The Effects of Social Physique Anxiety Levels, Body Mass Index, and Program Type on Exercise Adherence and Reasons for Exercise

Colleen N. Vandever
Eastern Illinois University

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The Effects of Social Physique Anxiety Levels, Body Mass Index, and Program Type on Exercise Adherence and Reasons for Exercise

(TITLE)

BY

Colleen N. Vandever

1997-

FIELD EXPERIENCE

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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The Effects of Social Physique Anxiety Levels, Body Mass Index, and Program Type on Exercise Adherence and Reasons for Exercise

Abstract

The purpose of this study was to compare adult females across various age groups, body mass index, and exercise facilities on their levels of social physique anxiety, reasons for exercise, and adherence rates over an 8-week period. Female members of the Eastern Illinois University Adult Fitness Program (n = 14), Curves for Women (n = 19), and the Sarah Bush Lincoln Health Center Employee Wellness Program (n = 14) took part in the study. Two age group categories were made: 30-50 (n = 21) and 51+ (n = 26) in order to compare female age groups. Specifically, the purposes of the study were a) to examine whether females with higher social physique anxiety (SPA) and body mass index (BMI) would report greater self-presentational reasons for exercise and would have lower adherence rates than individuals with low SPA and low BMI, and b) to examine whether females across different exercise facilities and different age cohorts, would significantly differ on their SPA levels, reasons for exercise, and attendance rates over the 8-week study period. Measures used for the data analysis included the Social Physique Anxiety Scale, the Reasons for Exercise Inventory, body mass index scores, and 8-week attendance rates. To test the first purpose, a 2 x 4 (SPA level x BMI classification) MANOVA was performed with SPA (median split) and BMI classification as independent variables. Results showed a nonsignificant overall interaction on REI subscales and weekly average attendance (Wilk’s Lambda = .67, F (16, 66) = .90, p =
Also, there were nonsignificant multivariate main effects for BMI (Wilk's Lambda = .63, F (24, 96) = .70, p = .84) and SPAS category (Wilk's Lambda = .77, F (8, 33) = 1.23, p = .31). When examining REI means, it was discovered that exercising for tone was more important for normal and Class I BMI females compared to overweight females. Hypothesis one was not supported as SPA and BMI did not interact to show greater self-presentational reasons for exercise or adherence rates. In order to test the second purpose, a 3 x 2 (facility x age group) MANOVA was performed using facility and age group as independent variables and SPA, REI, and program attendance as dependent variables. Results showed a nonsignificant overall multivariate interaction (Wilk's Lambda = .76, F (18, 66) = .53, p = .93), showing that facility and age did not interact to affect the dependent variables. There were also nonsignificant affects for age group and facility. Results of follow-up univariate ANOVA's showed a significant main effect for age group on REI attractiveness (F (1, 46) = 5.17, p < .05). Younger females were shown to exercise more for attractiveness reasons (M = 12.71, SD ± 3.78) compared to older females (M = 10.04, SD ± 4.04). There was also a significant univariate main effect for age on SPA as younger females had significantly higher SPA levels (M = 37.57) compared to older females (M = 31.19). Younger females were also shown to report mood improvement to be more important than older females as the main effect for age group approached significance (F (1, 46) = 3.94, p = .05). Overall results did not strongly support either hypothesis. Using a larger sample size has been indicated as a recommendation for further studies using several variables.
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CHAPTER I

INTRODUCTION

It has been well documented that engaging in regular physical activity can improve the health and well being of individuals. However, according to the American College of Sports Medicine (2000), physical inactivity is a major health problem in the United States. More than 60% of American adults are not regularly physically active, and 25% are not active at all. Professionals in the field of exercise science share a responsibility in attempting to increase the number of people who are involved in regular exercise or physical activity.

Consider the following:

... the health and fitness benefits associated with physical activity most likely follow a dose-response relationship. In other words, some activity is better than none, and more activity – up to a point – is better than less. (ACSM, 2000, p. 4)

Simply teaching people that some activity is better than none may help in regard to involvement in physical activity; this fact lets people know that they do not have to spend countless hours exercising in order to gain benefits. Developing programs that meet the needs of individuals who lack experience and knowledge in the area of physical fitness is one way to improve the health of the nation.

When knowledge of the additional health and fitness benefits associated with greater quantities and intensities of physical activity (i.e., exercise) is
combined with the fact that the list of chronic diseases favorably affected by exercise continues to grow, there remains a clear need for medically – and scientifically – sound preventive and rehabilitative exercise programs. (ACSM, 2000, p. 4)

Fitness programs around the nation that are based on sound fitness principles and exercise prescription continue to grow at universities, hospitals, and fitness centers. These programs have been created to meet the specific needs of individuals who desire to engage in regular physical activity. Although many people may hold memberships to these programs, adherence rates after the first six months of activity continue to be around 50 percent (Dishman, 1991).

Reasons why people exercise are varied and have been commonly partitioned into health-related reasons and self-presentational reasons (Silberstein, Striegel-Moore, Timko, & Rodin, 1988). Little progress has been made in understanding how determinants differ according to age, race, gender, ethnicity, socioeconomic level, and fitness level or in identifying who is most likely to benefit from various intervention approaches (Dishman, 1994). It has been found that body dissatisfaction exists in both men and women and that it is related to self-esteem (Bezner, Adams, & Steinhardt, 1997; Silberstein et al., 1988). Those who have poor self-esteem are likely to have low self-efficacy, which is the feeling that they are competent in performing a task. For many who begin exercise programs without any prior experience, self-esteem may be low, especially in the beginning stages of the program. It could be beneficial for fitness leaders to be informed about body dissatisfaction levels of their program
participants, as well as to be capable of structuring exercise goals to address self-presentational concerns.

Exercise adherence can be affected by several factors, including attitude of the exerciser, availability of an exercise program/facility, amount of knowledge or experience in regard to exercise, and current level of fitness and exercise history of the exerciser (Wankel, 1993). Reasons for exercise also have the potential to influence exercise adherence. Those individuals who exercise in order to improve physical attractiveness are said to exercise for self-presentational reasons (Eklund & Crawford, 1994), and there is a concern within the exercise literature that adherence rates may be lower for those exercising for these reasons (Silberstein et al., 1988).

Social anxiety is yet another factor that can affect general behavior, and exercise behavior in particular. Schlenker and Leary (1982) defined social anxiety as the anxiety that results from the presence of personal evaluation by others, which can take place in either real or imagined social situations. Social situations occur when people are or may come under the focus of other people’s attention. Those who are unconcerned with the perception of how others evaluate them will not feel socially anxious. However, when the motivation to impress others increases, the potential likelihood for experiencing social anxiety increases as well (Schlenker & Leary, 1982).

A type of anxiety that is specific to the exercise setting and may be related to one reason for exercise is social physique anxiety (SPA), defined as the anxiety that is associated with the perceived social evaluation of one’s body or physical
appearance (Hart, Leary, & Rejeski, 1989). It is certainly true that most exercise programs take place in social settings, and it has even been proposed that one potential reason for psychological benefits due to exercise stems from the regular social interaction that occurs with others (Berger & Motl, 2000). However, anxiety about physique has the potential to play a detrimental role in regard to exercise adherence. The major concern is that SPA may act to reduce exercise patterns in those individuals who place a high importance on self-presentational aspects of exercise (Crawford & Eklund, 1994). However, learning how SPA affects individuals can be helpful to educators when they plan and develop programs (Finkenberg, DiNucci, McCune, Chenette, & McCoy, 1998), in that individuals with high SPA or self-presentational reasons for exercise might adopt more extrinsic motivation combined with a negative appraisal of their ability to maintain this behavior, increasing subjective anxiety regarding exercise behavior, lessening subjective enjoyment, and thus reducing overall adherence.

