engaged in excessive exercise also manifested eating disorder traits and psychological disturbance. However, this study also identified a group of women who engaged in excessive exercise with less emotional fixation and few signs of eating disorders (Ackard, Brehm, & Steffen, 2002).

Similarly, Bamber, Cockerill, and Carroll (2000) compared women with exercise dependence, exercise dependence and an eating disorder, and controls where no exercise dependence or eating disorder was present. Aside from a higher incidence of reported menstrual abnormalities, the women who solely experienced exercise dependence (without an eating disorder) were largely indistinguishable from the women in the control group with regard to psychological functioning. Psychological disturbance was most notable for the group of women with both exercise dependence and an eating disorder.

Mond and colleagues (2004) also examined the relationship between exercise behaviors and disordered eating behavior and quality of life in a community sample of women. Self-report measures of frequency of exercise, obligatoriness of exercise and motivation for exercise, eating

disorder psychopathology, and quality of life revealed that exercising in order to improve appearance or body tone, as well as feelings of guilt following postponement of exercise, were strongly associated with elevated levels of eating disorder psychopathology, and in turn, reduced quality of life. This study also found that there was no association between exercise behavior and quality of life independent of the effects of eating disorder psychopathology.

Many studies have found that those who engage in obligatory and/or compulsive exercise share similar traits as those with disordered eating patterns and eating disorders. Liverman and Palek (1984) found that patients with anorexia nervosa and obligatory runners share psychological and physical characteristics. He reported similar psychological traits as those with anorexia nervosa, such drive to attain perfect physical fitness. The authors provided a case study of a male obligatory athlete who exhibited physical abnormalities identical to those have been found in patients with anorexia nervosa. For example, he had anemia, leukopenia, neutropenia, and reticulocytopenia. His bone marrow also demonstrated hypoplasia and fat atrophy. His weight was also 10% lower than the minimal normal range for his height.

Another study examined the association between motivations to run and eating disturbances in a sample of obligatory and nonobligatory runners (Slay, Hayaki, Napolitano, & Brownell, 1998). Participants were evaluated for running habits, motivations for running, and eating and weight concerns. Authors discovered that obligatory runners were more often motivated to run by negative factors, such as guilt for not running. They also exhibited more disordered eating. These findings were strongest in women, suggesting that female obligatory runners may be at an increased risk for eating disorders.

An additional study conducted a psychological comparison of females with anorexia nervosa and competitive male bodybuilders (Davis & Scott-Robertson, 2000). According to the

authors, women with anorexia nervosa and male body builders are those who have taken cultural standards of bodily perfection to the extreme, and both use unhealthy behaviors such as severe food restriction, excessive exercise, and steroids in pursuit of their goals. The findings of this study showed that psychological profiles of male bodybuilders were comparable to those of women with anorexia nervosa, with both groups being significantly more obsessional, perfectionistic, anhedonic, and pathologically narcissistic than the general population.

Exercise Dependence, Mental Health and Body Image

While many studies have demonstrated both the psychological and physical benefits of exercise, there is also evidence that physical exercise may produce "withdrawal syndrome," and that exercise may be regarded as addictive. The following studies have investigated psychological effects and withdrawal symptoms associated with exercise abstinence and deprivation.

Morris and colleagues (1990) investigated the effects of temporary withdrawal from regular running. Forty male runners were divided into two groups for six weeks. One group continued their normal running routine while the other group stopped running for the middle two weeks of the experiment. Participants completed questionnaires at the end of each week. Results showed that symptoms of depression were greater in the withdrawal group than the control group at the end of the second week of withdrawal. Anxiety, somatic symptoms, and insomnia were greater for the withdrawal group after the first and second weeks of withdrawal.

Davis and Fox (1993) conducted a study in order to investigate the degree of relationship between exercising and weight preoccupation. The researchers assessed women on various psychological, behavioral, and body composition measures, including weight preoccupation and leisure time physical activity participation. Results showed that excessive exercisers exhibited

significantly higher level of body focus and weight preoccupation compared to nonexcessive exercisers.

Crossman, Jamieson, and Henderson (1987) conducted two experiments investigating athletes' psychological response to lay-offs from training. In the first study 31 competitive runners were tested on mood and anxiety measures before, during, and after a one day lay-off from exercise. The second study examined 20 competitive swimmers who were also tested for mood and anxiety before and after, and also on the second and fifth days of the lay-off. Overall, there was little evidence for unpleasant effects of training lay-offs in either study. However, men as well as athletes competing at higher levels exhibited more negative mood than women and lower level athletes during lay-offs. The authors also noticed that two opposing processes may have occurred in participants. The first involved negative effects, which resulted from withdrawal from exercise. The second reflected positive effects for participants due to the dissipation of fatigue produced by overtraining.

The majority of remaining studies have reported negative effects from exercise withdrawal. It has been found that mood and affect are greatly impacted by exercise abstinence. Exercise abstinence in regular exercisers is associated with greater mood and affect disturbance and increased levels of depression (Mondin, et al., 1996; Szabo & Parkin, 2001; Glass, et al., 2004; Berlin, Kop, & Deuster, 2006). This effect has been found in runners (Conboy, 1994) and martial artists (Szabo & Parkin, 2001), specifically. Stetson and colleagues (2005) also found that exercise abstinence produced higher levels of guilt and perceived loss of control.

Glass and colleagues (2004) found similar results, in that 45% of participants experienced increased negative mood in addition to pain and fatigue after one week of exercise deprivation. The authors suspected that these participants may have been inherently different than the

remaining sample in that these participants may have been at risk for developing chronic multisystem illnesses, and had perhaps unknowingly repressed these symptoms when exercising regularly.

There is surprisingly little research investigating the impact of exercise abstinence on body image. One study, conducted by Niven, Rendell, and Chisholm (2008), examined 58 women who regularly engaged in physical activity (at least 4 times per week), who were either asked to abstain from exercise for 72-hours or to continue their normal exercise routine. Affect and body dissatisfaction were examined pre- and post-treatment. Compared to the control group, the abstinence group had a significant increase in tense arousal and body dissatisfaction. Following this study, the authors recommended that qualitative research explore possible explanations for this change in body image following exercise abstinence.

Exercise and coping. There has been little research examining how individuals cope with interference in exercise routines. Some studies have examined the relationship between the coping skills of individuals and eating and exercise behaviors. Simkin and Gross (1994) conducted a study in which 29 healthy women's' coping responses to situations interfering with planned exercise and subsequent patterns of relapse, or a lapse in exercise activity, were tested. Participants showed no evidence of disordered eating or obligatory exercise patterns. Participants were instructed to monitor their exercise activity for 14 weeks. Participants' responses indicated that 66% experienced a lapse in exercise activity at some point during the study, and 41% experienced a relapse in activity. Results also indicated that those who utilized more cognitive and behavioral coping strategies during a relapse (i.e. modify exercise cues, thoughts about the positive benefits of exercise) exhibited fewer relapses in exercise overall.

