

The Role of Social Comparison in Exposure to Athletic Media Images
on Body Image, Mood, and Desire to Exercise

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Lakehead University

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Abstract

The purpose of this study was to examine the role of social comparison and the impact of idealized athletic images in the media on body image and mood. The participants consisted of 90 undergraduate males and 132 undergraduate females from Lakehead University. One-week prior to the experimental manipulation, the participants completed a questionnaire package with the following instruments: Multiple Affect Adjective Checklist-Revised, visual analog scales for body image, State Self-Esteem Scale, Body-Image Ideals Questionnaire, Usual Physical Activity, Leisure Time Exercise Questionnaire, Exercise Identity Scale, and Reasons for Exercise. At time 2, the participants were randomly assigned to view either idealized images of female or male models exercising. The participants then completed the mood and body image questionnaires. Female participants reported a decrease in positive body image, a decrease in positive affect, and an increase in desire to exercise following exposure to athletic female models. The findings also indicated that exercise frequency, exercise identity, body image, and exercising for motives of fitness, attractiveness, and tone all predicted change in these state measures. Female participants who viewed male athletic models reported a decrease in positive affect following exposure. Male participants who viewed male athletic models reported a decrease in positive affect following exposure. These findings provide partial support for Festinger's (1954) theory of social comparison. It would appear that the impact of athletic media images is less aversive for males than females.

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The Role of Social Comparison in Exposure to Athletic Media Images on Body Image, Mood, and Desire to Exercise

Within the Western culture, television, motion pictures, the press, and advertisements portray images of the idealized body. Such images encourage consumers to compare their own physical characteristics to those portrayed, and the media emphasizes that the idealized body can be attained (Featherstone, Hepworth, & Turner, 1991). Social comparison theory suggests that consumers directly evaluate themselves against the idealized images. According to Festinger (1954), humans have a drive to evaluate their abilities and opinions. When there is a lack of objective means for self-evaluation, the evaluative drive can be fulfilled by socially comparing oneself with others. Wood and Taylor (1991) suggest that individuals compare themselves with others who exhibit the characteristics that are under evaluation. Festinger argues that people favour comparing themselves with other people who are similar to them, what he referred to as the “similarity hypothesis.”

Merton (1957) extended the theory to include social categories as a further basis for social comparison. Richins (1991) contends that idealized models in the media form a social category for consumers to compare themselves against. Goethals (1986) suggested that it is difficult for a person to not engage in social comparison with people who are “better off” than them, an upward comparison. Collins (1996) indicates that upward comparisons may lead to negative self-evaluations, in which Cash, Cash, and Butters (1983) have found that women who rated pictures of attractive women reported themselves as less attractive than women who rated pictures of unattractive women.

Festinger (1954) suggests that when a self-evaluation of an attribute is negative or inferior as a result of social comparison, this usually results in feelings of failure and inadequacy. Moreover, Buunk, Collins, Taylor, VanYperen, & Dakof (1990) have also found that positive or negative feelings may result from social comparison. Such feelings may also impact the person's body image. Body image is a mental model of one's own physical appearance. Individuals' internal perspective of their body is connected to feelings and thoughts that may alter their behaviour. Internal representation of their physical appearance may lead to positive or negative emotions about their body. This may also lead to cognitions such as thoughts about wanting to attain the idealized body as portrayed in the media. In addition, internal representations may lead to behaviours that alter body shape, such as diet and exercise (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999).

Body image can be conceptualized on a continuum with regard to the level of personal satisfaction. The majority of people fall in the middle of the continuum. It is when body dissatisfaction becomes severe that clinical problems arise (Thompson et al., 1999). Eating disorders have been associated with severe distortions in body image. Indeed, dissatisfaction with body shape and weight are part of the diagnostic criteria listed in the Diagnostic and Statistical Manual of Mental Disorders for anorexia nervosa and bulimia nervosa (American Psychiatric Association, 2000).

Body dissatisfaction can begin as early as adolescence among both genders. Many adolescent females have reported feeling fat and a desire to be thinner (Champion & Furnham, 1999). Adolescent males have also reported body dissatisfaction with a more typical desire to increase muscle mass (Furnham & Calnan, 1998). The presentation of

idealized images by the media plays a role in setting standards. Murray, Touyz, and Beumont (1996) conducted a study to examine participants' awareness of idealized bodies that are presented in the media. Ninety percent of the participants believed there is an "ideal" female body shape. Seventy-two percent of the participants believed there is an "ideal" male body shape. Forty-nine percent of the participants believed that "very overweight" figures were socially unacceptable. All females wished they looked like the thin idealized models portrayed in the media. On the other hand, males indicated that they are less likely to aspire to the idealized bodies portrayed in the media. The males also believed that the media is less likely to have any impact on their attitudes and behaviours related to their weight and body shape (Murray et al., 1996).

Body dissatisfaction becomes exacerbated when there is a discrepancy between the idealized self and the perceived self (Silberstein, Striegel-Moore, Timko, & Rodin, 1987). Myers and Biocca (1992) have indicated that body image is elastic and can be influenced by the media. Individuals' internal representation of body image is receptive to cues in the media. The 'perfect' body is portrayed in the mass media and body image is influenced by images displayed in the media.

The Effects of Media Exposure on Female Viewers

Body satisfaction. Numerous studies have evaluated the impact of exposure to thin media images on body satisfaction and mood (see Groesz, Levine, & Musnen, 2002). Richins (1991) provided the foundation for examining the role of social comparison on the female viewer's body satisfaction within the context of viewing thin media images. Richins established that female college students do in fact compare themselves to idealized models in advertisements and that following the comparison the participants

reported negative affect including feeling less attractive. Similarly, Wegner, Hartmann, and Geist (2000) found that 1-minute exposure to 12 photographs of thin models left undergraduate female students reporting higher ratings on the Body Self-consciousness Questionnaire (Miller, Murphy, & Buss, 1981) than the control group who viewed pictures of older men, women, children, and infants playing. These results suggest that exposing women to pictures of thin models causes them to feel worse about their private body consciousness, public body consciousness, and body competence.

The most recent investigation of the impact of thin media images on body satisfaction has been a meta-analytic review. Groesz et al. (2002) compiled data from 25 published studies. The authors considered the type of media images, number of exposures, age of participants, research design, and the predisposition to body dissatisfaction. They concluded that thin images produced a greater amount of body dissatisfaction among female viewers than over-weight models, average size models, or inanimate objects. Moreover, those females who were predisposed to body dissatisfaction and those who were younger than 19 years of age were most susceptible to the adverse effects of the media on body image.

Mood. Research has not only established that women are likely to experience body dissatisfaction after exposure to thin media images, but also changes in mood. Cattarin, Thompson, Thomas, and Williams (2000) had undergraduate females view either the experimental videotape (female models who represent thin and attractive idealized images) or control videotape (female models who do not represent thin and attractive idealized images). Within each condition participants received a comparison, neutral, or distraction instruction while viewing the videotapes. The authors found that

participants who were explicitly instructed to compare themselves to the thin models reported greatest body dissatisfaction. They also reported increases in depression, anger, and anxiety.

Stice and Shaw (1994) exposed undergraduate females for 3 minutes to binders containing 12 full-body photographs of female models that were either ultra-thin, average-sized, or pictures that contained no models. After viewing the binders, the participants completed the Body Parts Scale (Berscheid, Walster, & Bohrnstedt, 1973), a visual analog scale for rating affective states, and the shortened version of the Beck Depression Inventory (Beck, Steer, & Garbin, 1988). Compared to participants in the other two exposure conditions, females who viewed ultra-thin models from popular fashion magazines reported significantly greater feelings of body dissatisfaction, unhappiness, depression, guilt, shame, stress, and less confidence.

Pinhas, Toner, Ali, Garfinkel, and Stuckless (1999) also provide empirical support for the notion that body dissatisfaction and a decrease in positive affect is likely to result from exposure to idealized images. The university females completed the Body Parts Satisfaction Scale (Berscheid et al., 1973) and the Profile of Mood States (McNair, Lorr, & Droppleman, 1971) one-week prior to viewing 20 slides of either thin models or slides that contained objects. The same questionnaires were completed again post-exposure. The results indicated that after viewing idealized thin fashion models, women reported more negative affect such as depression and anger than women who viewed slides of objects.

Heinberg and Thompson (1995) also used a pre-test, post-test design to study the effects of television commercials on body dissatisfaction, depression, anxiety, and anger

among female university students. They used the Sociocultural Attitudes Towards Appearance Questionnaire (Heinberg, Thompson, & Stormer, 1995), Bulimia Cognitive Distortions Scale-Physical Appearance Subscale (Schulman, Kinder, Powers, Prange, & Glenhorn, 1986), and visual analog scales to measure body dissatisfaction, depression, anxiety, and anger. The participants watched a 10-minute segment of commercials that either contained women who were thin and attractive or commercials that did not focus on women who were aesthetically pleasing. The results indicated that exposure to media images of thinness and attractiveness had a negative influence on body satisfaction and mood. Women with high scores on body image disturbance and who were aware of societal attitudes of thinness and attractiveness reported greater depression after viewing the commercials of thin and attractive women than participants who viewed the control commercials. Also, women with high body image disturbance reported more discontent with their bodies after commercials with thin and attractive women. Taken collectively, the results from these studies indicate that body satisfaction and mood are likely to be adversely affected among women exposed to thin media images.