Several studies have examined psychological and physiological variables in relation to SPA, including: body fat percentage (Treasure, Lox, & Lawton, 1998; Hart, et al., 1989; McAuley, Bane, Rudolph, & Lox, 1995; and Eklund & Crawford, 1994), body dissatisfaction (Thornton & Maurice, 1997), reasons for exercising (Eklund & Crawford, 1994; Crawford & Eklund, 1994), weight satisfaction (Eklund & Crawford, 1994; Crawford & Eklund, 1994), attitudes toward exercise settings (Crawford & Eklund, 1994), and exercise behavior and preferences (Eklund & Crawford, 1994). Eklund and Crawford (1994) found that those with higher SPA rated specific questions higher on the Exercise Behaviors
and Preferences inventory including: preference for attending aerobics class with a friend, wearing loose-fitting exercise attire, and attending classes where most people are in worse shape than the exerciser. However, no significant association between SPA and these questions was found. Body composition, as determined by measuring percentage of body fat, was included in this study as a control measure, and was found to be a significant predictor of SPA. Body Mass Index (BMI) is a physiological measure also closely correlated with SPA. In accordance with the previous findings, it could be predicted that those with a higher BMI would also have higher levels of SPA and lower exercise adherence rates. To support this prediction, a recent model has been proposed in which BMI is shown to significantly influence SPA, which, in turn, affects self-presentational behaviors (Diehl, Brewer, Cornelius, Van Raalte, & Shaw, 2000). Thus, it appears that physiological indicators of body composition are primary predictors of SPA.

The level of SPA that one possesses most likely plays a role in the type of exercise behavior that one displays, but also in one’s reasons for exercise. Exercise is engaged in for many reasons as some do it purely for enjoyment or to experience accomplishment and/or independence. Others exercise in order to become healthy, lose weight, and improve the appearance of their bodies. Eklund and Crawford stated that, “Because exercise participation often occurs in social contexts, it seems reasonable that self-presentational strategies would have an impact on exercise behaviors” (1994, p. 431).
In order to succeed in something, commitment is essential. To see the benefits and results of exercise, people must adhere to regular exercise activities. Adults frequently report that it would help them to be more involved in exercise if facilities were made more available to them (Marcus, 1995). Not only does the facility play a role in adherence, but enjoyment of the exercise does as well. Enjoyment is essential for enhancing adherence because the direct result will be the realization of psychological and physical benefits (Wankel, 1993). SPA may play a role in exercise adherence as well. It could be predicted that those with low levels of SPA may have greater adherence rates in comparison to those who have high levels of SPA, and this may be linked to their motivational reasons toward engaging in exercise behavior. Young women enrolled in a university were involved in such a study. Results showed that the group with the highest commitment to exercise (athletes) had the lowest SPA levels when compared to a group of kinesiology majors and a control group (Finkenberg et al., 1998). The amount of time required in the chosen activity (i.e., athletes must commit to practice times in their chosen sports, whereas kinesiology majors individually decide how much time to spend in exercise activity) could be a possible explanation of the outcome of this study.

Many studies focusing upon SPA have been limited to college-age females. However, McAuley et al. (1995) stated that a concern with being overweight is not solely related to this age group. Older individuals have stated their reasons for exercise are often primarily for health-related reasons such as weight control and management. McAuley et al. (1995) found that over a 20-
week exercise program, physique anxiety was reduced among a group of formerly sedentary older males and females. Their findings suggest that SPA be explored for its role in determining exercise and physical activity. Lantz, Hardy, and Ainsworth (1997) examined the relationship between SPA and exercise behavior, and found that females were younger, less active, and more depressed and anxious about their bodies than males. However, results also showed that exercise behavior was lowest in older females with higher levels of SPA.

People exercise in a variety of settings and different facilities are designed to meet the exercise needs and goals of clients. Many facilities cater to both men and women; however, there are places that target only specific groups, such as Curves for Women, which is an all-female fitness facility. One purported reason for female-only facilities is their focus on the specific health needs of women; this is based on sociocultural concerns that are directed toward allowing females to exercise in a less-socially threatening environment. There is concern that if SPA is high enough, high risk individuals will avoid rather than approach structured exercise facilities altogether. These female facilities are often popular with females who are more conscientious about their physique and intimidated by other types of exercise facilities. For example, Eklund & Crawford (1994) found that compared to low-SPA females, women high in SPA were less likely to prefer coed aerobics classes and were also more aware of males who attended the exercise classes.

Learning about the impact of SPA upon exercise adherence and reasons for exercise can benefit fitness professionals by allowing them to structure
programs that maximize fitness and health benefits while minimizing physical and perceptual discomfort. This may also provide needed insight into psychological variables that have the potential to affect adherence to organized exercise programs, as well as guide exercise leaders in how to work individually with exercise clients regarding healthy, realistic self-referent exercise program goals.

Statement of the Problem

The purpose of this study was to compare adult females across various age groups, body mass index classification, and exercise facilities on their levels of social physique anxiety, reasons for exercise, and exercise adherence rates over an 8-week period. Eight weeks is a significant amount of time to monitor exercise attendance as it should give a fairly reasonable representation of the usual exercise behavior of study participants. In addition, eight weeks represents a time frame in which short-term adherence patterns may be effectively examined. SPA appears to be a psychological variable that may affect the exercise behaviors and adherence rates of the adult population. McAuley et al. (1995) studied SPA levels in older women and found that middle-aged and overweight women showed the highest anxiety levels. However, they did not measure reasons for exercise or adherence rates among their participants. A greater understanding of the relationship between these variables and SPA can be beneficial to those who work in the exercise setting as programs can structure the motivational climate so that adherence is enhanced. These programs will then have the potential to reduce
SPA levels and to increase adherence rates. Health reasons for exercise might be related to lower SPA and ultimately higher adherence rates. The relationship between self-presentational anxiety and exercise adherence rates needs further study. Information regarding this relationship may be instrumental in aiding exercise professionals to design facilities and devise programs that will improve adherence rates.

Hypotheses

1. It was hypothesized that females with higher social physique anxiety and body mass index would report greater self-presentational reasons for exercise and would have lower adherence rates than individuals with low social physique anxiety and low body mass index. Being anxious about one’s appearance may negatively affect exercise behavior in that some may choose not to engage in exercise within a highly social setting, thereby forfeiting social support and interaction, which are both important to exercise adherence.

2. It was hypothesized that females across three different exercise facilities (adult fitness program, gender specific program, worksite fitness facility) and different age cohorts (30-50, 51+) would be significantly different on their social physique anxiety, reasons for exercise, and attendance rates over the 8-week period.
It was proposed that adherence rates would be greatest at the Adult Fitness Program and lowest at Curves for Women. Furthermore, it was proposed that younger females at Curves would report higher SPA and greater self-presentational reasons for exercise, and that reporting health-related reasons for exercise would be greatest at the Adult Fitness facility.

**Assumptions**

It was assumed that all participants understood the questionnaires and that subjects were accurate with regard to logging their attendance rates at each exercise facility. It was also assumed that there was variability across programs in mode, frequency, and duration of exercise among subjects.