Another study by Loumidis and Wells (2001) tested the hypothesis that dysfunctional exercise and eating disorder beliefs are positively associated with emotion-focused and avoidance coping strategies. One hundred participants completed the Exercise Beliefs Questionnaire, Eating Disorder Belief Questionnaire, Coping Inventory for Stressful Situations, and COPE, which is an inventory measuring coping responses to stress. Eating disorder beliefs were related to dysfunctional exercise beliefs concerning physical appearance, social desirability, and inability to function mentally or emotionally. Eating disorder beliefs were positively associated with emotional coping and negatively correlated with task-oriented coping. Exercise beliefs were associated with avoidance coping, or distraction.

Thome and Espelage (2004) evaluated the role of exercise as both coping mechanism and as a health behavior in relation to eating pathology and other measures of psychological health in a nonclinical university population. Undergraduate students completed questionnaires that assessed exercise behavior, coping strategies, eating attitudes, self-esteem, life satisfaction, affect, depression and anxiety. Results showed that exercise related to positive psychological health in males, whereas in females it was associated with both positive and negative psychological health. Among females with eating pathology, exercise was actually related to negative affect while those without eating pathology demonstrated that exercise was related to positive affect and the use of exercise as a coping mechanism. Furthermore, for females with eating pathology, exercise was associated with higher levels of depression and anxiety.

Other studies have explored compensatory health beliefs and the use of food and exercise as compensatory behaviors to control weight. Compensatory health beliefs are beliefs that the negative effects of an unhealthy behavior can be compensated for by engaging in another, healthy behavior (Rabiau, Knäuper, & Miquelon, 2006). An example of a compensatory health

belief is "I can eat this piece of cake now because I will exercise later." Rabiau and colleagues (2006) suggested that compensatory health beliefs serve various purposes for individuals, including conflict resolution between desires and health goals and motivation for healthy behavior.

The compensatory beliefs model has been tested by various studies. Kronick and Knäuper (2010) asked women, both dieters and non-dieters, to sit at a table that had two cookies on tray in front of them. Participants were told that the researchers were interested in assessing the palatability and taste of new organic cookies. They were told that other participants had said that the high fat, high sugar organic cookies were rich, chewy and delicious tasking while the low fat, low sugar organic cookies were not very good. They were then asked to make their decision about which cookie to eat and to complete a questionnaire about the thoughts they were having while contemplating which cookie to eat. The questionnaire assessed compensatory intentions, degree of mental conflict and degree of temptation. Results indicated that compensatory intentions were a significant predictor of choosing the high calorie cookie for consumption, and that dieters demonstrated stronger endorsements of compensatory intentions than did non-dieters.

Kronick and colleagues (2011) investigated how compensatory thinking contributes to the prediction of caloric intake. Seventy-eight participants were each provided a PDA to use for 7 days. Each day the PDA's were programmed to randomly beep seven times each day. Each time the PDA beeped, participants were instructed to respond to items measuring compensatory intention and caloric intake. Results of this study demonstrated that compensatory beliefs and intentions were predictive of caloric intake throughout the day.

LePage and colleagues (2008) compared women who engaged in both fasting and vigorous exercise as compensatory strategies with women who engaged in either fasting or vigorous exercise, and women who employed no compensatory strategies. Participants completed questionnaires assess body dissatisfaction, restrained eating, thin-ideal internalization, depression, self-esteem, and general psychological distress. Results showed that women who utilized any compensatory strategies reported significantly greater body dissatisfaction and restrained eating than women who use no compensatory strategies. Additionally, women who used fasting as a compensatory strategy exhibited more significant psychological and behavioral symptoms than those who used vigorous exercise.

King and colleagues (2007) proposed that following exercise, many individuals increase food intake, which is likely due to increased appetite following energy expenditure. The authors noted, however, that there may be individual differences in the amount of increased food intake, and suggested that there is evidence that women, in particular, have been shown to associate food with rewards or a hedonic experience and, therefore, consume more food following exercise. This idea was tested by Finlayson, Bryant, Blundell, and King (2009) with a study in which 24 healthy female participants were randomly assigned to either 50 minutes of high intensity exercise or no exercise. Subjective appetite sensations, explicit and implicit hedonic processes, food preference and energy intake were measured immediately before and after each activity session and a test meal. The researchers also identified two groups (compensators and non-compensators) of participants in which exercise exerted different effects on compensatory energy intake and food preference. Results indicated that following exercise, compensators increased their energy intake, rated food as more palatable, and demonstrated increased implicit

wanting. Furthermore, compensators showed a preference for high-fat sweet food compared with non-compensators, independent of exercise intervention.

One study was found which examined gender differences in compensatory behaviors. Anderson and Bulik (2004) examined gender differences in a sample of 1111 male and 1510 female twins. Participants completed a questionnaire on eating attitudes and behaviors. Results of a logistic regression showed female participants used all compensatory behaviors other than exercise (e.g. purging, fasting, diet pills) more often than their male counterparts. Female participants were also shown to place greater importance on weight and shape, and exhibited more drive for thinness than men.

Statement of the Problem & Rationale for Study

The empirical evidence demonstrates that negative body image is a risk factor for a variety of psychological disorders, including eating disorders, in particular. Body image also appears to play a strong role in self-esteem and mood. It is clear that regular physical exercise may significantly improve and prevent body dissatisfaction. Although there is ample research examining the impact of exercise on overall psychological well-being, including body image and body satisfaction, there is still very little evidence addressing specifically *how* withdrawing from exercise can impact those who regularly do so. Furthermore, there is little known about the various mechanisms that may be at play to influence body image. For example, little is known as to how abstaining from exercise may influence body image (e.g. fear of weight gain, feeling lethargic). Niven, Rendell, Chisholm (2008) suggested that research may benefit from "…examining the influence of negative affect and increased body dissatisfaction responses to exercise abstinence on subsequent exercise and other compensatory health behaviours," (pp. 1241).

While many studies have demonstrated that exercise deprivation may lead to a variety a negative withdrawal symptoms, such as depressed mood, affect disturbance and physical pain, there is little known regarding how individuals cope with exercise deprivation. With exercise being recognized as both a behavior and coping strategy that might be present among individuals with disordered eating patterns, it is important to explore what coping strategies may be utilized if exercise is an unavailable option. There is also some empirical evidence demonstrating the use of compensatory behaviors, such as exercise or dieting, in order to lose weight or prevent weight gain. However, there have not yet been any studies examining how individuals may compensate for loss of exercise. Further investigation of this topic could be very useful for the field of counseling psychology, particularly with regard to the treatment of body dissatisfaction.

In addition, while multiple quantitative studies have demonstrated gender differences occurring with regard to body image, there is little known about how men and women may differ and what specific differences or similarities in their individual experiences of body image may be present. There are no known gender differences in relation to exercise abstinence and body image, particularly in a population that may be at risk of compulsive exercise behaviors, negative body image, or eating disorders.