Personal attributes. Not all women are susceptible to the negative effects of thin media exposure. For instance, Hamilton and Waller (1993) exposed women with and without an eating disorder to photographs of fashion magazines and then asked the participants to estimate their body sizes. Women with eating disorders subsequently overestimated their own body sizes more than women without an eating disorder. Posavac, Posavac, and Posavac (1998) used a pre-test, post-test research design in which female university students were exposed for 90 seconds to either 10 slides of professional fashion models or to 10 slides of automobiles. Immediately prior to exposure of the

slides, the females completed the Body Dissatisfaction subscale from the Eating Disorder Inventory (Garner, 1991) to measure body dissatisfaction as a personal trait measure. After the exposure to the slides, they completed the Body Esteem Scale (Franzoi & Shields, 1984) to assess weight concerns as a state measure. The findings showed that women who were exposed to slides of fashion models reported greater concern with their own weight on the Body Esteem Scale than women exposed to automobiles. However, not all women were vulnerable to the influence of the media. The women who reported low trait body dissatisfaction on the Eating Disorders Inventory prior to exposure were not subsequently affected by the fashion models. The authors concluded that women who are satisfied with their bodies are less likely to be influenced by the media's portrayal of attractive bodies.

Henderson-King and Henderson-King (1997) found personal attributes such as weight and self-monitoring characteristics were likely to influence body esteem following exposure to idealized photographs. The undergraduate women responded to the Self-Monitoring Scale (Snyder & Gangestad, 1986) and Body Esteem Scale (Franzoi & Shields, 1984). The researchers found that after viewing slides of thin female images, thinner participants reported greater sexual attractiveness while heavier participants reported more negative self-evaluations regarding their sexual attractiveness and their weight. Also, high self-monitoring women, who can be characterized as being concerned with their self-presentation, were more positive about their physical size after viewing idealized female pictures compared to low self-monitoring women, who are concerned with correspondence among their behaviour and inner beliefs and states.

Summary. Generally, the findings indicate that exposing female participants to thin media images of female models has a negative impact on their body image and mood (Groesz et al., 2002; Hamilton & Waller, 1993; Heinberg & Thompson, 1995; Pinhas et al., 1999; Posavac, et al., 1998; Stice & Shaw, 1994; Wegner, et al., 2000). Women with eating disorders, body dissatisfaction, and low self-monitoring are more likely to experience body dissatisfaction following exposure to thin images.

The Effects of Media Exposure on Males

Compared to the published research on media exposure in women, relatively less is known about the impact on men.

Body satisfaction. The idealized male body is muscular and lean (Spitzer et al., 1999). However, males are less likely to try and attain the idealized male body. Males believe that the media is less likely to impact their beliefs regarding their weight and body shape (Murray et al., 1996). Grogan, Williams, and Conner (1996) investigated whether men actually do compare themselves to the muscular media image. These researchers employed a pre-test, post-test design with male and female university students. The students were exposed to either 16 photographs of same-sex models or 16 landscape photos. Participants ranked each photograph for attractiveness. The results indicated that males reported greater body-esteem than women in general. Moreover, men and women both showed a significant decrease in body-esteem following exposure to idealized images compared to the control group, suggesting upward comparisons were made with the same-sex models.

Ogden and Munday (1996) exposed female and male medical students to two different sets of sex-matched photographs: either five thin pictures or five obese pictures,

each with a 5-minute duration of exposure. Visual analog scales and body silhouettes were completed before and after each set of photographs to measure body satisfaction. After viewing pictures of thin models, male and female participants both reported less body satisfaction. After exposure to obese pictures, males and females both reported greater body satisfaction. The males reported an overall greater sense of body satisfaction than the females as well as feeling more fit, toned, sexy, and less fat than the females. Ogden and Munday (1996) suggest that, while males reported a greater sense of body satisfaction than females, males are still influenced by the idealized images presented in the media. Regarding sex differences, female participants showed improved feelings on fatness and tone following the obese pictures. The researchers suggest that females may be more influenced by factors related to feelings of fat and tone, whereas strength may be important to males.

Mood. Kalodner (1997) investigated the influence of idealized images in the media on body consciousness, self-consciousness and anxiety among female and male university students. The participants were exposed to 1 minute of 12 pictures of either sex-matched thin models (exercising, in undergarments, and in designer clothes) or 12 pictures of older men, women, infants and children playing as the control condition. After viewing the pictures, participants responded to the Body Self-Consciousness Questionnaire (Miller et al., 1981), the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975), and the State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Males who viewed thin pictures did not differ from those who viewed control pictures on self-consciousness or state anxiety. However, males reported higher body competence than females, suggesting that males consider themselves to be

coordinated and stronger than females. In contrast, women exposed to the thin-idealized model pictures reported greater feelings of private self-consciousness and state anxiety than women exposed to the control pictures.

Summary. Grogan et al., (1996) and Ogden and Munday (1996) have found that body satisfaction decreases in males and females after being exposed to idealized models. These results suggest that males and females engage in social comparison when viewing pictures of idealized models. However, Kalodner (1997) did not report any significant decrease in body satisfaction, but suggests that males may be experiencing social comparison without the adverse impact on body satisfaction. The dearth of research on males and body image makes it difficult to form conclusions.

Exercise and Body Image

Media influences people from a young age. Field, Cheung, Wolf, Herzog, Gortmaker, and Colditz (1999) evaluated the impact of media on weight concerns among preadolescent and adolescent girls. The participants responded to statements regarding their frequency of reading fashion magazines, body dissatisfaction, exercise, preference for body types, and diet and weight loss. Frequent fashion readers were two to three times more likely than infrequent readers to report that they exercise and diet to lose weight because of a magazine article. Harrison and Cantor (1997) found frequent fitness magazine reading to be a predictor of attitudes and behaviours related to eating disorders. This relationship was still significant after controlling for interest in fitness and dieting, indicating that interest in fitness alone cannot account for the association between exposure to fitness magazines and eating disordered psychopathology. Moreover, the importance of fitness has increased over the years in magazines for young females

(Guillen & Barr, 1994). Frequent female magazine readers have indicated that they engage in exercise and diet to lose weight (Field et al., 1999). Popular men and women's fitness magazines contain articles regarding ways to get into better shape to achieve the idealized body (Men's Health, April 2001; Shape, January 2001). With the magazine media concentrating on fitness, it is no surprise that some people may abuse the effects of exercise to lose weight (Richins, 1991).

Exercise and Body Image in Females

Several studies have assessed the relationship between exercise and body image in women. The research findings are mixed. Furnham, Titman, and Sleeman (1994) compared body satisfaction and the perception of female body shapes in women who exercise (netball players, rowers, and bodybuilders) and sedentary women. Exercisers reported higher body satisfaction than non-exercisers, despite the exercisers weighing 11 pounds more than non-exercisers. The exercisers also had a more positive perception of their bodies than the non-exercisers: They rated their bodies as more confident, attractive, popular, and healthy. In addition, the exercisers rated pictures of muscular female shapes more positively and thin shapes more negatively than the non-exercisers.

Similar findings were reported by Tucker and Maxwell (1992) who compared body image and well-being among women exercisers and sedentary women. Participants in the experimental group were placed in a weight training intervention program for 2 days per week over 15 weeks. The comparison group did not engage in any weight training. The women completed a modified version of the Body Cathexis Scale (Tucker, 1985) prior to and following the intervention. Females who participated in the weight training intervention reported a significant increase in body image satisfaction compared

to the control group. Also, pre-test body weight was a predictor of improvements in body image. Heavier females gained the most muscle, lost the most weight, and improved the most in body image. Body image was also predicted by skinfold measure at the end of the intervention program. Females who experienced more leanness and were more toned increased most in body satisfaction. This study implies that females who engage in weight training exercise are likely to experience an increase in body satisfaction. In addition, the female weight lifters also reported significant improvements in well-being compared to the control group. The female weight lifters who reported the greatest psychological distress at the beginning of the experiment improved the most on general well-being. Large improvements in psychological well-being were reported by those exercisers who toned the most and lost larger amounts of weight (Tucker & Maxwell, 1992).

Davis (1990) compared women exercisers to non-exercisers on body image and weight preoccupation. The women responded to five sketches of female bodies and indicated which body shape most resembled their own body. They also completed the Body Image Questionnaire (Myers, Zivian, Kirkland & Zager, 1985), and the Neuroticism-Stability Scale from the Eysenck Personality Inventory (Eysenck & Eysenck, 1968) to measure emotional reactivity. The exerciser and non-exerciser groups did not differ on self-perceived body shape, body weight, and diet concerns, or emotional reactivity.

In summary, Furnham et al. (1994) and Tucker and Maxwell (1992) found that women who exercise have higher body satisfaction and increased well-being compared to women who do not engage in exercise. However, Davis (1990) did not find any

significant effects of exercise. The discrepant findings may be attributed to the sample of exercisers. Furnham's et al. (1994) exercise sample consisted of netball players, rowers, and bodybuilders, Tucker and Maxwell (1992) exercise sample consisted of a 15-week, two-day-per-week weight training intervention, while Davis's (1990) exercise sample consisted of people who engaged in exercise for a least three times a week for at least 30 minutes per session at a moderate intensity.

Exercise and Body Image in Males

Tiggemann and Williamson (2000) studied the relationship between exercise and body satisfaction in males and females. The participants ranged in age from 16-60 years. They completed the Reasons for Exercise questionnaire (Silberstein et al., 1988), the Body Cathexis Scale (McCaulay, Mintz, & Glenn, 1988) and a self-esteem measure that was modified by Bachman and O'Malley (1977) from Rosenberg's Self-Esteem Scale (1965). Men reported exercising in the previous month more than women. Men scored significantly higher on body satisfaction and self-esteem than women. For older and younger men and older women there was a positive relationship between the amount of exercise, body satisfaction, and self-esteem. In young women there was a negative relationship. These findings suggest that the more exercise young women engage in, the lower their body satisfaction and self-esteem. The authors suggest that young women may be more prone to the negative effects of the media as the advertisements are designed to target their age group. Tiggemann and Williamson also found that the majority of men and women reported exercising for fitness and health reasons. Women reported that they exercised more for weight control, toning purposes, and mood enhancement than men. Younger men and women reported exercising for attractiveness

and enjoyment. For young women, exercising for weight control and toning was related to body dissatisfaction. Interestingly, older women engaged in exercise for the same reasons of weight control, but they did not exhibit the negative relationship between exercise and body satisfaction.