**Rationale**

Previous studies within the SPA literature have not addressed the variables of SPA, reasons for exercise, and adherence rates in the same study. A major part of the current study was to examine if SPA levels affect adherence rates of exercise and the reasons people give for exercising. Many studies about SPA have been limited in focus, utilizing younger college-age females (Hart et al., 1989; Eklund & Crawford, 1994; Finkenberg et al., 1998; Bartlewski, Van Raalte, & Brewer, 1996; Crawford & Eklund, 1994; Spink, 1992; McAuley, Mihalko, & Bane, 1996). This study focused on generalizing the SPA literature to age groups...
older than most previous research in social physique anxiety, yet characterized specific types of exercise programs. Finally, comparisons were made across SPA in regard to reasons for exercise and adherence rates between three different exercise facilities.

For the purpose of this study, adherence rates were measured and defined as weekly frequency rates. Training volumes such as duration, intensity, or mode of activity were not taken into consideration. Previous exercise experience was also not assessed within the current study. When comparing an adult fitness program, a gender-specific program, and a worksite fitness facility, one may be able to determine why exercisers make certain preferences. Women may feel that they are less evaluated in an all-female facility and therefore feel less threatened by perceptions of negative social evaluations of the physique from the opposite sex, and those with little exercise experience may feel more comfortable with women. It is possible, however, that adherence rates would be affected negatively by SPA in each facility. Women have typically been shown to be more physique anxious than males (McAuley et al., 1995), so adherence may be decreased at an all-female facility.
Definition of Terms

**Body Dissatisfaction** – the degree to which people are not satisfied with their bodies.

**Body Mass Index (BMI)** – an index which incorporates height and weight to estimate critical values where the risk for disease increases; it is calculated by dividing weight in kilograms by the square of the height in meters (Hoeger & Hoeger, 1997). BMI can be classified into the following categories: Underweight < 18.5; Normal = 18.5-24.9; Overweight = 25.0-29.9; Class I Obesity = 30.0-34.9; Class II Obesity = 35.0-39.9; and Extreme Obesity = 40.0+ (National Heart, Lung, and Blood Institute, 1998).

**Physique** – one’s body form and structure, specifically body fat, muscle tone, and general body proportions (Hart et al., 1989).

**Self-Presentation** – involves the selective presentation and omission of aspects of the self to create desired impressions and avoid undesired impressions with specific people in a particular social encounter. This refers to the processes by which people monitor and control how they are perceived by others (Schlenker, 1980 in Leary, 1992).

**Social Anxiety** – the anxiety that results from the presence of personal evaluation by others (Schlenker & Leary, 1982).

**Social Physique Anxiety (SPA)** – the anxiety associated with the perceived social evaluation of one’s body or physical appearance (Frederick & Morrison, 1998; Hart, et al., 1989).
CHAPTER II

REVIEW OF LITERATURE

Exercise Adherence: The Importance of Enjoyment

In order to reap the benefits of exercise, consistent involvement must occur. The Centers for Disease Control and Prevention and the American College of Sports Medicine have found that only about 22% of adults are active at the level recommended for health benefits. This level includes engaging in 30 minutes or more of moderate intensity exercise (i.e., activity performed at an intensity level between 3-6 METS, which is the equivalent of walking 3-4 mph for most healthy adults) on most days of the week (Pate et al., 1995). Exercise need not be extremely vigorous or highly intense, as moderate-intensity exercise will provide sufficient health benefits. Moderate-intensity may be the type of exercise needed (ACSM, 2000; Pate et al., 1995) in order to increase adherence to a program, especially for beginners. Adults who engage in moderate-intensity physical activity, enough to expend approximately 200 calories per day, can expect a maximum amount of health benefits (Pate et al., 1995). Moderate intensity programs will be more physically feasible for beginners, provide higher enjoyment, and provide greater exercise self-efficacy.

It is important to make exercise enjoyable because these activities become intrinsically motivating to participants (Wankel, 1993). Those who enjoy exercise
may be more likely to stay involved in the activity because the activity is intrinsically motivating and will be more likely to succeed in meeting more moderate exercise-related goals. Enjoyment of exercise may also counter stress and bring about positive psychological health. It must be remembered, however, that enjoyment cannot be willed for a person. It must come from within and because all individuals attain enjoyment differently, a variety of activities should be offered at exercise facilities (Wankel, 1993; Wankel, 1985). Enjoyment of the chosen activity(ies) will have a positive influence upon adherence to exercise.

A health education approach has been primarily used to motivate greater involvement in physical activity and assumes that people will act upon information that they learn about behaviors that are good for their health. However, behavior change is often difficult (Wankel, 1985), and health behavior change research has indicated that simple education interventions are not sufficient to promote health behavior change. Those habits that are formed early in life, whether good or bad for health, are often very difficult and resistant to change. Those participants who adopt and maintain regular exercise patterns early in life are more likely to adhere to exercise programs later in life. In regard to exercise, there is a problem in maintaining regular participation in physical activity for the majority of people involved in activity programs. It is commonly reported that 50% of individuals who begin exercise will drop out of regular exercise programs within the first six months (Dishman, 1991). It has been suggested that it may be good to have people focus upon the enjoyment attained rather than on the health outcomes from a program (Wankel, 1985).
There are several factors that can have an impact upon the enjoyment of exercise. Self-motivation may reflect self-regulatory skills such as goal setting, which may help in the maintenance of physical activity (Dishman, 1991). The setting of goals is often common among exercisers. Exercise type must be compatible with one’s goals as this is important in selecting a meaningful activity. It is essential to remember that goals are likely to change over time, in that inexperienced, sedentary individuals will have different goals from fit individuals (Wankel, 1993). It has been suggested by Wankel (1985) that the key to exercise adherence when related to enjoyment may be the setting and reaching of goals that are not directly related to fitness, such as those focusing upon weight loss or increased social interaction. Therefore, a combination of initial goals, perceptions of the program, and social support can help to discriminate between dropouts and continuing participants (Wankel, 1985).

Social involvement is related to the notion of social support. The social nature of activity is important as many people choose to exercise with a friend (Wankel, 1993). Exercising with a friend promotes individual accountability and has the potential to increase enjoyment, thereby promoting continued involvement in the activity. Caserta and Gillett (1998) found social support and interaction to be important in regard to exercise adherence. Wankel (1985) interviewed members of an employee fitness program and investigated factors relating to reasons for continued involvement or dropping out of the program. Results showed that participants received more encouragement from social groups and had higher levels of friendship than did the dropouts (Wankel, 1985). These
results support a statement made by the CDC and the ACSM regarding the importance of family and friends to provide encouragement and/or companionship in physical activity (Pate et al., 1995). Social support is indeed an important component to both exercise adherence and enjoyment.

Enjoyment is important to adherence and psychological benefits that can result from physical activity. According to Wankel (1993), there are several factors that are related to enjoyment. First of all, feeling competent and self-determining results in enjoyment. People often receive feedback about their capabilities when involved in leisure time physical activities. Harter’s Competence Motivation Model indicates that we strive to feel competent in our behaviors, and Losier & Vallerand (1994) examined the relationship between perceived competence and self-determined motivation among hockey players and results partially supported the notion that over time, perceived competence determines motivation; however, it was stated that motivation may also influence perceptions of competence. People who feel competent in their exercise behavior are more likely to remain adherent. Feedback from spouses, friends, and fitness specialists often serves as motivation for continuous involvement in the activity. Along with this notion is the need for good communication between the leader and the participant. Encouragement and positive feedback can increase enjoyment in the activity and has the potential to increase self-esteem and confidence (Wankel, 1993; Tecco, 1999).