Purpose

The purpose of this study was to explore how exercise abstinence relates to body image in those that may be at risk of obligatory or disordered exercise. This study also examined how people experience externally imposed exercise abstinence. Furthermore, the present study investigated how men and women who typically engage in obligatory exercise cope with a period of exercise abstinence.

An additional aim of this study was to shed light on the similarities and/or differences in the experiences of exercise abstinence of men and women who may be risk of obligatory exercise and how they might cope with exercise deprivation through similar or different means.

This study utilized qualitative methodology to understand the experience of individuals during a period of exercise abstinence. Qualitative methods were recommended as potentially contributing greater understanding to the phenomenon of experienced body image during periods of exercise abstinence (Niven, Rendell, & Chisholm, 2008).

Research Questions

How do women and men who engage in or may be risk for obligatory exercise experience body image during a period of imposed exercise abstinence? The imposed abstinence is intended to simulate the experience of exercise deprivation in these participants.

How do they cope with exercise deprivation?

How are male and female college students different or similar in their experiences of exercise abstinence?

METHOD

The purpose of this study was exploratory and, therefore, utilized a qualitative research approach. This approach falls under the postpositivist paradigm, which has become the foundation for natural and social sciences (Willis, 2007). Postpostivism, or postempiricism, posits that one can never do enough research to prove a theory, but only provide more evidence to support a given theory (Willis, 2007). It accepts the scientific method, and it allows the researcher to guide the practice.

The qualitative approach that this postpositivist study takes is that of grounded theory. Grounded theory is one of the most common methods for qualitative data analysis in the field of counseling psychology (Fassinger, 2005). It is based on the assumption that people develop meanings to an event through experience and social interaction. The meanings that people assign to these events build their behavior. Grounded theory, therefore, seeks to explain internal processes (Glaser, 1978). The purpose of a grounded theory study is to explain participants' behaviors in a natural setting, and lay the groundwork for future studies in generating a theory, as well as to modify and further develop existing theories (Creswell, 2007). An additional purpose of the grounded theory approach is to investigate beyond the conjecture of quantitative data and examine the underlying processes of what is happening, enabling professionals to eventually intervene with greater confidence to help resolve concerns (Glaser, 1978). A grounded theory study is an inductive model of theory development that follows systematic procedures in data collection and data analysis. The theory is also developed within the views, beliefs, and experiences of the participants in the field being studied (Creswell, 2007).

Participants

Purposeful sampling was executed in participant selection. Participants were selected based on specific criteria. Participants were a homogenous group of undergraduate students who are at risk for obligatory exercise or disordered exercise behavior. University athletes were not eligible to participate as their training requirements may interfere with participation requirements as well as reported experiences compared to non-athletes. To ensure participants were eligible, they were screened with the Obligatory Exercise Questionnaire (OEQ) (Thompson & Pasman, 1991). Participants who achieved a total score of 50 or greater on the OEQ (Thompson & Pasman, 1991) were eligible for participation.

Forty-two undergraduate students (26 women; 16 men) at a large public university met the criteria for participation in the present study with a mean OEQ total score of 53.21 (M=50.80 for males; M=54.82 for females) and scores ranging from 50 to 60 (SD= 3.58). Participants had a mean age of 19.04 years (M=19.17 for males; M=18.93 for females) and age ranged from 18 to 25. Forty participants identified as White/Caucasian, 1 participant identified as Latino/Hispanic, and 1 participant identified as multiracial.

Procedure

Recruitment. Participants were recruited through undergraduate psychology courses at Colorado State University. All participants received course credit for participation.

Data Collection. Data was collected through a structured interview questionnaire, which was administered via the internet. Electronic data is a contemporary method of data collection for qualitative research decreases problems with time, location and space of data collection (Onwuegbuzie, Leech, & Collins, 2010) as well as eases transcription of data (Biddix, 2008). Furthermore, it has been shown to be an effective means of collecting diverse forms of

qualitative data for counseling psychology research studies (Suzuki, Ahluwalia, Arora, & Mattis, 2007). The present questionnaire will consist of open-ended questions regarding their experiences and reactions to abstaining from exercise.

Questionnaire. Participants were provided an electronic link that led them to a consent form and instructions for participation. They were screened to ensure eligibility for participation through being administered the Obligatory Exercise Questionnaire (OEQ). The OEQ is a 20-item questionnaire with documented reliability and validity that measures attitudes and activities related to exercise. Individuals report on a 4-point Likert scale how often they experience each exercise-related situation. This measure has been psychometrically validated on 90 subjects and has an internal consistency ratio of .96 as well as test-retest reliability of .96 (Thompson & Pasman, 1991). Higher scores indicate a stronger sense of obligation to exercise. Those who received a total score of 50 or greater were eligible to participate in the study, and were then asked to abstain from any exercise outside of necessary physical activity (e.g. walking to class) for three consecutive days. During each day of exercise abstinence they were asked to login to the electronic survey to confirm they had not exercised, and were asked open-ended questions inquiring about body image, health-related behaviors, and how they were coping with the exercise abstinence. When they finished, they were led to debriefing information about the research study. Procedure materials including the consent form, questionnaire, and debriefing information can be viewed in Appendices A-C.

Data Analysis

Grounded Theory Analysis. This study followed a grounded theory approach with the application of constant comparative analysis, which follows three steps to ensure quality of coding and analysis (Fassinger, 2005). The first step in the coding process is open coding, or

recording initial observations of what the interviews are portraying. In open coding, the researcher wants to answer the question, "What am I observing here?" and records salient categories supported by the data. Overall, open coding is a process in which the data is reduced to small sets of themes that describe the process being explored in the study (Creswell, 2007).

As the coding process progresses, the researcher began axial coding and develops a codebook that considers the broader, thematic content. The codebook consists of categories under which the open codes might fit. After the axial codes have initially been developed, a recursive process of coding takes place, meaning the researcher returns to the raw data and compares one category to another, with the goal of recognizing when categories seem to interrelate and/or subsume each other. Coders reach consensus, or agreement, on the categorical structure by coding transcripts independently and comparing code applications as a team. When discrepancies occurred, all coders will discuss which code was most appropriate.

Finally, selective coding, which is the broadest level of coding, took place. Selective coding consists of determining a coding paradigm, in which a theory is generated. In this coding phase, a theoretical model may be presented, which will offer an explanation that embraces the data, and begins to address research questions.

Trustworthiness. Within the paradigm of qualitative research, trustworthiness refers to the strategies taken to ensure the validity of results and conclusion of a study. It is recommended to use a minimum of two strategies to sufficiently address trustworthiness in a grounded theory study (Creswell, 2007). This study utilized a variety of strategies, and will undertake a series of credibility checks to verify trustworthiness in the data analysis. This helped to ensure an accurate representation and interpretation of data provided by participants. For the present study, the following three strategies for trustworthiness were utilized.