McDonald and Thompson (1992) examined gender differences in body image dissatisfaction and reasons for exercising in undergraduate students. The participants completed a self-report exercise activity questionnaire, Reasons for Exercise (Silberstein et al., 1988), and Body Dissatisfaction subscale of the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983). Women reported more body dissatisfaction than men. Also, compared to men, women reported exercising more for weight control and toning purposes. For men and women, exercising for weight control, toning, and attractiveness was positively correlated with body image dissatisfaction and eating disturbance. Exercising for health reasons was associated with increased self-esteem for both genders. For men, exercising for fitness purposes was negatively correlated with eating disturbance, and positively correlated with self-esteem. These results indicate that men who engage in more physical activity exhibit fewer eating disturbances and higher self-esteem.

Other researchers have not found any sex differences in the relationship between exercise and body image. In one study (Silberstein et al., 1988), male and female university students responded to the Body Esteem Scale (Franzoi & Shields, 1984) and Reasons for Exercise (Silberstein et al., 1988). Overall, men and women did not differ significantly on body dissatisfaction. However, women wanted to be thinner and not heavier, while men wanted to be thinner as well as heavier. Also, women reported that

they exercise for weight control, and this motive for exercising was associated with eating disturbance.

Summary. The majority of the studies support the notion that sex differences exist on body image in men and women who exercise. Men who exercise have been found to have more body satisfaction than women who exercise (McDonald & Thompson, 1992; Silberstein et al., 1988; Tiggemann & Williamson, 2000). In addition, exercising for weight control, toning, and attractiveness has been found to be associated with more body dissatisfaction and eating disturbance for both men and women (McDonald & Thompson, 1992; Silberstein et al., 1988; Tiggemann & Williamson, 2000).

Purpose of the Present Study

The present study examined the role of social comparison in exposure to media images in a sample of female and male university students. Based on Festinger's (1954) social comparison similarity hypothesis, four groups of participants were compared: female participants viewing female models, female participants viewing male models, male participants viewing male models, and male participants viewing female models. These groups were compared on positive body image, body dissatisfaction, mood, and desire to exercise following exposure to same versus opposite-sex media images. If the effects of media exposure are attributable to social comparison, then exposure to same-sex media would have stronger impact upon participant's body image and mood than exposure to opposite-sex media.

Previous research has established that exposure to idealized "thin" pictures in the media results in greater body dissatisfaction and adverse mood states among women. Research on the effect upon men is more equivocal and additional research is warranted.

No published study has yet to examine the impact of “athletic” media images. It was hypothesized that men and women would report a significant decrease in positive body satisfaction and mood following exposure to such images, providing support for social comparison. Moreover, it was hypothesized that men and women would report an increase in desire to exercise due the feeling of inadequacy as suggested by Festinger (1954), in an attempt to emulate the media images they see. This study also explored exercise frequency and identity, and predispositional body image as possible predictors of changes in body image, mood, and desire to exercise subsequent to viewing athletic media images.

Method

Participants

The participants consisted of 132 female and 90 male undergraduate students from Lakehead University. The voluntary participants were recruited through various psychology classes and the varsity basketball and wrestling teams. Ages ranged from 17 - 49 with a mean age of 21.4 ($SD = 4.29$). Participants signed an informed consent form approved by the Senate Ethics Committee (see Appendix A). Those participants from Introductory Psychology classes received one bonus mark for their participation.

Experimental Design

The study consisted of a mixed, one-within and two-between subjects design. The within-subjects variable was time (pre-exposure vs. post-exposure). The between-subjects variables were sex (male vs. female participants) and picture (same-vs. opposite -sex pictures). There were 62 female participants viewing female athletic models, 70 female participants viewing male athletic models, 45 male participants viewing male athletic

models, and 45 male participants viewing female athletic models. All participants took part in two testing sessions with intervals ranging from 7 to 14 days.

State Measures

Participants completed three state measures of affect, body image, and desire to exercise at time 1 (pre-exposure) and again at time 2 (post-exposure).

1. Multiple Affect Adjective Check List – Revised (MAACL-R; Zuckerman & Lubin, 1985; see Appendix B). This 132-item questionnaire assesses six general mood states: Anxiety, Depression, Hostility, Dysphoria, Positive Affect, and Sensation Seeking. The questionnaire also produces a composite score of Positive Affect and Sensation Seeking referred to as PASS. The scales have been found to have adequate internal consistency within a college sample: coefficient alphas .80 for Anxiety, .82 for Depression, .82 for Hostility, .93 for Positive Affect, .74 for Sensation Seeking, .90 for Dysphoria, and .92 for PASS. In terms of validity, the Profile of Mood States (POMS; McNair, Lorr, & Droppelman, 1971) assesses mood and has four scales that are similar to those on the MAACL. The Anxiety, Depression, and Hostility scales on the MAACL correspond respectively to the Tension, Depression, and Anger scales from the POMS. The concurrent validity coefficients for the MAACL within a college sample ranged from .4 to .7 for the corresponding scales of the POMS (Zuckerman & Lubin, 1985).

2. Visual analog scales (VAS; Heinberg & Thompson, 1995; see Appendix C). These scales measure current opinions about feeling sexy, weight/size dissatisfaction, physically toned, physically fit, attractive, strong, healthy, overall appearance dissatisfaction, and desire to exercise. The participants were instructed to indicate their

current feelings by placing a slash on a 10-centimetre line anchored 0 = “no” to 10 = “extreme.” The responses were recorded to the nearest millimetre on a 100-point scale.

A factor analysis was conducted on the 9 pre-exposure VASs from the data provided by the complete sample of 222 participants. Principle Component Analysis was used to estimate the number of factors, in which 2 factors emerged that accounted for 70.33 % of the total variance. The first factor accounted for 51.51 % of the variance while the second factor accounted for 18.83 %. The following VAS items loaded on factor 1: sexy, physically toned, physically fit, attractive, strong, and healthy (see Table 1 for rotated factor loadings). This factor was labelled Positive Body Image. Weight/size dissatisfaction and overall appearance dissatisfaction loaded on factor 2, which was labelled as Body Dissatisfaction. The rotated factor loading for the VAS item desire to exercise loaded on both factor 1 and factor 2. Hence, this item was used independently from the two factors on all subsequent analyses.

3. State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991; see Appendix D).

This 20-item questionnaire measures state self-esteem along three dimensions: appearance, social, and performance self-esteem. The measure has been found to have a high internal consistency with a coefficient alpha of .92. The authors found the SSES to detect temporary changes in self-esteem. During a laboratory manipulation participants completed the SSES during an initial session and again after receiving their grades for a midterm exam. Participants in the experimental condition reported a significant decrease in self-esteem following the laboratory manipulation when compared to the control condition.

Table 1

Rotated Visual Analog Scale Item Loadings

Items	Factor	
	1	2
Sexy	.785	-.097
Weight Size Dissatisfaction	-.368	.760
Physically Toned	.872	-.128
Physically Fit	.878	-.164
Attractive	.853	-.076
Strong	.869	-.039
Healthy	.782	-.195
Overall Appearance Dissatisfaction	-.238	.787
Desire to Exercise	.452	.632

Trait Measures

Participants completed the five trait measures listed below at time 1 (pre-exposure).

1. Body-Image Ideals Questionnaire (BIQ; Cash & Szymanski, 1995; see Appendix E). This questionnaire provides a useful framework for studying trait body image characteristics. The BIQ has two distinct subscales, the Discrepancy and Importance subscales, and their multiplicative composite. The Discrepancy subscale assesses the discrepancies between the perceived and idealized physical characteristics. The physical characteristics include the following: height, weight, skin complexion, hair texture and thickness, facial features, muscle tone and definition, body proportions, chest size, physical strength, and physical coordination. The participants rated their idealized characteristic on a four-point Likert scale from 0 = “exactly as I am” to 3 = “very unlike me”. The Importance subscale consists of the participants rating the importance of the idealized characteristic on a four-point Likert scale from 0 = “not important” to 3 = “very important.” The BIQ also measures the multiplicative composite of these two subscales by considering the discrepancy from individual perceived ideals and the importance of these ideals to each participant. The Discrepancy, Importance, and their composite cross-product have adequate internal consistency, with Cronbach’s coefficient alphas of .75, .82, and .77, respectively. The concurrent validity of the BIQ has been established in relationship with five other measures of body image.

2. Usual Physical Activity (UPA; Li, Carlson, & Holm, 2000; see Appendix F).

This one-item measure assesses participant’s level of usual physical activity. The

participants rated their activity levels as either highly active, moderately active, or inactive. The UPA has a two-week, test-retest Spearman's correlation coefficient of .88. Concurrent validity of the UPA was established by correlating the scores with the Physical Activity Questionnaire (Sturgeon, Brinton, Berman, Mortel, Twiggs, Barrett, & Wilbanks, 1993) which resulted in a Spearman's correlation coefficient of .66.