A balance between skills and challenges is important in any activity. This balance is found within the perceptual appraisal of individual resources for fitness
activities by each exerciser. Low challenge causes feelings of boredom while high challenge produces anxiety. Achieving a balance between the two is important in assuring enjoyment of the exercise activity. In regard to enjoyment and adherence, the attitude of the exerciser is an area of much influence. For some people, exercise is enjoyable and something they like to do. For others, it is engaged in mainly for health reasons and therefore may not be enjoyable as it is something they have to do in order to maintain their quality of life (Wankel, 1993). Finally, the nature of the activity and the leadership within the setting affect both enjoyment and continued involvement (Wankel, 1985). Exercise must be specific to each individual and the activity undertaken needs to be enjoyed so the person will spend time in it. Those in leadership roles at exercise facilities have an important role to play in increasing enjoyment and adherence rates. Communicating to exercisers with positive feedback, concern, and care are of utmost importance in maintaining good relations with clients. Exercise leaders who get to know their clients and who keep up to date on progress within the chosen activity and on the attainment of goals can directly affect adherence.

**Women and Exercise Adherence**

A large percentage of the population does not adhere to regular exercise, and fewer women than men are involved in physical activity (Klonoff, Annechild, & Landrine, 1994; U.S. Department of Health and Human Services, 2000). Sedentary living contributes to disease states (i.e., coronary heart disease,
hypertension, diabetes mellitus, osteoporosis, etc.) and poor quality of life (Pate et al., 1995). In order to reverse sedentary trends the United States Department of Health and Human Services (2000) has recommended that daily physical activity be promoted at the individual, group, environmental, and policy level; by integrating physical activity into many areas, the potential for increasing activity involvement becomes stronger as there are more opportunities for people to become involved. In order to keep the sedentary trend from continuing, ways to increase continued involvement in physical activity must be devised.

There are several factors that affect exercise adherence (Dishman, 1991). Past activity history has been shown to predict adherence. Having previous sport experience that allows for the attainment of knowledge and skills is also important as it involves the concept of self-efficacy and feeling competent in performing a skill. Using behavior modification and cognitive-behavior change techniques along with exercisers has been shown to positively affect exercise adherence. Behavior change has been shown to be difficult, but can have a positive affect upon health if it is successful. Having feelings of enjoyment and well-being, which are stronger motives for continued participation, are important according to both Dishman (1991) and Wankel (1993). A conveniently located exercise setting has been shown to positively affect behavior because it is easily accessed. Also, being self-motivated is important for exercise maintenance. Finally, removal of real and perceived barriers to exercise – such as cost, location of facility, travel, medical events, and relocation – and having social support and reinforcement are
important determinants of exercise adherence (Dishman, 1991; Caserta & Gillett, 1998; Wankel, 1993; Wankel, 1995).

The goal(s) of the exerciser must also be taken into consideration. Some individuals may exercise for health reasons and want to reduce their risk for cardiovascular disease or other health problems that result from a sedentary lifestyle. Others exercise with the goal of losing weight and improving their current health condition. An example of this would be engaging in regular physical activity to reduce high cholesterol or high blood pressure.

Within the exercise adherence literature a number of barriers to physical activity have been identified including: high coronary heart disease risk; low fitness level; smoking; being overweight; resisting behavioral change; lack of time; not expecting outcomes from the activity; and perceiving exercise as unimportant to health (Dishman, 1991). Lack of time is a common barrier to physical activity that has been reported. However, this may reflect a lack of interest or commitment upon the part of the exerciser because those who regularly exercise also report lack of time to be a barrier (Dishman, 1991).

An important area within this literature has been the examination of adherence patterns in females since women have typically shown lower physical activity involvement than males (Klonoff et al., 1994). Caserta & Gillett (1998) examined the following four domains of exercise among sedentary overweight women aged 60-70 years when looking at adherence: perceived importance of exercising with peers, structural features of the exercise programs, experience of companionship and support during exercise, and perceived benefits of exercise.
The women were divided into 2 groups; one group exercised on their own 3 times per week while the other group attended 3 supervised aerobic sessions per week. Results at the 18-month follow-up showed that both groups declined to a similar exercise frequency and that the women who appreciated and valued the health benefits of regular exercise were more likely to maintain regular exercise (Caserta & Gillett, 1998). The study concluded that the motivating aspects of the exercise experience as well as women’s understanding of exercise determinants would be more effective in facilitating older adults’ long-term adherence to regular exercise programs (Caserta & Gillett, 1998). This may be true as the social comparison process is downplayed when one focuses on the health benefits of exercise. Also, unlike Wankel (1993), the importance of companionship and support did not explain exercise frequency in this study. However, the women stated that it was important to them to have companionship and support (Wankel, 1985; Wankel, 1983; Pate et al., 1995), as well as to have gradual exercise progression and leader characteristics (Caserta & Gillett, 1998). It was stated that there may be increased likelihood of maintaining a regular aerobic routine if women valued and appreciated the benefits of regular exercise. Perhaps an increase in education programs at facilities would help to increase knowledge and therefore exercise maintenance.

Greater understanding of the aspects of the exercise experience that are sources of motivation would more effectively facilitate older adults’ long-term adherence to regular aerobic exercise programs. (Caserta & Gillett, 1998, p. 8)
Treasure et al. (1998) examined determinants of physical activity in a sedentary, obese female population to determine if SPA could be used to predict exercise adherence in obese females. Non-obese female populations desire to exercise in settings that do not emphasize the physique (Crawford & Eklund, 1994; Eklund & Crawford, 1994), yet body-related anxiety may be more salient in overweight/obese populations. SPA was higher in older and younger obese groups in comparison to similar age non-obese groups (Treasure et al., 1998). This may be due to the societal pressures that promote the “ideal” body shape that is often unattainable for most people. This study also looked at physiological variables (i.e., resting heart rate, body mass index, VO2 max, and percentage of body fat) in regard to physical activity patterns. None of these variables were highly correlated with adherence (Treasure et al., 1998).

There are physical and biological variables that have been related to exercise adherence. It has been speculated that the release of beta endorphins during exercise will help to reinforce this behavior due to an elevated mood. However, Klonoff et al. (1994) did not find beta endorphins to be related to exercise adherence. In regard to SPA and age, middle-age participants had lower social physique anxiety and attended more sessions than the younger participants (Treasure et al., 1998). Therefore, a socially evaluative exercise setting may not determine exercise habits as much for older individuals. According to McAuley et al. (1995), it can be proposed that as we age we expect to become heavier. Consequently, this condition has become more readily accepted, and some older individuals may not experience as much social physique anxiety as their younger
counterparts. It may be beneficial to encourage young adult obese females to exercise in private settings or specific classes when they begin an exercise program. Consequently, they may then be free to develop their experience in an exercise setting without experiencing self-presentational anxiety that might limit their exercise participation. If exercise is consistent and physical improvement occurs in such settings, other options for exercise can be explored with little potential for the development of anxiety.

Finally, there are psychological and physiological factors that can help to predict exercise adherence in women. Klonoff et al. (1994) examined adherence factors in females. Women involved in the study could participate in a free aerobics class as many times as they desired within a 10 week time frame; 3 classes were offered each day. As a result of the exercise, women's self-reported mood significantly increased. Also, those who were more anxious, heavier, and reported more physical symptoms, were more likely to attend the classes and adhere to the program; in addition, these people were not highly stressed by their daily lives (Klonoff et al., 1994). Exercise adherence was greater for less fit individuals; perhaps these women's levels of body dissatisfaction were a source of motivation to maintain regular physical activity. It is interesting to note that those who were more comfortable with their weight and physical condition may drop out early due to less motivation to continue in the activity. Weight and body dissatisfaction may, under conditions of high self-motivation, result in higher exercise adherence rates and problematic exercise behaviors.
Body Dissatisfaction

The degree to which people are satisfied with their bodies may have an effect upon their behavior and self-perceptions (Silberstein et al., 1988). Attitudes and behaviors come from the view a person holds of him/herself and self-perceptions influence adopted wellness behaviors (Bezner et al., 1997). These behaviors can include eating and exercise approaches and practices. Physical activity is important to overall well-being, but structured exercise programs are not necessarily predictive of body satisfaction. Body satisfaction can be predicted by how people see themselves, and even though people may engage in regular exercise, they may not be satisfied with their physical appearance (McAuley et al., 1995). For example, someone who walks three days a week may continually experience feelings of dissatisfaction in body tone or body weight.