Clarifying Research Bias. In this grounded theory study, the researcher initially identified her personal experiences, views, and biases in order to divulge information related to what assumptions that may be present. These experiences, views, and biases are explained in the subsequent paragraph.

"The researcher is a graduate student at Colorado State University in the counseling psychology program. This study will be completed as a dissertation in partial fulfillment of her doctoral degree in counseling psychology. While there are no expected results, the researcher does recognize the positive effects of regular physical activity on body image, and that abstaining from exercise may be difficult for those who regularly engage in it. She has experienced many benefits of exercise including enhanced positive affect, energy, self-esteem, as well as reduced anxiety, stress, and negative affect. Second, the researcher has personal experience with negative body image, which has been improved through participation in exercise. Furthermore, as a clinician that often works with people struggling with negative body image, the researcher has witnessed clients experience more positive body image after engaging physical activity on a regular basis.

She also recognizes that some individuals may have an obligatory, and potentially unhealthy, relationship with exercise and that these individuals may tend towards other unhealthy coping mechanisms. While she has witnessed therapy clients benefits from engaging physical activity, she has also found that those with rigid exercise beliefs and routines may experience more challenges with body image and self-concept."

Follow-up Questions. The initial credibility check was to ask a follow-up question at the end of the questionnaire each day to ensure that the interviewees' experience has been fully represented. At the end of the questionnaire each day, participants were asked, "Is there

anything else that you feel is important that I have not asked about?" This question provided the interviewees an opportunity to express and share any final thoughts, ideas, or experiences that was not previously addressed in the interview.

Peer review. A second credibility check was to engage in peer review in order to establish coding consensus among all coding team members. This occurred throughout the process of data analysis. The coding team consisted of the researcher and 2 undergraduate research assistants. Each coder coded each interview independently. Then the entire coding team met to discuss each code that was applied. When discrepancies arrived, all members of the coding team discussed the code in question until an agreement was reached. If the coding team was unable to reach an agreement, the researcher made the final decision for which code should be applied.

The researcher further consulted with a research committee, which consisted of faculty, including one counseling psychology faculty member, with experience and understanding of qualitative research. This committee helped to monitor the biases of the researcher and possibly provide guidance for the researcher in developing themes and codes by providing the researcher with feedback and considerations regarding the analysis and methodology of the study.

RESULTS

This qualitative study yielded a theoretical model of obligatory exercising college students' response to, and experience with, exercise abstinence. As depicted in Figure 1, participants' experiences of exercise abstinence resulted from a dynamic interaction among several factors.

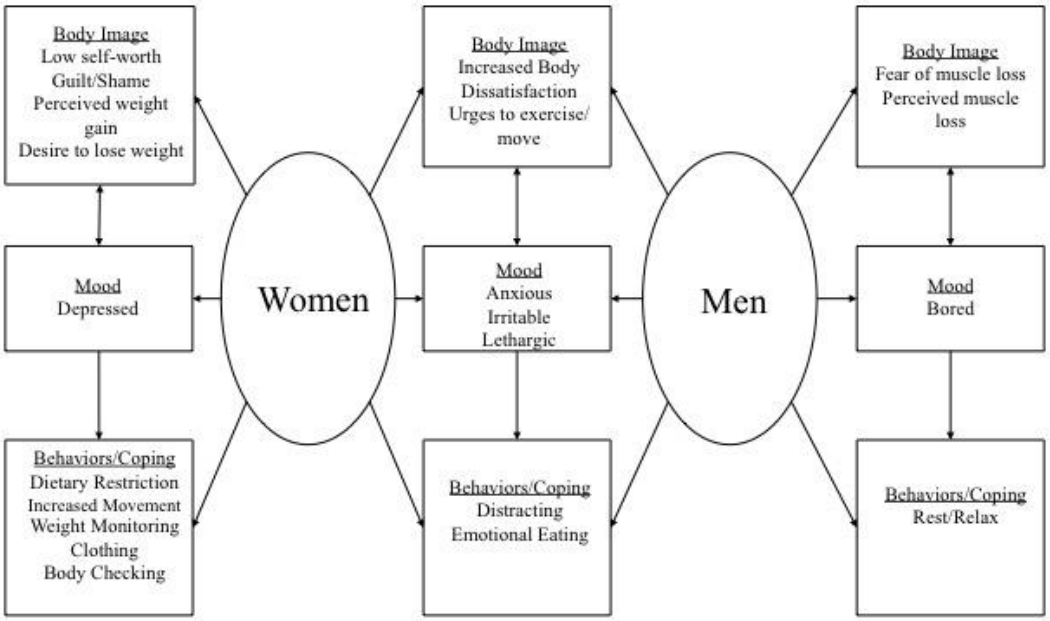

Figure 1: Grounded theoretical model of college students' reactions and experiences to abstaining from exercise

Central to the interaction was gender, as male and female college students who engage in obligatory exercise reportedly experienced exercise abstinence in different ways. Female college students who engage in obligatory exercise reported various emotional and cognitive reactions regarding body image that their male counterparts did not. Male and female participants also reported similar reactions in their experiences of exercise abstinence. There were three major categories that emerged in gender differences and similarities. The first major category was body image, which entailed both cognitive and emotional reactions to exercise abstinence in

relation to physical appearance, weight, and body satisfaction. The next major category was mood, which described the overall state of mind of the participants during the period of exercise abstinence. The final major category was behaviors and coping strategies used by participants as a means of coping with exercise abstinence.

Female participants endorsed numerous themes related to body image. A prominent theme that emerged from female responses was an association of self-worth to weight and physical appearance. Twenty-four female participants discussed feelings of self-hatred and often made statements devaluing their worth. One female college student discussed,

> I'm just disgusted with myself since I haven't exercised. I feel gross and fat, and I just don't like myself. I look in the mirror, and I just don't feel as confident because I don't look good. I hate the way I look, which makes me not like myself.

They also reported feelings of guilt and shame for their weight and food intake, noting that they did not deserve to eat so much food due to not exercising. For example, one female college student explained,

> I feel like I'm eating too much, since I'm not exercising, so I'm consuming all these extra calories I don't need. I feel guilty for eating and not exercising like I normally would.

One theme that emerged throughout interviews with female college students engaging in obligatory exercise was fear of weight gain. Twenty-two female participants reported being fearful that abstaining from exercise would result in weight gain. Many of the female participants (n=19) also reported a desire to lose weight, which made exercise abstinence difficult for them. One of the female participants said,

> I am really worried I will gain weight, and I REALLY don't want to gain any weight. I usually exercise at least once per day and if I lose that I'm afraid the weight will start to pile on. I already think I weight too many now. I want to lose weight, but without being able to exercise I am very worried that I will gain weight.

Furthermore, 20 female participants reported perceiving that they had gained weight, despite knowing that they had actually not gained weight, participants noted, "feeling bigger" and "heavier." For instance, one of the female college students expressed,

> I just feel bigger. When I look in the mirror my hips look wider and my stomach looks rounder. I just feel heavier as I walk around and move. It's just uncomfortable. I'm pretty sure I've gained some weight.