3. Leisure Time Exercise Questionnaire. (LTEQ; Godin & Shephard, 1985, see Appendix G). This two-item questionnaire assesses the amount of exercise undertaken during a 7-day period. Participants were instructed to indicate how many times per week they engaged in strenuous, moderate, or mild exercise on LTEQ1. Participants also indicated how often they work up a sweat during the week on LTEQ2: often, sometimes, or never/rarely. The two-week, test-retest reliability coefficients for strenuous, moderate, light, and sweat-inducing exercise were .94, .46, .48, .80, respectively. Concurrent validity was established through discriminant function analyses in which the participants' body fat, maximum oxygen intake, skinfolds, and the Canadian Home Fitness Test were used to differentiate fit from unfit participants and thin from heavy participants.

4. Exercise Identity Scale (EI; Anderson & Cychosz, 1994; see Appendix H).

This 9-item questionnaire measures the extent to which exercise is a component of one's concept of self. The measure has a single factor structure. A higher score on EI reflects more investment in exercise. The measure has been found to have a one-week, test-retest reliability of .93, and Cronbach's alpha of .94. The validity of the EI was established with self-report data on exercise. There was a significant positive correlation between exercise identity and number of weeks exercising ($r = .68$), frequency of exercise ($r = .49$), minutes of exercise ($r = .39$), and intensity of exercise ($r = .29$).

5. Reasons for Exercise (RFE; Silberstein, Striegel-Moore, Timko, & Rodin, 1988; see Appendix I). This 24-item questionnaire measures seven motives for exercising: exercising for fitness, weight control, body tone, health, mood, physical attractiveness, and enjoyment. Higher scores on each of the subscales are indicative of greater motives to exercise. The Cronbach's alpha coefficient for the subscales ranges from .67 to .81.

Procedure

Participants were recruited through in-class announcements indicating that they would be viewing pictures taken from magazines to investigate the effects the media has on attitudes, self-image, emotions, and behaviours. At time 1 (pre-exposure), participants completed a questionnaire package in class consisting of the following: MAACL, VASs, SSES, BIQ, UPA, LTEQ, EI, RFE, and a demographics questionnaire (see Appendix J). This testing session lasted approximately 15 minutes. The experimenter returned to class at time 2 (post-exposure), 7 to 14 days later during which photographs were projected on to a screen for all participants to view. Following this exposure, participants completed the state measures once again: MAACL, VAS, and SSES. This session lasted approximately 20 minutes.

Two sets of photographs were used. Set 1 consisted of 27 full-body photographs of athletic female models engaged in exercise that were taken from fitness magazines Shape and Fitness. Set 2 consisted of 27 full-body photographs of athletic male models taken from the fitness magazines Men's Health and Muscle and Fitness. Sample pictures may be found in Appendix K. The participants were randomly assigned by class to view either the pictures of the athletic female models or the athletic male models. The total

exposure time to the pictures was 7.5 minutes, with 15 seconds per picture. Participants were recruited from seven classes ranging 12 – 65 participants per class.

Pilot Study

There were initially 60 athletic model pictures (30 male and 30 female) selected by the experimenter. Seven graduate students (4 female and 3 male) were recruited and required to sign an informed consent (see Appendix L). These judges independently rated all 60 pictures on a 100-point VAS anchored scale 0 = “no” to 100 = “extreme” on the following characteristics: physically toned, physically fit, strong, healthy, sexy, and attractive. The sex of the judge was counterbalanced with the sex of the picture to minimize contrast effects. Ratings for each of the six characteristics were averaged across all judges. Pictures were dropped if any mean rating fell below 67 on any of the characteristics. This occurred for three male model and three female model pictures. Means and standard deviations for the remaining 54 stimulus pictures are displayed in Table 2. Overall, the pictures were rated very highly on all six physical characteristics. Male models were rated significantly higher than female models on toned, fit, strong, and healthy. Models did not significantly differ on ratings for sexy or attractive.

Data Screening

Descriptive statistics for the variables were examined through SPSS Frequencies to ensure all values were in the appropriate range. Missing values for continuous data were replaced with mean scores of all other participants for that variable. Table 3 lists the internal consistencies of the multi-item measures in which the coefficient alphas range from .67 to .95.

Table 2

Comparisons Between Judge's Ratings of Female and Male Model Pictures on Six Physical Characteristics

Characteristic	Female		Male		t	p
	M	(SD)	M	(SD)		
Toned	78.8	(5.4)	87.7	(5.1)	-6.18	.001
Fit	81.8	(4.2)	88.8	(4.1)	-6.26	.001
Strong	76.6	(7.5)	86.8	(5.0)	-5.93	.001
Healthy	84.0	(4.2)	88.0	(3.1)	-4.04	.001
Sexy	80.3	(6.0)	80.4	(5.2)	-0.07	.947
Attractive	80.9	(5.5)	80.2	(5.8)	0.46	.651

Note: Ms are averaged ratings across seven judges. ns = 27 male and 27 female athletic models.

Table 3

Internal Consistencies of the Multi-item Measures

Measure	<u>M</u>	(<u>SD</u>)	Number of items	Coefficient alpha
SSEI Performance subscale	25.43	(4.95)	7	.80
SSEI Social subscale	25.32	(5.35)	7	.82
SSEI Appearance subscale	20.46	(4.59)	6	.84
SSEI Total	71.21	(12.60)	20	.90
BIQ Discrepancy subscale	9.21	(6.53)	11	.78
BIQ Importance subscale	16.16	(6.13)	11	.83
EI	28.04	(10.08)	9	.95
RFE Weight Control subscale	13.05	(4.41)	3	.67
RFE Fitness subscale	21.27	(4.77)	4	.86
RFE Mood subscale	17.78	(5.53)	4	.84
RFE Healthy	20.91	(5.08)	4	.87
RFE Attractive subscale	14.56	(4.66)	3	.90
RFE Enjoyment subscale	12.89	(4.49)	3	.83
RFE Tone subscale	12.93	(4.52)	3	.80

Note. SSEI = State Self-Esteem Inventory; BIQ = Body Image Ideals Questionnaire; EI = Exercise Identity; RFE = Reasons for Exercise Inventory. n = 222 participants.

Results

Comparability of Experimental Groups at Time 1

The experimental groups were examined to determine if there were sex differences between the female and male participants. Table 4 lists the means and standard deviations for the state measures of mood, body image, desire to exercise, and self-esteem within the four experimental groups at pre- and post- exposure to pictures of the athletic models. Table 5 lists the means and standard deviations for age, body mass, and trait measures of body image, exercise frequency, exercise identity, and reasons for exercise within the four experimental groups. Table 6 lists the effects of sex, picture, and sex by picture for age, body mass, and trait measures of body image, exercise frequency, exercise identity, and reasons for exercise. There was a sex main effect for BIQ-Discrepancy, $F(1, 218) = 6.46, p = .012$; BIQ-Composite Score, $F(1, 218) = 7.56, p = .006$; UPA, $F(1, 218) = 5.76, p = .017$; LTEQ Weekly, $F(1, 218) = 8.72, p = .003$; RFE Weight Control, $F(1, 208) = 49.58, p = .001$; RFE Mood, $F(1, 208) = 6.76, p = .01$; and RFE Tone, $F(1, 208) = 6.42, p = .012$. Compared to males, females reported less frequent exercise. Females reported greater body image dissatisfaction. Females also reported greater motivations for exercise involving reasons of weight control, and altering mood and body tone. There was a picture main effect for exercising for health purposes, $F(1, 208) = 6.06, p = .015$, indicating that participants who viewed male pictures were more motivated to exercise for health purposes than participants who viewed female pictures. There was an interaction between sex and picture condition for UPA, $F(1, 218) = 3.91, p = .049$. Males viewing male pictures reported most frequent exercise. There was also a significant interaction for RFE Weight Control $F(1, 208) = 4.16, p = .043$, such

Table 4

Mean and Standard Deviations for State Measures of Mood (MAACL), Self-esteem (SSEI), Body Image, and Desire to Exercise (VAS) Within the Four Experimental Groups Pre- and Post-exposure to Pictures of Athletic Models

Dependent variable	Female participants viewing female pictures (n=62)				Female participants viewing male pictures (n=70)				Male participants viewing female pictures (n=45)				Male participants viewing male pictures (n=45)			
	Pre		Post		Pre		Post		Pre		Post		Pre		Post	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)
MAACL Anxiety	2.0	(2.3)	1.5	(2.2)	9.7	(5.7)	0.9	(1.5)	1.1	(1.6)	0.9	(1.4)	1.3	(1.7)	0.8	(1.0)
MAACL Depression	1.4	(1.9)	1.1	(1.9)	0.6	(1.3)	0.5	(1.4)	0.8	(2.0)	0.6	(1.2)	0.6	(1.0)	0.8	(1.3)
MAACL Hostility	1.5	(2.6)	1.6	(2.2)	0.9	(1.7)	1.0	(1.6)	1.4	(1.9)	0.8	(1.8)	1.3	(1.7)	1.0	(1.6)
MAACL Positive Affect	10.0	(6.3)	6.8	(6.5)	9.7	(5.7)	7.6	(6.7)	8.0	(7.0)	8.6	(6.6)	8.4	(5.9)	6.2	(6.3)
MAACL Sensation Seeking	5.0	(2.4)	4.9	(2.2)	5.5	(2.5)	5.2	(2.9)	5.7	(2.7)	5.5	(2.5)	5.9	(2.7)	5.2	(2.5)
MAACL Dysphoria	5.0	(5.7)	4.3	(5.0)	2.7	(3.7)	2.5	(3.5)	3.3	(4.6)	2.2	(3.7)	3.3	(3.1)	2.5	(2.4)
MAACL PASS	15.0	(7.9)	11.7	(8.1)	15.2	(7.1)	12.8	(8.7)	13.7	(8.5)	14.0	(8.1)	14.3	(7.5)	11.4	(7.3)
VAS Positive Body Image	4.3	(1.9)	3.9	(2.0)	4.8	(1.7)	4.8	(1.6)	5.4	(2.0)	5.3	(2.2)	5.9	(2.0)	5.5	(2.1)
VAS Body Dissatisfaction	4.2	(2.3)	4.9	(2.5)	3.8	(2.3)	4.2	(2.2)	3.4	(2.3)	3.5	(2.5)	3.6	(2.2)	3.5	(2.2)
VAS Desire to Exercise	5.7	(2.9)	6.5	(2.4)	5.9	(3.0)	5.6	(2.6)	5.2	(2.7)	5.4	(2.6)	6.2	(3.0)	6.1	(2.4)
SSEI Performance	24.4	(4.8)	25.6	(4.5)	25.7	(5.1)	26.9	(4.6)	25.8	(4.6)	26.3	(4.5)	26.0	(5.3)	27.0	(5.1)
SSEI Social	23.7	(5.1)	23.4	(5.5)	25.9	(5.5)	26.5	(5.6)	26.0	(4.9)	25.6	(5.3)	25.9	(5.6)	26.6	(6.3)
SSEI Appearance	18.8	(4.8)	18.2	(5.1)	20.2	(4.5)	20.3	(4.8)	21.7	(4.4)	21.1	(4.7)	22.0	(3.9)	21.6	(3.5)
SSEI Total	66.9	(12.2)	67.3	(12.9)	71.8	(12.8)	73.7	(12.9)	73.5	(11.4)	73.1	(12.2)	73.9	(12.7)	75.2	(12.6)