Bezner et al. (1997) examined the relationship of body dissatisfaction and core wellness to physical self-esteem, which is the perception of one’s body and physical abilities. Three exercise groups were studied including university students, corporate employees, and commercial fitness-club members. When looking at body size drawings, females reported their perceived body sizes to be greater than their ideal body sizes, and women in all groups were dissatisfied with their current body shape (Bezner et al., 1997). It was also found that there is a negative relationship between body dissatisfaction and physical self-esteem, and those who have high body dissatisfaction are shown to have lower levels of physical self-esteem (Salusso-Deonier & Schwartzkopf, 1991; Silberstein et al.,
Also, a greater discrepancy between perceived and ideal body size is associated with lower physical self-esteem (Bezner et al., 1997). This is evidenced by the findings in the study pertaining to the women and is greater for women than men. It must be emphasized that greater physical self-esteem showed lower body dissatisfaction, as these people were also more confident of themselves, and therefore more accepting of their bodies (Bezner et al., 1997).

One would tend to believe that higher levels of body dissatisfaction would correspond with self-presentational reasons for exercise. In fact, research has shown that females with high levels of body dissatisfaction do in fact exercise more for self-presentational reasons compared to males (Silberstein et al., 1988). Silberstein et al. (1988) explored the relationship of body-esteem, self-esteem, dieting and exercise in male and female undergraduate students. When looking at the body size drawings, men were as likely to want to be heavier as thinner, whereas all but one female chose an ideal figure thinner than their perceived figure (Silberstein et al., 1988). Also, twice as many females than males wanted to be thinner. It has been found that there are differences in reasons for exercise when comparing women and men. Silberstein et al. (1988) found that women reported that they exercise more for weight control than men. Weight control can be seen as a health reason for exercise, yet is often referred to as a self-presentational reason for exercise, which involves the way people monitor and control how they are perceived by others (Leary, 1992). These results mirror those of the study by Bezner et al. (1997) as women also tended to exercise more for weight control than men. It was stated that weight dissatisfaction might
actually have less of an impact on women's self- and body-esteem because there is a normative discontent with females regarding weight dissatisfaction. Our culture promotes the very thin female beauty ideal—a woman dissatisfied with her weight resembles the normative discontent in body satisfaction (Silberstein et al., 1988). Although body dissatisfaction has the potential to keep people from exercising, it can also provoke efforts to close the perceived-ideal discrepancy gap on body aspects that are changeable, such as weight. One can diet and exercise in order to change this body aspect (Silberstein et al., 1988).

The attractiveness contrast effect is also related to esteem and body dissatisfaction. This may be explained in how an average looking person may be perceived as less attractive when evaluated in a setting with a more attractive person of the same sex. The cultural ideal of attractiveness may be a consequence of media exposure, yet people choose what they view, so this may also direct media exposure (Thornton & Maurice, 1997). Thornton & Maurice (1997) studied the physique contrast effect on undergraduate women aged 17-28 years who were shown pictures of models that possessed ideal thin physiques. After exposure to these photographs, subjects reported diminished self-esteem and increased SPA, body dissatisfaction, and self-consciousness (Thornton & Maurice, 1997). Those who showed less ascription to an attractiveness ideal had higher self-esteem, lower SPA, and were less publicly self-conscious (Thornton & Maurice, 1997). Results show that effects of physique contrast are unique to the individual and in how she adheres to this effect. Some tend to be greatly influenced by media effects, yet exposure to media is often under the control of
the individual. Perhaps a limiting of this exposure may help to increase body satisfaction and self-esteem, as well as engagement in regular physical activity.

Finally, exercise involvement may contribute to increased body cathexis (satisfaction) according to a study done by Salusso-Deonier & Schwartzkopf (1991), regardless of a person's initial level of body satisfaction. By reducing body dissatisfaction through a structured, realistic exercise program whereby realistic short-term goal attainment may increase exercise self-efficacy, overall self-esteem may be increased and health-related reasons for exercise may be associated with better long term adherence rates.

Self-Presentational Anxiety in Exercise Settings

Self-presentation involves the processes people use to monitor and control how other people perceive them. Other people's reactions are monitored even when people are not consciously trying to make an impression (Leary, 1992). Any public setting where there is the potential to induce evaluation from others is capable of inducing self-presentational anxiety, and exercise settings often emphasize this social comparison process (Hart et al., 1989; Kowalski, Crocker, & Kowalski, 2001; Eklund & Crawford, 1994; Crawford & Eklund, 1994). Participation in physical activity may be largely related to self-presentational concerns (Crawford & Eklund, 1994; Eklund & Crawford, 1994; Hart et al., 1989; and Leary, 1992). Social anxiety helps to keep people's behaviors in socially desirable limits. However, it can take on negative aspects if self-presentational
concerns (such as self-doubt or feelings of inadequacy) become excessive and the individual perceives he/she will not be able to make a desired impression on others (Kowalski et al., 2001). It is quite common for women to report that they are active for self-presentational reasons, and SPA has been shown to correlate with self-presentational concerns (Crawford & Eklund, 1994). If people view their bodies favorably or are disinterested in others’ reactions to their physical appearances, they may rarely experience self-presentational anxiety in an exercise context. However, others may experience chronic concerns with how others view their physiques, either because their bodies are objectively unattractive or because they hold an unrealistically negative perception of their physiques (Hart et al., 1989).

Self-presentational concerns affect type of physical activities selected, their intensity, and the contexts in which these activities are performed. Therefore, it is important that facilities attend to the self-presentational dynamics of the exercise setting, such as having classes away from mirrors and viewing windows (Diehl et al., 2000). This will then allow people to focus more on the activity rather than on how they appear to others. Many people worry about what they look like when they engage in physical activity. Some are so concerned that they will not let others see them exercise (Leary, 1992). Because of this anxiety, they exercise alone or not at all, leading to increased difficulty in staying in shape due to lack of social support, interaction, and accountability, thereby exacerbating elevated self-presentational concerns regarding their appearance. These concerns also limit exercise activity choices and locations (Leary, 1992). The potential
exists that many individuals may be aware of the benefits of exercise and be willing to engage in this behavior, yet may be prevented by their self-presentational anxiety.

Self-presentational motives have the potential to induce exercise behavior, but they may also diminish exercise participation due to the concern about the impressions others might have (Leary, 1992). Some people may want to be seen as physically active while others might exercise to improve or maintain a desired physical appearance. Both women and men are concerned about weight issues, yet exercise had very little effect upon weight satisfaction in Salusso-Dionier and Schwartzkopf's (1991) study. Although both males and females are concerned about weight issues, the concern for each group is different. Silberstein et al. (1988) found that men had a desire to be heavier rather than thinner (such as through gaining muscle mass and losing fat), whereas the majority of women desired to be thinner. Men were more concerned about being underweight while women were more concerned about being overweight.