With regard to mood, all female participants discussed feeling depressed during the three days of exercise abstinence. As described by one female participant,

> My mood has been really low- lower than normal. I feel pretty depressed. I just feel really down most of the time and I just don't care about much.

A final category of themes that emerged was behavioral strategies used by participants to cope with exercise abstinence. The most common strategy for coping with exercise abstinence for female participants was dietary restriction. Twenty-five female participants reported counting calories and restricting certain foods or types of foods from their dietary intake in order to compensate for loss of exercise. One of the female participants stated,

> I have been trying to eat less, since I am not exercising, and I don't have as many calories for the day. I have been trying to have smaller meals. I have also been trying to not have any junk food or foods with a lot of sugar or fat. I'm also trying to watch my carbs.

An additional means of coping and compensation for exercise abstinence among female participants was increased movement throughout each day without exercise. While participants confirmed that they did not engage in physical exercise during the study, twenty-three female college students reported attempting to move more by taking longer routes on walks to class or walking at a faster pace.

> I've noticed that I've been moving more than I usually would had I exercised. Like, when I'm sitting in class or studying I have been bouncing my leg. I have also been taking longer ways to get to class and other places I have to go, walking faster than I normally do. It's like I'm trying to make up for the amount of activity that I've lost for these three days.

Female college students also reported monitoring their weight during the three-day period of exercise abstinence. Twenty-one female participants discussed tracking their weight and

weighing themselves, up to three times per day for some students, to ensure they were not gaining weight. As noted by one female college student,

> I've weighing myself a lot just to make sure that I don't gain weight from not exercising during this three days. I hope that three days will not make a significant difference, but my workouts tend to be a pretty high intensity, and without that for three straight days, I just need to watch my weight.

An additional theme that materialized from responses of female participants was body checking. Eighteen female participants reported examining their bodies and/or often looking in mirrors to monitor if their bodies were changing due to exercise abstinence. One of the female college students claimed,

> I look in the mirror every chance I get to see if/how my body has changed from not being exercise. And not just in real mirrors- even if I walk in front of a wall or a window where I can see my reflection, I try to see how much weight I've gained or how noticeably different I look to other people.

The final theme that emerged as a coping mechanism for female college students abstaining from exercise was to intentionally wear clothing that provided more coverage of their bodies. Seventeen participants reported wearing loose and/or more layers in order cover their "problem areas," which they perceived to have become more unattractive due to exercise abstinence. One of the female participants explained,

> On thing that I've been doing since I'm so uncomfortable with my body and not exercising is wearing clothes that don't show much of my body. Instead of jeans and fitted shirts that I would normally wear, I've wearing big sweat pants and sweatshirts to cover up.

Pronounced themes also appeared in the reports of male college students that fell under the category of body image, which were not endorsed by female college students. Thirteen male college students reported having a fear of losing muscle during the 3-day period of exercise abstinence. For instance, one male college student stated,

> I've worked hard to build the muscle that I have, and if I don't keep up with my schedule, I might lose some of my muscle. It would be disappointing to have to make up for all of that hard work.

Male college students also reported believing that they had lost muscle due to abstaining from exercise for 3 days. Twelve male college students discussing "feeling" as though they had lost muscle mass. According to one of the male participants,

> I'm pretty sure I'm going to have to hit the gym pretty hard at the end of this study, because I'm pretty sure I've lost some of my strength and muscle mass. My muscles don't feel as tight and they look and feel smaller.

With respect to mood, a common theme that emerged from male college students was boredom. Fourteen male college students reported feeling bored and unsure of what to do with the extra time they had from not exercising. One of the male participants stated,

> I don't know what to do with all of the extra time I have! I am just so bored. I almost just want to sleep to make all this time pass faster, but I don't want my sleep schedule to get all messed up either. I'm definitely looking forward to getting back into my workouts again, so I have something to do.

For the category of behaviors and coping strategies, male college students reported spending more time resting and relaxing during the 3 days of exercise abstinence. Fifteen male college students discussed using the spare time that would otherwise be used to exercise to relax rest their bodies. According to one of the male college students,

> I've just been trying to relax and give my body a break. I figure, if I can't exercise I might as well take advantage to sit back and relax. I mean, I wish I could exercise, but I agreed to not workout for this study so I'm just going to hangout and let my body rest.

Among the main category of body image to exercise abstinence, mood, and behaviors/coping skills, both male and female college students reported some similar themes. One theme endorsed by all participants was having a negative perception of their physical appearance and body dissatisfaction. Thirty-seven participants discussed a feeling of increased body dissatisfaction induced by abstaining from exercise. As noted by one female college student,

> "I've always struggled with body image, but it's gotten way worse since I stopped exercising. I am really unhappy with my appearance, and even more so without being able to exercise."

Equally, a male college student stated,

> "I don't think I've ever been completely satisfied with how I look. It's never been a huge concern for me thought either. But over the past three days I have noticed worrying about how my body looks a little more than usual. Wishing I was a little more toned and muscular.

A next theme falling under the category of body image among male and female college students who engage in obligatory exercise patterns was having urges to exercise and move throughout the days of exercise abstinence. Thirty participants reported feelings of discomfort and restlessness, which led them to experience strong urges to engage in exercise.

With respect to mood, male and female college students reported experiencing some similar moods during three consecutive days of abstaining from physical exercise. The most common mood endorsed by both male and female students was having and anxious mood. Forty participants discussed feeling very anxious and stressed during the period of exercise abstinence. For example one female college student said,

> I feel more anxious than usual. We're getting close to midterms and I think I am more stressed and anxious about them then I would be if I was able to exercise for these three days.

Similarly, a male college student stated,

> I've had quite a bit of anxiety lately. I just feel a little more amped up and have a lot of restless energy and nervousness. I feel like I have a lot more stuff going through my mind that I'm worrying about.

Another theme endorsed by both male and female college students was irritability. Thirty-seven participants discussed being more sensitive and feeling "on edge." They described themselves as easily annoyed, irritated, or angered due to being unable to maintain their obligatory exercise habits for three days. According to one of the female students,

> I feel a lot more on edge and sensitive than I usually am. I am finding a lot of things that would normally not bother me to be very annoying and irritating. It's almost like nothing is going to please me right now.

Likewise, a male college student reported,

> It seems like maybe I have a bit more of temper than usual. I am just very easily angered or irritated these days, and I'm pretty sure it's just because I haven't exercised like I normally would have.

The final theme that emerged in the mood category was feeling lethargic. Thirty participants reported feeling more tired and fatigued, sluggish and apathetic. They described

having less energy or being more easily fatigued by tasks that they would otherwise complete with more ease had they been able to exercise. As one female college student explained,

> I just feel so tired all of the time. I want to be lazy all day do nothing. I'm finding it a lot harder to get up and go to class and doing everything I need to do because I simply don't have the same amount of energy.