Note: MAACL= Multiple Affect Adjective Checklist; PASS=Positive Affect and Sensation Seeking; VAS= Visual Analogue Scale; SSEI= State Self-Esteem Scale; n = 222.

Table 5

Means and Standard Deviations for Age, Body Mass, and Trait Measures of Body Image (BIQ), Exercise Frequency (UPA, LTEQ), Exercise Identity (EI), and Reasons for Exercise Within the Four Experimental Groups

Dependent variable	Female participants viewing female pictures		Female participants viewing male pictures		Male participants viewing female pictures		Male participants viewing male pictures	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Age	21.5	(4.5)	21.0	(4.6)	21.6	(3.5)	21.8	(4.4)
BMI	24.5	(4.7)	24.5	(3.9)	25.6	(5.6)	25.3	(4.1)
BIQ Discrepancy	1.0	(0.5)	0.9	(0.6)	0.8	(0.6)	0.7	(0.6)
BIQ Importance	1.6	(0.5)	1.4	(0.6)	1.4	(0.5)	1.4	(0.6)
BIQ Composite Score	2.0	(1.2)	1.5	(1.3)	1.4	(1.3)	1.2	(1.2)
UPA	3.5	(1.0)	3.4	(1.2)	3.6	(1.3)	4.1	(1.2)
LTEQ Weekly	49.3	(30.4)	50.8	(34.6)	65.4	(44.0)	64.8	(41.8)
LTEQ Sweat Inducing	1.9	(0.7)	1.9	(0.7)	1.8	(0.8)	1.6	(0.7)
EI	27.9	(9.9)	27.1	(9.9)	28.0	(10.0)	29.7	(10.8)
RFE Weight Control	5.2	(1.1)	4.6	(1.3)	3.5	(1.3)	3.7	(1.6)
RFE Fitness	5.2	(1.2)	5.4	(1.1)	5.2	(1.3)	5.5	(1.2)
RFE Mood	4.6	(1.3)	4.7	(1.3)	4.1	(1.4)	4.2	(1.4)
RFE Health	5.2	(1.2)	5.3	(1.3)	4.9	(1.5)	5.5	(1.0)
RFE Attractiveness	5.1	(1.5)	4.6	(1.5)	4.7	(1.6)	5.1	(1.6)
RFE Enjoyment	4.3	(1.6)	4.2	(1.5)	4.4	(1.4)	4.3	(1.5)
RFE Tone	4.7	(1.5)	4.4	(1.4)	3.8	(1.6)	4.2	(1.5)

Note: BMI = body mass index; BIQ = Body Image Ideals Questionnaire; UPA = Usual Physical Activity; LTEQ = Leisure Time Exercise Questionnaire; EI = Exercise Identity; RFE = Reasons for Exercise. $n = 222$.

Table 6

Effects of Sex, Picture, and Sex by Picture on Age, Body Mass, and Trait Body Image (BIQ), Exercise Frequency (UPA, LTEQ), Exercise Identity (EI), and Reasons for Exercise (RFE).

Dependent Variable	Sex		Picture		Sex by picture	
	F	p	F	p	F	p
Age	0.61	.434	0.10	.756	0.29	.591
BMI	2.17	.143	0.04	.834	0.08	.777
BIQ Discrepancy	6.46	.012	1.52	.219	0.19	.667
BIQ Importance	1.29	.258	1.01	.316	1.17	.281
BIQ Composite Score	7.56	.006	3.06	.081	0.43	.515
UPA	5.76	.017	1.14	.228	3.91	.049
LTEQ Weekly	8.72	.003	0.01	.938	0.04	.835
LTEQ Sweat Inducing	2.73	.100	0.42	.518	0.45	.503
EI	1.01	.317	0.13	.722	0.78	.379
RFE Weight Control	49.58	.000	1.02	.314	4.16	.043
RFE Fitness	0.08	.772	2.94	.088	0.26	.614
RFE Mood	6.76	.010	0.14	.710	0.10	.755
RFE Health	0.10	.756	6.06	.015	2.03	.155
RFE Attractiveness	0.03	.853	0.10	.747	3.90	.050
RFE Enjoyment	0.26	.613	0.22	.637	0.13	.722
RFE Tone	6.42	.012	0.18	.668	2.68	.103

Note: BMI = body mass index; BIQ = Body Image Ideals Questionnaire; UPA = Usual Physical Activity; LTEQ = Leisure Time Exercise Questionnaire; EI = Exercise Identity; RFE = Reasons for Exercise.

$n = 222$

that females viewing female pictures reported higher motivation to exercise for purposes of weight control.

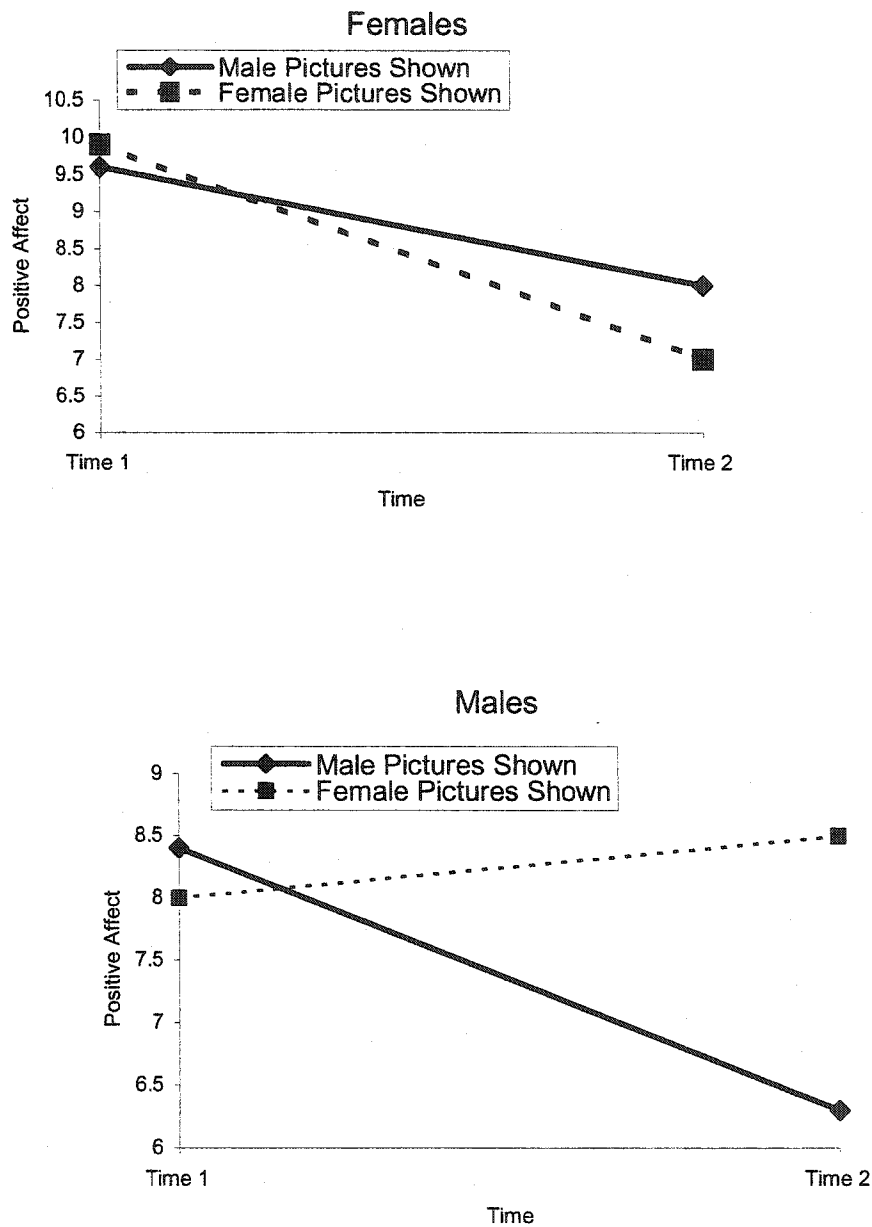
Effect of Experimental Manipulation

Mood. A two between (sex and picture condition), one within (time) multivariate analysis of variance (MANOVA) was performed on seven dependent variables associated with change in mood on the MAACL: Anxiety, Depression, Hostility, Positive Affect, Sensation Seeking, Dysphoria, and Positive Affect and Sensation Seeking (PASS). With the use of Wilk's criterion, the mood variables were significantly influenced by time for female and male participants, $F(2, 129) = 20.14, p = .001$, and $F(2, 87) = 7.43, p = .001$, respectively. The multivariate time by condition interaction was also significant for male participants, $F(2, 87) = 5.40, p = .006$. The MANOVAs were followed up by univariate ANOVA for each of the seven MAACL mood scales and only Positive Affect was found to be influenced by two independent variables: time and picture condition. The main effect of time on Positive Affect was significant for the female participants, $F(1, 436.68) = 29.48, p = .001$ (see Figure 1). Women reported a significant reduction in Positive Affect pre- to post-exposure after viewing same-and opposite-sex athletic models. The time by picture condition on Positive Affect was significant for the male participants, $F(1, 88.20) = 9.34, p = .003$ (see Figure 1). Males exposed to same-sex athletic models reported significant reductions in Positive Affect. This effect was not observed among those males exposed to opposite-sex pictures.