Those individuals motivated against exercising in a public setting and who are set on exercising alone are disadvantaged from the start of their regime because social support is a key aspect of motivation to adhere to exercise when beginning a program. It has been shown that people are more likely to exercise if they do so with others (Leary, 1992). Although those with high self-presentational concerns dislike evaluation and scrutiny by others, it is true that people tend to exercise harder when others are watching them, and they may improve their performances in order to make a good impression (Leary, 1992).
This has an advantage in improving performance, but also has the potential to cause injury due to over-exertion. People desire to impress others quite often as well as to present themselves in socially desirable ways (Schlenker & Leary, 1982).

Each social interaction carries the prospect of people making judgments of one another. If people judge others, they most likely realize that the potential for being judged themselves is present. Consequently, more concern about being evaluated may occur and bring about feelings of anxiety. People are secure in settings where they are not concerned about others’ evaluations of them or when they believe they will be successful in making an impression (Schlenker & Leary, 1982). This depends upon the person, the setting, and the amount of experience one has with the activity (Dishman, 1991; Wankel, 1993). Someone who feels that he/she lacks skills in the area of weightlifting will most likely feel anxious and uncomfortable, or may discontinue the activity altogether.

Social anxiety takes place when people desire to make certain impressions, but doubt that these impressions will be successful. Similar to having self-presentational concerns, this may cause avoidance of exercise altogether (Leary, 1992). When in a social situation, people tend to prefer to make a desired impression in a given area (i.e., intelligence, attractiveness, humor). Social anxiety occurs when people perceive that they will not make a positive or desirable impression on others (Schlenker & Leary, 1982). People who have a high need for social approval are most likely to be highly motivated to come across well to others. However, as the motivation to impress others
increases, so does the potential for having social anxiety (Schlenker & Leary, 1982). Uncertainty, having low outcome expectancies, low self-esteem, and lack of experience in the activity can increase social anxiety. Familiarity with the exercise setting, which comes about with experience, could be attributed to a reduction in SPA (Bartlewski et al., 1996). It is important to increase self-efficacy, which will increase self-confidence, in regard to exercise activity. Also, increasing the knowledge about benefits associated with regular exercise may improve expectancies for positive outcomes. Self-esteem is somewhat dependent upon satisfaction with the physical self (Salusso-Deonier & Schwartzkopf, 1991). If an individual perceives they are successful at a given activity, their body satisfaction may be increased which will, in turn, reduce social anxiety.

Social physique anxiety may be defined as the anxiety people feel in response to other people’s evaluations of their physiques and may be thought of as an exercise-specific form of self-presentational anxiety (Hart et al., 1989). The experience of this anxiousness may not affect all people. However, due to SPA, those who may need physical activity the most (i.e., overweight and sedentary individuals) may prefer to remain sedentary (McAuley et al., 1995).

Many physical activities take place in public settings. The physique is often emphasized and has the potential to be evaluated by others, and exercise facilities often promote an inherent social comparison process to evaluate regular progress toward fitness and subjective appearance goals. This alone may deter people from participation in an exercise program. Furthermore, SPA may be associated with choice of activity, preferences for physical activity settings, and
level of involvement in physical activity (Crawford & Eklund, 1994; Eklund & Crawford, 1994; Frederick & Morrison, 1996; Lantz et al., 1997; Spink, 1992; & Treasure et al., 1998). SPA may also contribute to commitment to physical activity. Finkenberg et al. (1998) showed that those who had the highest commitment level to physical activity had the lowest level of SPA. On the other hand, high SPA scores were associated with women who had the lowest commitment to activity. It is possible to draw from this study that those who were highly committed to activity were more satisfied with their bodies. McAuley et al. (1995) found that physique anxiety was reduced over time for those involved in a 20-week exercise program. This reduction was more prevalent for women and younger study subjects. Initially, females were more anxious than males, as were younger subjects in comparison to older subjects. Support was found that regular exercise participation was related to reductions in SPA.

In public exercise environments there are often higher amounts of physique comparison. When people exercise, many strive to improve or maintain their physical appearance. Therefore, SPA should be a particularly salient form of social anxiety when exercise is performed in a social setting (Crawford & Eklund, 1994). To support this notion, Spink (1992) found that female exercisers with high SPA preferred to exercise alone at home. The motives behind exercising are different for individuals, and differing levels of SPA affect exercise behaviors and the motives behind them. For example,

Desires to improve or maintain physical appearance through exercise or to construct a certain social identity or image (such as being fit or athletic)
clearly reflects acquisitive self-presentational motives. (Crawford & Eklund, 1994, p. 71)

Those who have high levels of SPA tend to avoid situations where their physique is under the scrutiny of others (i.e., locker rooms, swimming pools), suffer depression, and may attempt to improve their physiques using potentially harmful methods, such as excessive exercise or overdieting (Hart et al., 1989). Both avoidance and withdrawal from situations where anxiety occurs is common, and there is a concern that individuals with high SPA are more likely to remain sedentary (McAuley et al., 1995).

McAuley et al. (1995) performed a study examining the relationship between reductions in body composition and post-exercise program SPA. Subjects who exercised more had lower levels of SPA after the program was over and subjects who had higher body fat percentages and larger waists and hips reported having more SPA. Hart et al. (1989) found that the high SPA women weighed significantly more and had significantly higher percentages of body fat than low SPA women.

Social physique anxiety appears to have differential effects on exercisers. For example, Hart et al. (1989) found that high socially physique anxious women weighed more than low socially physique anxious women, and also had a higher percentage of body fat (Frederick & Morrison, 1996; Spink, 1992). According to Eklund & Crawford (1994), women high in SPA were less likely to prefer coed aerobic classes. This study also found that a higher emphasis on exercising for health reasons was associated with lower levels of SPA. Eklund and Crawford
(1994) found that SPA was correlated with self-presentational reasons for exercise (i.e., body tone, weight control, and improving physical attractiveness). For weight satisfaction, Crawford and Eklund (1994) found that this variable was negatively associated with SPA and those who are overweight are shown to have higher anxiety levels. Also, media images of female exercise attire greatly emphasize the physique (Crawford & Eklund, 1994). In support of this contention, Crawford & Eklund (1994) showed participants two different aerobic exercise session videos. One video showed an aerobics presentation where the class wore shorts and T-shirts; the other video displayed the class wearing typical aerobics fashion attire. Results showed that subjects preferred the shorts and T-shirts attire, which de-emphasized the physique and that there was a strong association between SPA and attitudes toward exercise settings related to the videos. However, Eklund and Crawford (1994) found no significant association between attitudes toward exercise settings and SPA in their study, yet they observed an association between the two when questioning subjects’ preferences for tight- or loose-fitting aerobic clothing.

Older individuals exercise for weight control and management like younger individuals. Furthermore, McAuley et al. (1995) concluded that SPA might be reduced as individuals age because of normative perceptions regarding reduced attractiveness of the body. Although physique anxiety may not affect the older population to a great extent, a negative implication arises in the potential for decreased participation or failing to see the importance in physical activity. Physique-related concerns are natural when fitness is emphasized (Hart et al.,
1989). This may cause some people to avoid physical activity, yet on the other hand, it may increase the motivation of others to exercise in order to improve their physical appearance (Kowalski et al., 2001).

Social Physique Anxiety and Exercise Behavior

Social physique anxiety has great potential to affect exercise behavior and has been related to motivation (Frederick & Morrison, 1996), as well as to exercise behaviors and attitudes (Crawford & Eklund, 1994). A person’s readiness to become physically active is helpful in determining successful participation in physical activity, as is availability of exercise facilities and programs (including worksite-based programs), and gender (Marcus, 1995). Being married and having children can impact women’s activity levels as they often play multiple roles (i.e., parent, employee, spouse).