A male college student also said,

> I have a lot less energy than usual and I feel a lot more tired than usual.

Both male and female participants also endorsed similar themes with regard to behavioral strategies and coping skills. The most common theme that emerged from both male and female college students was to engage in activities that distracted them from thinking about exercise abstinence. All 42 participants reported trying to engage in activities (e.g. watch television/movies, read, study) that would provide distraction from thinking about loss of exercise. For example, one female college student noted,

> I've just been trying to keep my mind busy and try not to think about how I'm not able to exercise. I've trying to spend time with my friends and watching a lot of movies, listening to music, all kinds of things to just distract myself.

Also, a male college student said,

> The biggest thing I've done to cope is to just keep busy. Luckily, I've had a lot of studying to do this week, so that has been a good distraction for me.

The final theme that emerged under the category of behaviors and coping skills was emotional eating. Twenty-eight male and female college students reported eating more food, especially "unhealthy" or "junk" food, despite not feeling hungry during the three days of exercise abstinence. For instance, one female participant explained,

> I've been eating more food and more unhealthy food, like chips and cookies and stuff, more than usually do. I don't why. I don't think I actually feel hungrier, but I've just been craving junk food more than I usually do.

Similarly, a male college student reported,

> I have been just been eating a lot more than usual. I think it's just out of boredom. Since I haven't been working out, I've just been sitting and watching a ton of TV, so I just eat a bunch of food.

DISCUSSION

This study utilized qualitative research methodology based on grounded theory to explore how both male and female college students who engage in obligatory exercise react to exercise abstinence. It aimed to answer three research questions. 1) How do college students who engage in obligatory exercise experience body image during a period of imposed exercise abstinence? 2) How do they cope with exercise deprivation? 3) How are male and female college students different or similar in their experiences of exercise abstinence? The findings revealed numerous gender differences as well as some similarities with respect to mood, cognitive and emotional reactions, and behavioral/coping strategies to exercise abstinence, which will be discussed below.

Regarding the first question both men and women expressed concerned that they lost muscle tone and experienced an increased negative perception of their appearance. Men reported more concern about loss of muscle or strength whereas their female counterparts expressed intense fear of weight gain. Notably, results suggest that the female college students associated body image with self-worth. Previous studies have well established the association between body dissatisfaction and concepts related to self-esteem in girls and women (Furnam, Badmin, & Sneade, 2002; Tiggemann, 2005; Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006). Since body dissatisfaction has been shown to be a risk factor in girls and women, female college students who engage in obligatory exercise may be at risk for low self-esteem.

The second research question addressed how college students who are also obligatory exercisers cope with exercise abstinence. This may be one of the first studies to examine how obligatory exercisers respond to exercise abstinence. This study attempted to address this by asking participants if and how their eating had changed as well as how they have been coping

with exercise abstinence. The most commonly identified coping strategy reported by female participants was dietary restriction by means of counting calories, skipping meals, or restricting certain food groups or amounts of food at each meal/snack. Female participants also reported using other strategies including monitoring their weight, increased physical movement, and wearing loose or more clothing. Previous research has shown that exercise dependent women and women with eating disorders are largely indistinguishable with regard to body image, disordered eating, and psychological distress (Liverman & Palek, 1984, Bamber, Cockerill, & Carroll, 2000; Bamber et al., 2000; Ackard, Brehm, & Steffen, 2002). Since the participants in this study scored high on the OEQ and also exhibited behaviors potentially associated with disordered eating, it is possible that the construct of obligatory exercise may be related to exercise dependence, and that female obligatory exercisers may be at risk for disordered eating patterns when abstaining from exercise.

The only commonly identified coping strategy endorsed solely by the male participants was resting and relaxing during the time they would usually spend exercising. Perhaps male college students who engage in obligatory exercise may be at less risk of disordered eating, particularly dietary restriction, than their female counterparts when exercise abstinence is imposed.

There were some coping strategies commonly identified by all participants in the study, with the most prominent being engaging in activities that distracted participants from urges to exercise. Both sexes also reported increased body checking, such as looking in mirrors and examining their bodies. Few studies have examined the behavior of body checking, although some researchers have linked body checking to anxiety in female participants. Haase and colleagues (2007) found that social physique anxiety, or concern of others' perceptions of one's

physical appearance, mediates the relationship between body checking cognitions and body checking behaviors in women. Hajistavropoulos and Lawrence (2006) found that women with higher anxiety regarding health were more likely to be preoccupied with food and engage in body checking behavior. Additionally, Waller and colleagues (2008) added that body checking may serve as a function to maintain self-esteem for women.

Another particularly interesting finding of this study was that both male and female college students reported more emotional eating during the exercise abstinence period. This finding may indicate that since participants did not have access to what may be their primary tool for relieving stress (physical exercise) they began utilizing food to manage stress and regulate emotions. Previous studies investigating emotional eating have more strongly focused on female participants with few studies examining emotional eating patterns in men. Tanosfsky and colleagues (1997) found that men exhibited less emotional eating compared to female counterparts during emotional distress. On the other hand, Larsen and colleagues (2006) concluded that the difficulty male participants had in identifying emotions led to more emotional eating than female participants. While this study was unable to quantify emotional eating in participants, the finding does show that both male and female college students who engage in obligatory exercise may be at risk for emotional eating when abstaining from exercise. This may be the first study to identify a possible link between exercise abstinence and emotional eating in both male and female obligatory exercisers.

Implications for Practice

College counselors should effectively assess exercise behaviors of their clients. While exercise as a coping skill has been recommended for therapy (Burks & Keeley, 1989; McEntee & Halgin, 1996; Burton, Pakenham, & Brown, 2010), some students may be relying too heavily

on exercise. College counselors need to be especially mindful of exercise behaviors of their clients. College counselors may also consider utilizing the OEQ in order to quantifiably measure if their clients are engaging in obligatory exercise.

For clients who are engaging in obligatory exercise, counselors must be aware of the risks to the student in the case of a period of imposed exercise abstinence. Counselors may then discuss these concerns with their clients as well as explore each client's beliefs and attitudes about exercise. Counselors should be prepared to provide students with other effective skills in order to broaden their clients' abilities to manage stress and navigate difficult issues.

In the instance that a student who engages in obligatory exercise has already had exercise abstinence imposed, college counselors must assess for any changes in behaviors and mood. As demonstrated by the present study, a client may exhibit changes in eating patterns (dietary restriction or emotional overeating) or other disordered eating patterns (such as calorie counting or obsessively monitoring weight). They may also feel more anxious, depressed, and dissatisfied with their physical appearance. College counselors must be prepared to address these issues in therapy. If necessary, referrals to other resources (e.g. dietitian, nutritionist, body image support group) may be appropriate.