Body Image. A similar MANOVA was performed on two body image dependent measures (positive body image, body dissatisfaction), and desire to exercise. Among

Figure 1

Means for positive affect at time 1 (pre-exposure) and time 2 (post-exposure).



females, there was a significant multivariate time main effect, $F(3, 128) = 4.69, p = .004$, and a significant time by picture condition interaction, $F(3, 128) = 4.65, p = .004$.

Univariate ANOVAs revealed significant time by picture condition interactions for positive body image and desire to exercise among women, $F(1, 130) = 5.29, p = .023$ (see Figure 2), and $F(1, 130) = 5.90, p = .017$ (see Figure 3), respectively. In both instances, only women exposed to same-sex athletic models were affected, and exhibited decreases in positive body image and increases in desire to exercise. Body dissatisfaction was not affected among women, $F(1, 130) = 0.66, p = .419$. Interestingly, for males the athletic media images did not affect their positive body image, body dissatisfaction, or desire to exercise.

Predictor Analysis

The second purpose of the study was to determine which trait measures predict greatest change on state measures of positive affect, positive body image, and desire to exercise among female participants who viewed female models, as this group was the most affected among the four experimental groups by the exposure to the athletic pictures.

Residual scores for the state measures of positive body image, positive affect, and desire to exercise were calculated using pre-exposure scores to predict post-exposure scores. A lower residual score for positive body image is indicative of a greater reduction in positive body image. A lower residual score for positive affect suggests a greater reduction in positive affect. A higher residual score for desire to exercise indicates an increase in desire to exercise.

Figure 2

Means of female participants on positive body image at time 1 (pre-exposure) and time 2 (post-exposure).

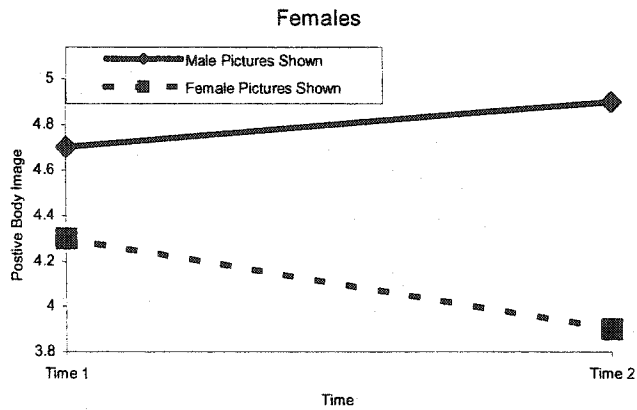
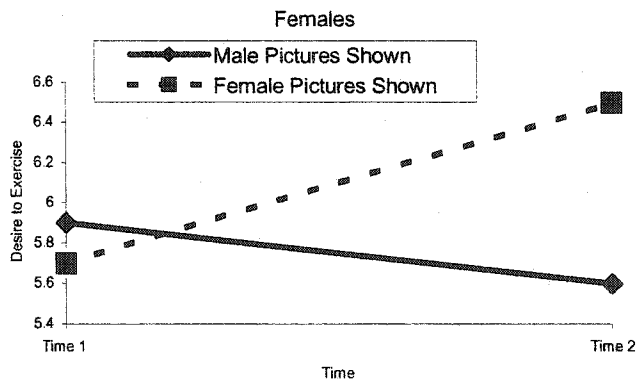


Figure 3

Means of female participants on desire to exercise at time 1 (pre-exposure) and time 2 (post-exposure).



Eleven trait measures were completed at time 1: body image (BIQ), exercise identity (EI), exercise frequency (UPA, LTEQ), and the various reasons for exercise (RFE) which include weight control, fitness, mood, health, attractiveness, enjoyment, and tone. Zero-order Pearson correlations were calculated between these 11 predictors and the residualized criterion variables (see Table 7). For the residual positive body image scores, only UPA was significant, with an $r = .31$. Women who report more frequent exercise show a greater decline in positive body image post exposure to female athletic models.

Four variables were significantly correlated with residual positive affect: UPA ($r = .35$), LTEQ-A ($r = .25$), EI ($r = .32$), and RFE Fitness ($r = .31$). These results indicate greatest decreases in positive affect post-exposure for women who report frequent strenuous exercise, higher investments in exercise identity, and fitness motives for exercise. To determine the non-redundant contribution of these four variables in the prediction of change in positive affect post-exposure, a stepwise multiple regression was performed. The original data set of $n = 62$ was reduced to 59 owing to the fact that three female participants did not report reasons for exercise because they did not exercise. The resulting regression analysis was significant, $R = .33$, $F(1, 52) = 6.85$, $p = .011$. This analysis indicates that female participant's frequency of exercise (UPA) alone accounts for 11% of the variance in residualized change scores regarding positive affect without further contribution from EI or RFE Fitness.

The third criterion variable of residual desire to exercise had significant univariate correlations with four predictor variables: BIQ Importance ($r = .26$), RFE Fitness ($r = .29$), RFE Attractiveness ($r = .35$), and RFE Tone ($r = .31$). These results indicate greatest

Table 7

Zero Order Pearson Correlations Between Predictor and Criterion Variables for Female Participants
Viewing Athletic Female Models

Predictor variables	Criterion variables		
	Residual positive body image	Residual positive affect	Residual desire to exercise
BIQ Discrepancy	-.09	-.02	-.07
BIQ Importance	.11	.11	*.26
BIQ Composite Score	-.10	.01	.6
UPA	*.31	*.35	.13
LTEQ Weekly	.13	.21	.06
LTEQ Strenuous Exercise	.17	*.25	-.05
LTEQ Moderate Exercise	.14	.13	.13
LTEQ Mild Exercise	.18	-.06	.17
LTEQ Sweat Inducing	-.19	-.18	-.09
EI	.24	*.32	.09
RFE Weight Control	-.01	.04	.06
RFE Fitness	.19	*.31	*.29
RFE Mood	.13	.11	.11
RFE Health	.03	.23	.23
RFE Attractiveness	-.02	.16	*.35
RFE Enjoyment	.17	.05	-.19
RFE Tone	.11	.14	*.31

Note: BIQ = Body Image Ideals Questionnaire; UPA = Usual Physical Activity;
LTEQ = Leisure Time Exercise Questionnaire; EI = Exercise Identity; RFE = Reasons for Exercise.

n = 62

* p < .05

increases in desire to exercise post-exposure among those female participants who report greater importance of personal ideals (BIQ), and who report reasons for exercising (RFE) involving fitness, attractiveness, and tone. The subsequent multiple regression analysis in the prediction of residual desire to exercise was significant, $R = .35$, $F(1, 57) = 7.80$, $p = .007$. This analysis indicates that female participants who report exercising for reasons of attractiveness accounts for 12% of the variance in the residual desire to exercise scores without further contribution from the remaining three predictor variables.

Recall that female participants exposed to athletic male models showed only a significant decrease in positive affect. Four univariate correlations between positive affect and predictor variables were significant in this group: BIQ Discrepancies ($r = -.24$), EI ($r = .27$), RFE Fitness ($r = .33$), RFE Enjoyment ($r = .27$). The obtained stepwise multiple regression was significant, $R = .46$, $F(2, 64) = 8.49$, $p = .001$. Reasons for exercise with the motive of fitness accounted for 11% of the variance in the residual positive affect. The second variable to be entered into the regression model was BIQ-Discrepancies, which accounted for an additional 11% of variance. Thus, it appears that female participants viewing male models also show a reduction in positive affect, as did their counterparts who viewed female models. Yet, the females who are most affected by viewing the male models are those who have the greatest discrepancy between their actual and idealized body image.

Discussion

One purpose of the current study was to examine the influence of athletic media images. The study aimed to evaluate the influence of same-or opposite-sex athletic

images on body image, mood, and desire to exercise among men and women. The second purpose of the study was to determine which trait measures predict greatest change in such variables.

Effect of Athletic Media Images

According to Festinger (1954), people favour comparing themselves with other people who are similar to them. Hence, female participants viewing athletic female models and male participants viewing athletic male models should be most affected by the exposure relative to their counterparts viewing opposite-sex models. For the most part, the obtained results conformed to such expectations.

Positive body image. It was hypothesized that following exposure to athletic models, the participants would report a significant decrease in positive body image. This prediction was partially supported by the present research findings. Positive body image significantly decreased for women after exposure to female athletic models, but not male models, as predicted on the basis of social comparison theory. However, men did not report a significant decrease in positive body image after viewing athletic male or female models. These results indicate that females are more susceptible than males to decreases in positive body image following exposure to same-sex models.