Women tend to be more socially anxious than males (Lantz et al., 1997; Frederick & Morrison, 1996). However, recent studies have advocated that more research investigate males and other age groups (Martin et al., 1997; Russell, in press). This may be due in part to the sociocultural emphasis placed upon female thinness and appearance (Silberstein et al., 1988). Anxiety regarding the body that affects women may be due to the emphasis that the media places upon the female figure. In regard to differences between SPA levels and age, however, it has become widely accepted that a decline in physical activity occurs as an individual increases in age. Due to decreases in physiological functioning, a
person's perception of his/her body and its ability to perform may become lower as well (Lantz et al., 1997). This normative attitude can be problematic because research has supported that physical activity is important in improving health status, especially in older populations (Brown, 1992).

Favorable evaluations by others are desired because physique is an important aspect of the overall self. Research has shown conflicting results regarding whether SPA is related to lower exercise rates. Frederick & Morrison (1996) found that high SPA individuals reported that they exercised a greater number of days per week, resembling addicted exerciser profiles. These participants also reported lower body competence and were very publicly body conscious. However, Lantz et al. (1997) found that older females with higher levels of SPA had the lowest exercise behavior, meaning that they were less likely to exercise in settings where their bodies might be negatively evaluated.

Self-presentation can be seen as underlying motivated behavior in exercise settings. This may be used to improve or maintain physical appearance or to construct a social identity, such as being fit (Crawford & Eklund, 1994). Self-presentation is related to self-appraisal of one's physique and some are stressed by the potential to be evaluated, while others experience little anxiety. Bartlewska et al. (1996) studied college females enrolled in an aerobic exercise course over a semester and found that SPA decreased from pre- to post-test. This reduction was attributed to familiarity with the exercise setting, which can be a direct result from continued exercise involvement.
Social physique anxiety has been shown to be related to motivation and those who are intrinsically motivated tend to have a more positive attitude toward exercise, allowing potential psychological benefits from exercise to occur, such as enhanced self-esteem and reduced anxiety. However, those who are extrinsically motivated tend to have an attitude of stress and pressure (Frederick & Morrison, 1996). Assessing motivation as one begins an exercise program may be helpful in specifying a program to meet the needs of the individual. Perhaps this would help to foster continued involvement, which may reduce anxiety in time.

Just as people have different preferences for exercise activities, they also do so for location of physical activity. Those with high SPA levels may select exercise situations where evaluation is minimized (Spink, 1992), and may prefer to exercise at a gender-specific facility or at home in a private setting. Spink (1992) found that high SPA women preferred to exercise more in a private setting. Frederick & Morrison (1996) also showed people higher in SPA had higher body weight than low SPA scorers. Due to being heavier, women were most likely to be dissatisfied and less confident about their bodies, and this has the potential to increase physique anxiety in a social setting, as well as to decrease overall exercise adherence rates. Different exercise environments have the potential to play a role in reducing anxiety. Exercise appears to have a positive effect upon anxiety reduction, and would seem to be a wise choice for those suffering from SPA. Finding the appropriate environment for each individual is the key to being successful.
In summary, a number of physical and psychological variables have been shown to be associated with, and even predictive of, SPA. These include: high body mass index, high body fat percentage, younger age, high weight, and low commitment to exercise. Learning how these variables relate to individuals of different age groups and exercise facilities can be useful in increasing exercise adherence rates as well as in knowing how to work specifically with individuals in order to decrease social physique anxiety levels.
CHAPTER III

METHODS

The purpose of this study was to compare adult females across various age groups, body mass index classification, and exercise facilities on levels of social physique anxiety, reasons for exercise, and exercise adherence rates over an 8-week period.

Subjects

The target population for this study included 47 females 30 years old and above who were current members of the following exercise programs: the Eastern Illinois University Adult Fitness Program (AFP), which promotes strength training with free weights and machines, as well as aerobic exercise such as walking and swimming; Curves for Women, an all-female fitness facility offering circuit weight training; and the Sarah Bush Lincoln Health Center (SBLHC) Employee Wellness Program, which offers aerobics and toning classes, as well as weight training and cardiovascular equipment. The final sample included 47 females, including 14 AFP members, 19 Curves patrons, and 14 SBLHC Wellness members. Subjects ranged in age from 32-81 years and were divided into two age categories of 30-50 and 51+. 
Measures

Subjects gave their voluntary informed consent prior to initiating participation in the study. The informed consent included a brief description of the study, subject responsibilities, contact information, procedures, and a statement of opportunity to withdraw from participation in the study at any time (Appendix A).

Information obtained from each subject included self-reported gender, age, exercise history, and current exercise frequency as measured by average number of days per week the subject engaged in aerobic exercise (Appendix B).

Social Physique Anxiety Scale

The Social Physique Anxiety Scale (SPAS) is a 12-item self-report inventory (Appendix C) that measures how anxious people become when others observe or evaluate their physiques (Hart et al., 1989). The scale was developed in order to study the effect that anxiety can have upon exercise perceptions and behaviors. When originally developed by Hart et al. (1989), the SPAS showed high internal (.90) and test-retest reliability (.82). However, Eklund, Mack, & Hart (1996) tested factorial validity of the Social Physique Anxiety Scale with females and indicated that it be tested across both genders and with older samples. Recent studies (Crawford & Eklund, 1994, Eklund et al., 1996) have found that item Number 2 on the Social Physique Anxiety Scale, “I would never worry about wearing clothes that might make me look too thin or overweight”, has a very low item-total correlation due to the negative wording of the item. Therefore, this
item has been rephrased to read, “I would worry about wearing clothes that might make me look too thin or overweight” (Eklund & Crawford, 1994, p. 434; Hart et al., 1989). The responses for each question number from 1 (not at all) to 5 (extremely) in how characteristic the statement is to each individual. The Social Physique Anxiety Scale is scored by summing the number correlating to each response together for a single global score, which will range from 12-60. A higher global score indicates a higher level of social physique anxiety.

**Reasons for Exercise Inventory**

The Reasons for Exercise Inventory (REI) (Appendix D) was developed by Silberstein et al. (1988) to measure different motivations toward exercise behavior. The REI contains seven subscales that assess multidimensional reasons for exercising and contains health-related and self-presentational reasons for exercise. The responses for each subscale are added together for a total of seven separate scores: exercising for weight control, for fitness, for health, for improving body tone, for improving overall physical attractiveness, for improving one’s mood, and for enjoyment. A higher score for a specific subscale indicates that subscale to be a greater reason for exercise as perceived by each individual. The categories can be divided into self-presentational reasons for exercise (i.e., weight control, improving body tone, and improving overall physical attractiveness) and health reasons for exercise (i.e., fitness, health, and improving mood).
Procedures

Before data collection, permission for performing the study was requested from each exercise facility supervisor. Adult Fitness Program participants were approached by the investigator and asked to volunteer their participation, and study packets were available for pick-up during morning fitness sessions. An informational sheet was posted at Curves and a sign up sheet was made available for those patrons interested in participating; those who signed up received packets, while extra packets were available for others who refrained from signing up. Study packets were distributed to random departments at Sarah Bush and were also made available during aerobics and yoga sessions. Those who agreed to participate completed a packet containing demographic information, informed consent, the SPAS, and the REI. Adult Fitness Program members were instructed to return their packets on Monday, Wednesday, or Friday mornings when they came to exercise. These packets were given to the principal investigator or to other Adult Fitness staff members. Participants who attended the all-female facility returned their completed packets to staff members at the facility, which were then collected by the principle investigator. Sarah Bush Lincoln Health Center wellness members returned their packets to either the wellness director or to the principal investigator. Survey order was counterbalanced to prevent a response bias and inventories were number coded in order to preserve participant anonymity. Adherence at each program facility was tracked over an 8-week period by examination of daily attendance logs.
A post-experimental assessment of adherence patterns was obtained by the principle investigator upon the conclusion of the 8-week study period through e-mail, telephone, and paper/pencil response (Appendix F). This assessment gave each participant an opportunity to give reasons for lack of attendance at exercise sessions, such as for illness or injury. In addition, all study participants had their height (recorded to the nearest \(\frac{1}{4}\) inch) and weight (recorded to the nearest tenth of a pound) measured so that body mass index (BMI) could be calculated (by taking weight in kg divided by height in meters squared) and subjects' BMI could be classified into the following categories: Underweight < 18.5 kg/m\(^2\); Normal = 18.5-24.9 kg/m\(^2\); Overweight = 25.0-29.9 kg/m\(^2\); Class I Obesity = 30.0-34.9 kg/m\(^2\); Class II Obesity = 35.0-39.9 kg/m\(^2\); and Extreme Obesity = 40.0+ kg/m\(^2\) (National Heart, Lung, and Blood Institute, 1998).