As noted by many of the participants of the present study, obligatory exercise may be related to body image or body dissatisfaction issues. This seemed to be especially true for female participants. It is recommended that college counselors be prepared to address body image, body dissatisfaction, and related issues with their clients.

Limitations

As is the case is with any study, this study exhibited various limitations. For grounded theory studies, large samples sizes are recommended in order to ensure saturation (Creswell,

2007). This study consisted of a relatively small sample size of 42 participants. While saturation was still achieved, the study may have benefited from a larger sample. Furthermore, the sample in the present study was not equally representative of male and female participants.

This study may also be prone to volunteer bias. While participants were awarded class credit for participation, they were able to choose the studies in which they would like to participate in order to earn credit. It is possible there still may have been some differences between those who were willing to participate in a study compared to those that were not willing to participate. Further, the social desirability bias may have been activated for some participants. Despite the fact that participants were told responses would be kept anonymous, it is possible that they may have still provided the seemingly desirable or preferred responses regarding their experiences during exercise abstinence.

Due to the nature of grounded theory qualitative research, this study was able to capture rich data of the participant's thoughts and experiences, but was unable to determine any association between exercise abstinence and body image or compensatory behaviors, or make statistically based correlational or causal conclusions. Furthermore, due to lack of control, the study is unable to provide evidence of any causality. These limitations are inherent to qualitative methodology, however, and allow the researcher to study the meaning to an event through the experience of the participants.

Future Research

Due to the paucity of research on exercise abstinence, there are many potential directions for future research. Based on the exploratory nature of the present study, future research studies might investigate the relationship between obligatory exercise, body image, and eating disorder symptomatology through quantifiable methods in order to determine correlation. Additionally,

the difference between obligatory exercisers with imposed exercise abstinence and those without exercise abstinence might be examined in order to determine if exercise abstinence may have causal influence on certain coping/compensatory behaviors.

Another direction might involve longitudinal research to examine the impact of obligatory exercise and various psychological constructs (e.g. body image, mood, self-esteem) over time. Similarly, future studies could investigate how obligatory exercisers respond to a period of exercise abstinence longer than three days or to a different interruption of obligatory exercise behavior, such as time limit on physical exercise (e.g. no more than 30 minutes per day). Another interesting direction would be to compare the effects of abstaining from different types of exercise (e.g. aerobic versus anaerobic). Many studies have found aerobic and anaerobic exercise to have different effects on mental health and psychological well-being (Sinyore, et al., 1986; Blumenthal & Maddem, 1988; Steege & Blumenthal, 1993). Therefore, it is possible that depending on an individuals exercise routine, he or she may react differently to abstaining to different types of exercise.

A final suggestion for future research would be to examine the effects of exercise abstinence on subsequent exercise behaviors. It is possible that it may be more difficult for participants to return to exercise behaviors due negative affect being induced by exercise abstinence (Niven, Rendell & Chisholm, 2008). On the other hand, it is possible that if participants have an obligatory attitude toward exercise, they may easily return to their exercise out of obligation, or may return to exercise at an increased intensity in order to compensate for the loss of exercise during abstinence.

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APPENDIX A

CONSENT FORM

CONSENT TO PARTICIPATE IN A RESEARCH STUDY
COLORADO STATE UNIVERSITY

PROJECT TITLE: The Influence of Exercise Abstinence in College Students

PRINCIPAL INVESTIGATOR: Kathryn Rickard, Counseling Psychology, Ph.D., 491-5121

CO-PRINCIPAL INVESTIGATOR: Lauren Millard, M.S., Counseling Psychology graduate student, 235-1476

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?

You have been invited to do this study, because you are and undergraduate student at Colorado State University who endorses exercising on a consistent and regular basis. Since you regularly exercise, we are interested in your personal views and experience after abstaining from exercise.

WHO IS DOING THE STUDY?

Dr. Kathryn Rickard is an associate professor in counseling psychology at Colorado State University. She specializes in clinical psychology, and her current research interests are related to health psychology.

Lauren Millard is currently a graduate student in the counseling psychology program at Colorado State University. This research study is being completed as her doctoral dissertation.

WHAT IS THE PURPOSE OF THE STUDY?

The purpose of this study is to learn about the impact of exercise abstinence. It is meant to learn about the impact of abstaining from exercise on mood, body image, and potential compensatory behaviors. This study will also investigate gender differences and similarities on the impact of exercise abstinence.

WHAT WILL I BE ASKED TO DO?

You will be asked to abstain from any exercise, outside of necessary movement (e.g. walking/biking to class), for three consecutive days before returning to your exercise routine. For each day you abstain from exercise, you will be asked to log into an online questionnaire, confirm you have not exercise and answer some question. These questions will take approximately 20-30 minutes for each of the three days.

ARE THERE ANY POSSIBLE RISKS AND DISCOMFORTS?

There are no known risks. It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable efforts to minimize any known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?

There are no known benefits to taking part in this research; however, the questions in this study may allow you to reflect on your own physical and mental health, which may lead to increased self-awareness.

WHO WILL SEE THE INFORMATION THAT I GIVE?

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Members of the research team include the principal investigators as well as research assistants. Your name will be kept separate from your research records and these two things will be stored in different places under lock and key. Transcripts of your responses will then be used by research team members for data analysis. The transcripts will have ID numbers but no other identifying information in them. Computer files, including the audio files of recorded interviews, that contain the data will also use ID numbers. Computer files will be kept on a password-protected computer that can only be accessed members of the research team. A list with names, ID numbers, and contact information will be kept in a locked file cabinet with signed consent forms. This file cabinet is separate from the interview transcripts. This will ensure that the information you provide about your practices cannot be linked to your name. The list of names and IDs will be kept for five years after the conclusion of the study because we may need to refer back to the information for further analysis. After five years, the list will be destroyed. Paper documents will be shredded, and computer files will be deleted.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH?

The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?

If you have questions about the study, you can contact the investigators, Dr. Kathryn Rickard at (970) 491-5121 or Lauren Millard at (970) 235-1476.

Questions about participants' rights may be directed to Janell Barker at (970) 491-1655. This consent form was approved by the CSU Institutional Review Board for the protection of human subjects in research on (approval date here).

WHAT ELSE DO I NEED TO KNOW?

Your participation in this research is voluntary. If you decide to participate in this study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

Your electronic signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature acknowledges that you have received, on the date signed, a copy of this document containing three pages.