Positive affect. It was also predicted that the participants' mood would be adversely impacted by exposure to athletic models. This hypothesis was also partially supported. There was a significant decrease in positive affect scores. Once again, female participants were the most affected. Female participants reported a significant decrease in positive affect following exposure to both athletic male and female models. Male participants, however, only experienced a decline in positive affect after exposure to male

models. These results are indicative of female participants being more vulnerable to declines in positive affect after exposure to athletic female and male models, whereas male participants reported significant changes in positive affect only after exposure to male models.

Desire to exercise. It was also hypothesized that men and women would increase in their desire to exercise following exposure to same-sex models. Again, this prediction was only partially supported. Female participants exposed to female athletic models did report a significant increase in desire to exercise. However, male viewers did not report an increase in desire to exercise following exposure to athletic male models. These results suggest that female participants exposed to athletic female models are likely to want to increase their exercise activity in order to emulate the athletic female models. Male participants did not indicate such behavioural intention post-exposure to athletic male models.

These findings are consistent with Festinger's (1954) theory of social comparison. Female participants are likely to have compared themselves with the athletic female models, resulting in a significant decrease in positive body image, a decrease in positive affect, and an increase in desire to exercise. These results suggest that female participants formed upward comparisons with the athletic models, leading to the significant changes in the state measures, and increased desire to exercise.

These findings suggest that women are more susceptible than men to the adverse influences of the media (Kalodner, 1997). It is possible that women possess a latent trait for an attractiveness schema, and viewing the idealized pictures of people exercising activated the schema. After all, physical attractiveness is especially important to female

college students (Freedman, 1984). Male participants viewing male models only reported significant decreases in positive affect, and there were no significant changes in positive body image or desire to exercise. Such observations support the contention that the media is less likely to have an impact on men's attitudes related to their weight and body shape (Murray et al., 1996). These findings contradict Grogan et al. (1996) who found that men reported a significant decrease in body-esteem following exposure to male models. Perhaps, men do engage in social comparison, but to a lesser degree and without the adverse impact on positive body image (Kalodner, 1997) and an increase in desire to exercise.

Predictive Trait Measures Associated with State Measures

The second purpose of the study was to determine which trait measures predict greatest change on state measures of positive body image, positive affect, and desire to exercise. The results suggest that certain personal trait measures make individuals more susceptible to the influence of the media exposure.

Positive body image. Those female participants who reported significant decreases in positive body image following exposure to athletic female models were more likely to have reported higher levels of usual physical activity. This finding is consistent with Tiggemann and Williamson (2000) who found that the more exercise women engage in, the lower their body satisfaction.

Positive affect. There were four trait measures associated with the state measure of positive affect for female participants who viewed athletic female models. Women were more likely to report a decrease in positive affect if they reported a high level of physical activity, strenuous physical exercise, had a high investment in their exercise

identity, and reported exercising for fitness purposes. Of these trait measures, only high levels of usual physical activity was a unique predictor of decrease in positive affect. Hence these results indicate that female participants who are highly active are more likely to report a decrease in positive affect following exposure to athletic female models. To speculate, perhaps these women experience a decrease in positive affect because they have a high investment in exercise in order to achieve attractiveness. Perhaps the women perceive themselves as less attractive compared to the athletic models depicted within the pictures, resulting in a decrease in positive affect.

In addition, female participants who viewed athletic male models also reported a significant decrease in positive affect. There were four trait measures that predicted change scores for positive affect. Female participants who reported a discrepancy between their perceived and idealized physical characteristics, had high investment in their exercise identity, and who reported exercising for fitness and enjoyment purposes were more likely to report a significant decrease in positive affect after viewing athletic male models. The predictor variables that accounted for the greatest change in positive affect were poorer body image and reasons for exercise involving fitness motives. To speculate, this result may be attributable to fitness magazines emphasizing physical fitness as the new standard for attractiveness. Females compare their actual characteristics with the ideal characteristics and realize the discrepancy, resulting in a decrease in positive affect.

Desire to exercise. Four trait measures significantly correlated with increases in desire to exercise among female participants who viewed athletic female models. These female participants were likely to express an increase in desire to exercise if they reported

greater body image discrepancies, and if they reported exercising for fitness, attractiveness, or toning purposes. Out of these four trait measures, exercising with the motive of attractiveness, was the strongest predictor of change in the state measure desire to exercise. This finding suggests that females who exercise to become more attractive are more likely to attempt to change their physique by engaging in exercise following exposure to athletic models. This finding is also consistent with Tiggemann and Williamson (2000) who have found that young women reported exercising for attractiveness purposes. Perhaps this supports the notion suggested earlier that a latent attractiveness schema is activated by viewing the idealized models.

The present research findings replicate earlier studies on women that have reported decreases in positive body image and positive affect with exposure to idealized images. Previous studies have focused primarily on thin models. To date, no other published study has exposed participants to athletic models. In addition, this study also supports the notion that sex differences exist with respect to changes on state measures following exposure to athletic models. Moreover, this is also the first study to evaluate the participant's behavioural intentions following exposure to idealized models. The female participants exposed to athletic female models indicated an increase in desire to exercise post-exposure, suggesting that the female participants were willing to increase their exercise habits to emulate the model's physique. Moreover, this study also extends previous research by examining the trait characteristics that predict change on positive body image, positive affect, and desire to exercise.

Limitations

One limitation of this study and the majority of other studies (Heinberg & Thompson, 1995; Henderson-King & Henderson-King, 1997; Kalodner, 1997; Ogden & Munday, 1996; Pinhas et al., 1999; Posavac et al., 1998; Richins, 1991; Stice & Shaw, 1994; Wegner et al., 2000) that have evaluated body image and media is the limited generalizability across the lifespan. Most studies only include university aged, young people. Freedman (1984) suggests young people regard physical attractiveness as an important characteristic at this developmental stage. These people are dating and physical appearance is an important factor. It would be advantageous to include older people, as conceivably attitudes toward body image change later in life. Possibly the media has less of an adverse impact on older men and women. A second limitation, as suggested by Richins (1991), concerns the method of presenting the images. Images were projected on screen and appeared significantly larger than their presentations in magazines. The participants were also required to view the images whereas, when reading magazines, the individual controls the duration of exposure. Moreover, the participants were only exposed to the most physically fit and attractive models. The less desirable models were excluded from the study. Consequently, the images possibly had a greater effect on the individuals' positive body image, positive affect, and desire to exercise.

Future Research

Future research should address the impact the media has on older men and women. Research has established that university students, women in particular, are likely to be adversely affected by athletic media images. Does this trend continue as people grow older? Additionally, as indicated by Richins (1991), future research should

examine the duration of the adverse effect of the media. Specifically, how long does the person experience body dissatisfaction and a decrease in positive mood? Are the effects highly transitory or more enduring? Moreover, does exposure to media images lead to problematic behaviours such as excessive exercising, dieting, or even the development of certain eating disturbances? Answers to these questions would lead to a more comprehensive understanding of the role that the media plays on body image and mood.

In conclusion, the present study found that exposure to athletic models resulted in a decrease in positive body image, a decrease in positive affect, and an increase in desire to exercise among female participants viewing female models. As for men, there was a decrease only in positive affect after viewing male models. These findings are consistent with a growing literature on the adverse effects of the media. If the intent of fitness magazines is to promote healthy lifestyles among its readership, the consequences may unexpectedly prove negative for certain individuals. The results suggest that women are more susceptible than men to the media influences perhaps because attractiveness is more pertinent for women.

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Appendix A

Consent Form

My signature on this sheet indicates that I agree to participate in a study assessing exercise, body image, and mood. The study is being conducted by Dana Seymour in the Department of Psychology for her Master's thesis under the supervision of Dr. Ron Davis (343-8646). Today you will complete a few questionnaires regarding your feelings, your perception about your body, and your mood. In a week you will complete some of the same questionnaires after viewing photographs taken from popular magazines.

Signing this form indicates that I understand the following:

1. I am a volunteer and can withdraw at any time from this study without penalty.
2. There is no apparent risk of physical or psychological harm with participation.
3. The data I provide will be confidential and will be securely stored in the Department of Psychology at Lakehead University for seven years.
4. I may receive a summary of the project, upon request, following the completion of the study.

I have received explanations about the nature of the study, its purpose, and procedures.

Name of Participant (please print)

Signature of Participant

Student Number

Name of Professor for Psych 1100
bonus mark

Date

Appendix B

Multiple Affect Adjective Check List

See the next page.

Appendix C

Visual Analog Scale

Please make a vertical mark across the horizontal line to indicate your **CURRENT** level of feeling for the following emotions.

- | | |
|---|----------------|
| Sexy | No-----Extreme |
| Weight/Size
Dissatisfaction | No-----Extreme |
| Physically Toned | No-----Extreme |
| Physically Fit | No-----Extreme |
| Attractive | No-----Extreme |
| Strong | No-----Extreme |
| Healthy | No-----Extreme |
| Overall Appearance
Dissatisfaction | No-----Extreme |
| Desire to Exercise | No-----Extreme |

MULTIPLE AFFECT ADJECTIVE CHECK LIST

STATE / TODAY FORM

By Marvin Zuckerman
and
Bernard Lubin

Name..... Age..... Sex.....

Date..... Highest grade completed in school.....

DIRECTIONS: On this sheet you will find words which describe different kinds of moods and feelings. Mark an in the boxes beside the words which describe how you feel now - today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.



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Appendix D

State Self-Esteem Scale

This is a questionnaire designed to measure what you are thinking at this moment. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself at this moment. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you **RIGHT NOW**.