_____ _____

Participant electronic signature Date

APPENDIX B

QUESTIONNAIRE

Initial Questions and Screening:

Age:

Sex: M F

Race/Ethnicity: White/Caucasian African-American Hispanic/Latino (a) Asian-American Multiracial Other:

Directions:

Listed below are a series of statements about people's exercise habits. Please circle the number that reflects how often you could make the following statements:

1 – NEVER 2 – SOMETIMES 3 – USUALLY 4 – ALWAYS

1. I engage in physical exercise on a daily basis. 1 2 3 4

2. I engage in one/more of the following forms of exercise: walking, jogging/running or weightlifting. 1 2 3 4

3. I exercise more than three days per week. 1 2 3 4

4. When I don't exercise I feel guilty 1 2 3 4

5. I sometimes feel like I don't want to exercise, but I go ahead and

push myself anyway. 1 2 3 4

6. My best friend likes to exercise. 1 2 3 4

7. When I miss an exercise session, I feel concerned about my body

possibly getting out of shape. 1 2 3 4

8. If I have planned to exercise at a particular time and something unexpected comes up (like an old friend comes to visit or I have some work to do that needs immediate attention) I will usually skip my exercise for that day. 1 2 3 4

9. If I miss a planned workout, I attempt to make up for it the next day. 1 2 3 4

10. I may miss a day of exercise for no good reason. 1 2 3 4

11. Sometimes, I feel a need to exercise twice in one day, even though I may feel a little tired. 1 2 3 4

12. If I feel I have overeaten, I will try to make up for it by increasing the amount I exercise. 1 2 3 4

13. When I miss a scheduled exercise session I may feel tense, irritable or depressed. 1 2 3 4

14. Sometimes, I find that my mind wanders to thoughts about exercising. 1 2 3 4

15. I have had daydreams about exercising. 1 2 3 4

16. I keep a record of my exercise performance, such as how long I work out, how far or fast I run. 1 2 3 4

17. I have experienced a feeling of euphoria or a "high" during or after an exercise session. 1 2 3 4

18. I frequently "push myself to the limits." 1 2 3 4

19. I have exercised when advised against such activity (i.e. by a doctor, friend, etc.) 1 2 3 4

20. I will engage in other forms of exercise if I am unable to engage in my usual form of exercise. 1 2 3 4

Instructions: Thank you for responding to our initial questions. For three consecutive days, please abstain from any exercise that you would normally do (e.g. going to the gym, going on a hike or bike ride, etc.), which is outside physical activity that is necessary for your normal routine (e.g. walking or biking or class). For each day, please return to this survey and answer questions.

Day 1-3 of Exercise Abstinence:

Did you exercise today? YES NO

How would you describe your mood since abstaining from exercise for [1, 2, 3] day[s]?

How do you feel about your physical appearance after abstaining from exercise for [1, 2, 3] day[s]?

How do your feel about your weight after abstaining from exercise for [1, 2, 3] day[s]?

How do you feel about your body shape after abstaining from exercise for [1, 2, 3] day[s]?

How have your eating habits changed since abstaining from exercise for [1, 2, 3] day[s]?

What have you done to cope with lack of exercise for [1, 2, 3] day[s]?

Is there anything else that you feel is important that you have not been directly asked?

APPENDIX C

DEBRIEFING INFORMATION

Debriefing Information
Department of Psychology
Colorado State University

Project Title: Body Image, Mood, and Coping Strategies during Exercise Abstinence for Male and Female Obligatory Exercisers

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Background:
Research on exercise has illuminated many positive effects on both physical and mental health (Walsh, 2011). Engaging in regular physical activity has been shown to significantly promote psychological well-being and vitality (Ryan et al., 2010).

Regular exercise has also been found to significantly improve and promote positive body image and body satisfaction (Hausenblas & Fallon, 2006). Research studies have consistently demonstrated that people who exercise have more positive body image than those who do not exercise, and those with negative body image experience improved body image after exercising (Williams & Cash, 2001).

Few research studies have been conducted examining the impact of exercise abstinence, but some studies have found that withdrawing from exercise can induce negative mood and increased levels of depression (Berlin, Kop & Deuster, 2006). There is also some research suggesting that those who engage in obligatory exercise, or exercise may be at risk of psychological distress (Davis & Fox, 1993; Slay, Hayaki, Napolitano, & Brownell, 1998) and compensatory behaviors (Rabiau, Knäuper, & Miquelon, 2006).

Purpose:
This study examines how abstaining from exercise may influence body image in people who engage in obligatory exercise. This study also investigates if and how negative affect that may be induced from exercise abstinence may be related to body image. It examines how men and women be similar or different in their responses to exercise abstinence, particularly in relation to body image and possible body dissatisfaction, and how they might cope with decreased body image and increased body satisfaction (i.e. dietary restriction, compulsive exercise after 3-day abstinence).

Methods/Procedures:
Based on your responses to some initial screening questions, it is possible that you may be engaging obligatory exercise. You were asked to abstain from exercise for a period of three consecutive days. You were asked questions about your experience during and following the three-day period of exercise abstinence. Questions were in regard to how exercise abstinence may have impacted your mood, body image, and health-related behavior, such as eating, exercise and other potential compensatory behavior during the three-day period of abstaining from exercise. Open-ended questions were used to obtain your individual experience.

Use of Data:
All responses given in this study are completely confidential, and will not be traced to you. Your information will be combined with information from other people taking part in the study and your individual answers will not be taken into account unless combined with other people's answers. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials.

Resources:
We understand that some of the information and/or questions in this study may have made you feel uncomfortable or emotionally distressed which is completely normal. If you are by any means concerned or upset by any of the facts that you read or any other aspects of this experiment, please feel free to contact the primary investigator of this study at Kathryn.Rickard@colostate.edu or 970-491-5121. It is also highly encouraged to utilize the following resources that are at your disposal.

CSU Health Network
Counseling Services (Aylesworth) at 970-491-6053 (main office) or Yerin Shim, MA at 970-491-3052

Provides therapy, counseling, stress management, self-help resources. PLEASE NOTE: Fees may be associated with services here if you have already used your free sessions provided by student fees.

CSU Health Network @ LSC (Lory Student Center) at 970-491-2634

Provides health and relationship information and various services.

Health Services at 970-491-7121

Provides medical and behavioral as well as other health services.

If you have any questions as a volunteer in this research, please contact Janell Barker, Human Research Administrator, at 970-491-1655.

Implications & Applications:
This research is necessary because it takes a new view at obligatory exercise, body image, and their relation to health. It seeks to further understand the impact of obligatory exercise on mental and body image in both men and women, in particular, as well as how they cope with exercise abstinence. The results of this study could provide further significant evidence that people who engage in obligatory exercise may increase vulnerability in developing body image issues, putting them at further risk to other issues, such negative mood, low self-esteem, and eating disorders. It may also exhibit important information regarding how men and women are similar

and different in their response to exercise abstinence. While there is no direct benefit from participation in this study, your participation will help us better understand the relationship between exercise and body and how men and women are influenced by the two. Furthermore, our results based on your participation may be important in clinical and/or counseling situations in order for people dealing with problems with negative body image, low self-confidence, eating disorders, and more psychological issues.

If you would like more information about the concepts discussed here, please see Modules 26 and 32 in your Myer's PSY 100 textbook.

Please do not discuss this study with anyone else until the end of the semester, as we will still have people from your course that may participate, and whose results could be affected by more information that was provided to you before participating.

Please print out a copy of this debriefing for your records. Thank you again for your participation.