- 1 = Not at all
 2 = A little bit
 3 = Somewhat
 4 = Very much
 5 = Extremely

1.	I feel confident about my abilities.	1	2	3	4	5
2.	I am worried about whether I am regarded as a success or failure	1	2	3	4	5
3.	I feel satisfied with the way my body looks right now.	1	2	3	4	5
4.	I feel frustrated or rattled about my performance.	1	2	3	4	5
5.	I feel that I am having trouble understanding things that I read.	1	2	3	4	5
6.	I feel that others respect and admire me.	1	2	3	4	5
7.	I am dissatisfied with my weight.	1	2	3	4	5
8.	I feel self-conscious.	1	2	3	4	5
9.	I feel as smart as others.	1	2	3	4	5
10.	I feel displeased with myself.	1	2	3	4	5
11.	I feel good about myself.	1	2	3	4	5
12.	I am pleased with my appearance right now.	1	2	3	4	5
13.	I am worried about what other people think of me.	1	2	3	4	5
14.	I feel confident that I understand things.	1	2	3	4	5
15.	I feel inferior to others at this moment.	1	2	3	4	5
16.	I feel unattractive.	1	2	3	4	5
17.	I feel concerned about the impression I am making.	1	2	3	4	5
18.	I feel that I have less scholastic ability right now than others.	1	2	3	4	5
19.	I feel like I'm not doing well.	1	2	3	4	5
20.	I am worried about looking foolish.	1	2	3	4	5

Appendix E

Body-Image Ideals Questionnaire

Each item on this questionnaire deals with a different physical characteristic. For each characteristic, think about how you would describe yourself as you actually are. Then think about how you wish you were. The difference between the two reveals how close you come to your personal ideal. In some instances, your looks may closely match your ideal. In other instances, they may differ considerably. On Part A of each item, you will rate how much you resemble your personal physical ideal by circling the number on the 0 to 3 scale.

Your physical ideals may differ in how important they are to you, regardless of how close you come to having them. You may feel strongly that some ideals embody the way you want to look or to be. In other areas, your ideals may be less important to you. On Part B of each item, rate how important your ideal is to you by circling the number on the 0 to 3 scale.

1. A. My ideal height is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal height?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

2. A. My ideal skin complexion is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal skin complexion?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

3. A. My ideal hair texture and thickness are:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you are your ideal hair texture and thickness?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

4. A. My ideal facial features (eyes, nose, ears, facial shape) are:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you are your ideal facial features?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

5. A. My ideal muscle tone and definition is:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal muscle tone and definition?

0	1	2	3
Not Important	Somewhat Important	Moderately Important	Very Important

6. A. My ideal body proportions are:

0	1	2	3
Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you are your ideal body proportions?

0	1	2	3

Not Important	Somewhat Important	Moderately Important	Very Important

7. A. My ideal weight is:

0	1	2	3

Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal weight?

0	1	2	3

Not Important	Somewhat Important	Moderately Important	Very Important

8. A. My ideal chest size is:

0	1	2	3

Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal chest size?

0	1	2	3

Not Important	Somewhat Important	Moderately Important	Very Important

9. A. My ideal physical strength is:

0	1	2	3

Exactly As I Am	Almost As I Am	Fairly Unlike Me	Very Unlike Me

B. How important to you is your ideal physical strength?

0	1	2	3

Not Important	Somewhat Important	Moderately Important	Very Important

Appendix F

Usual Physical Activity

A SINGLE-ITEM 5-POINT RATING OF USUAL PHYSICAL ACTIVITY

Choose the column (A, B or C) that best describes your usual level of physical activity. Rate your activity level:

Column A..... 5
 Between Column A and B 4
 Column B..... 3
 Between Column B and C 2
 Column C..... 1

A HIGHLY ACTIVE	B MODERATELY ACTIVE	C INACTIVE
<p>My job requires very hard physical labour (such as digging or loading heavy objects) at least four hours a day</p> <p style="text-align: center;">OR</p> <p>I do vigorous activities (jogging, cycling, swimming, etc.) at least three times per week for 30-60 minutes or more</p> <p style="text-align: center;">OR</p> <p>I do at least one hour of moderate activity such as brisk walking at least four days a week</p>	<p>My job requires that I walk, lift, carry or do other moderately hard work for several hours per day (day care worker, stock clerk or busboy/waitress)</p> <p style="text-align: center;">OR</p> <p>I spend much of my leisure time doing moderate activities (dancing, gardening, walking or housework)</p>	<p>My job requires that I sit at a desk most of the day</p> <p style="text-align: center;">AND</p> <p>Much of my leisure time is spent in sedentary activities (watching TV, reading, etc.)</p> <p style="text-align: center;">AND</p> <p>I seldom work up a sweat and I cannot walk fast without having to stop to catch my breath</p>

Appendix G

Leisure Time Exercise Questionnaire

1. Considering a **7-day period** (a week) how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your **free time** (write in each circle the appropriate number).

**TIMES
PER
WEEK**

- a) **STRENUSOUS EXERCISE
(HEART BEATS RAPIDLY)**
(i.e. running, Jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)
- b) **MODERATE EXERCISE
(NOT EXHAUSTING)**
(i.e. fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)
- c) **MILD EXERCISE
(MINIMAL EFFORT)**
(i.e. yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)

2. Considering a **7-day period** (a week) during your **leisure-time**, how often do you engage in any regular activity long enough to **work up a sweat** (heart beats rapidly)?

OFTEN

SOMETIMES

NEVER/RARELY

1.

2.

3.

Appendix H

Exercise Identity

Please indicate with the 5-point Likert scale the extent to which you agree with the following statements.

- 1 = Strongly Agree**
2 = Agree
3 = Somewhat Agree
4 = Disagree
5 = Strongly Disagree

1.	I consider myself an exerciser.	1	2	3	4	5
2.	When I describe myself to others, I usually include my involvement in exercise.	1	2	3	4	5
3.	I have numerous goals related to exercising.	1	2	3	4	5
4.	Physical exercise is a central factor to my self-concept.	1	2	3	4	5
5.	I need to exercise to feel good about myself.	1	2	3	4	5
6.	Others see me as someone who exercises regularly.	1	2	3	4	5
7.	For me, being an exerciser means more than just exercising.	1	2	3	4	5
8.	I would feel a real loss if I were forced to give up exercising.	1	2	3	4	5
9.	Exercising is something I think about often.	1	2	3	4	5

Appendix I

Reasons For Exercise

People exercise for a variety of reasons. When people are asked why they exercise, their answers are sometimes based on the reason they believe they should have for exercising. What we want to know are the reasons people actually have for exercising. Please respond to the items below as honestly as possible. To what extent is each of the following an important reason that you have for exercising? Use the scale below, ranging from 1 to 7, in giving your answers. (If you never exercise, please skip this section.)

1	2	3	4	5	6	7
not at all important			moderately important			extremely important

1.	To be slim.	1	2	3	4	5	6	7
2.	To lose weight.	1	2	3	4	5	6	7
3.	To maintain my current weight.	1	2	3	4	5	6	7
4.	To improve my muscle tone.	1	2	3	4	5	6	7
5.	To improve my strength.	1	2	3	4	5	6	7
6.	To improve my endurance, stamina.	1	2	3	4	5	6	7
7.	To improve my flexibility, coordination.	1	2	3	4	5	6	7
8.	To cope with sadness, depression.	1	2	3	4	5	6	7
9.	To cope with stress, anxiety.	1	2	3	4	5	6	7
10.	To increase my energy level.	1	2	3	4	5	6	7
11.	To improve my mood.	1	2	3	4	5	6	7
12.	To improve my cardiovascular fitness.	1	2	3	4	5	6	7
13.	To improve my overall health.	1	2	3	4	5	6	7
14.	To increase my resistance to illness and disease.	1	2	3	4	5	6	7
15.	To maintain my physical well-being.	1	2	3	4	5	6	7
16.	To improve my appearance.	1	2	3	4	5	6	7
17.	To be attractive to members of the opposite sex.	1	2	3	4	5	6	7
18.	To be sexually desirable.	1	2	3	4	5	6	7
19.	To meet new people.	1	2	3	4	5	6	7
20.	To socialize with friends.	1	2	3	4	5	6	7
21.	To have fun.	1	2	3	4	5	6	7
22.	To redistribute my weight.	1	2	3	4	5	6	7
23.	To improve my overall body shape.	1	2	3	4	5	6	7
24.	To alter a specific area of my body.	1	2	3	4	5	6	7

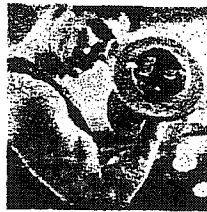
Appendix J

Demographic Information

1. How old are you? _____ years.
2. What is your gender? _____ female, _____ male.
3. How would you describe your ethnic origin? _____.
4. What is your height? _____ feet, and _____ inches. (Guess if you don't know)
5. What is your current weight? _____ pounds. (Guess if you don't know)
6. What would be the right weight for you? _____ pounds.
7. What are you majoring in? _____, year _____.

Appendix K

Sample Athletic Images



*Appendix L***Consent Form**

My signature on this sheet indicates that I agree to participate in a study about my opinions regarding selected pictures of idealized images as presented in the media. This research is for Dana Seymour's psychology MA thesis conducted under the supervision of Dr. Ron Davis (343-8646). I understand the following:

1. I am a volunteer and can withdraw from the study at any time.
2. There is no apparent risk of physical or psychological harm.
3. The data I provide is confidential and will be held in the Department of Psychology for seven year.
4. Upon request, I may receive a summary of the overall findings of the study when it is available.

Print Name: _____

Signature of Participant: _____

Date: _____