Adult Fitness Program participants had their exercise attendance and time recorded in a log book by Adult Fitness staff members after each exercise session. At the gender-specific facility, participants signed in each time they attended an exercise session. The principal investigator monitored adherence rates for these women each week by using the same method that was used for the Adult Fitness members. Exercise adherence for members of the Sarah Bush Lincoln Health Center Employee Wellness program was monitored through examination of their monthly wellness cards. Days where aerobic exercise occurred were recorded on the Exercise Adherence Log (Appendix E).
Data Analysis

In order to test the first hypothesis that females with higher SPA and BMI would report greater self-presentational reasons for exercise and lower adherence than females with low SPA and BMI, a 2 x 4 (SPA level x BMI classification) MANOVA was performed with SPA (median split) and BMI classification as independent variables, and REI subscale scores and 8-week attendance rates as dependent variables. Significant MANOVA effects were followed up by univariate ANOVAs to test significances on each dependent variable. In order to test the hypothesis that females across exercise facility and age cohort would differ on SPA, REI, and attendance, a 3 x 2 (facility x age group) MANOVA was performed using facility (all-female facility, worksite facility, adult fitness program) and age group (30-50, 51+) as independent variables and SPA, REI, and program attendance as dependent variables. It was hypothesized that younger females (31-50) at the gender-specific facility would report higher SPA and greater self-presentational reasons for exercise, and that program attendance and health-related reasons for exercise would be highest in the Adult Fitness facility. It was predicted that those exercising at the gender-specific facility would tend to be more anxious about their physiques because they felt less comfortable exercising at a coed facility where perceived evaluation of their bodies would occur from the opposite gender. Many of the Adult Fitness Program members have been exercising in the program for years, and this familiarity may have had the potential to reduce their SPA levels, and furthermore, exercising for health reasons may be more specific to these individuals.
At the end of the 8-week data collection period a post-experimental assessment of adherence patterns to verify reasons for low adherence was obtained for qualitative examination of why exercise adherence may have differed. An a priori alpha level of significance of $p < .05$ was adopted for all tests.
CHAPTER IV

RESULTS

The purpose of this study was to compare adult females across various age groups, body mass index classification, and exercise facilities on levels of social physique anxiety, reasons for exercise, and exercise adherence rates over an 8-week period.

Subject Characteristics

Current members of the Eastern Illinois University Adult Fitness Program, Curves for Women, and the Sarah Bush Lincoln Health Center Employee Wellness Program took part in this study. For the Adult Fitness Program, 27 packets out of 50 were taken during the morning fitness session. Out of these, 15 were returned and one was not used as it was completed by a male, for an overall response rate of 52%. At Sarah Bush, 67 packets were sent to wellness members in various departments, while 33 were left for random pick-up by aerobics/yoga participants. Out of these, 16 were returned; two could not be included in the data analysis as one female was under 30 years of age, and the other female terminated her employment during the data collection period. The overall return rate was 14%. At Curves a sign-up sheet was posted for those interested in participating in the study. Out of 31 who signed up, 20 packets were returned. Three of these
were under the age of 30 and were not used as part of the data, for a return rate of 55%. Subjects ranged in age from 32-81 (M = 53.87, SD ± 13.23) and were divided into two age categories of 30-50 and 51+. Mean age for the younger group was 41.95 years (SD ± 6.05), and mean age for the older group was 63.5 years (SD ± 8.78). For the Adult Fitness Program, Curves for Women, and the Sarah Bush Lincoln Health Center Employee Wellness Program, age results were as follows: M = 63.29 years, SD ± 8.92; M = 54.53 years, SD ± 13.92; M = 43.57 years, SD ± 7.83, respectively. Since previous SPA studies have focused primarily on young females, the present study sought to extend findings to older female populations.

Means and standard deviations were calculated for study variables to examine differences across independent variables. Means and standard deviations for SPA across exercise facility are displayed in Table 1. A one-way ANOVA on SPA was performed across age groups, which indicated a significant difference across age on SPA (F (1, 46) = 5.26, p < .05). Follow-up tests indicated that SPA scores were significantly higher among younger females (M = 37.57, SD ± 11.62) compared to older females (M = 31.19, SD ± 7.33). In regard to facility, mean SPA scores for Adult Fitness, Curves, and SBLHC were 32.43 (SD ± 7.1), 34.26 (SD ± 10.34), and 35.36 (SD ± 12.00), respectively. Raw data and complete statistical analysis results can be seen in Appendix G.

Body mass index was examined in the present study. There were 18 subjects classified as Normal BMI with a mean result of 22.83 m/kg² (SD ± 1.6). The mean SPA score for this group was 30.11 (SD ± 6.8). The Overweight
classification consisted of 21 subjects. The mean BMI was 27.55 m/kg^2 (SD ± 1.4). For this group, the mean SPA score was 35.29 (SD ± 11.6). Seven subjects made up the Class I Obesity classification for BMI, which showed a mean score of 31.71 m/kg^2 (SD ± 1.1). The mean for SPA was 38.86 (SD ± 8.5) for those in this classification. Only one subject fell into the Class III Obesity category. Her BMI was 49.92 and SPA score was 45. Both health-related and self-presentational reasons for exercise were assessed by the Reasons for Exercise Inventory (Silberstein et al., 1988). REI subscale means and standard deviations are shown in Table 2.

Table 1
Social Physique Anxiety Means and Standard Deviations for Females Across Exercise Facility

<table>
<thead>
<tr>
<th>Facility</th>
<th>Age (Years) M ± SD</th>
<th>SPA M ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFP (n = 14)</td>
<td>63.29 (8.92)*</td>
<td>32.43 (7.10)</td>
</tr>
<tr>
<td>Curves (n = 19)</td>
<td>54.53 (13.92)</td>
<td>34.26 (10.34)</td>
</tr>
<tr>
<td>SBLHC (n = 14)</td>
<td>43.57 (7.83)</td>
<td>35.36 (12.00)</td>
</tr>
</tbody>
</table>

*Standard deviations are in parentheses.
### Table 2

**Means and Standard Deviations for Reasons for Exercise Across Exercise Facility**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Weight Control</th>
<th>Fitness</th>
<th>Mood</th>
<th>Health</th>
<th>Attractiveness</th>
<th>Enjoyment</th>
<th>Tone</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFP</td>
<td>13.93</td>
<td>23.36</td>
<td>18.14</td>
<td>26.14</td>
<td>10.57</td>
<td>11.93</td>
<td>13.21</td>
</tr>
<tr>
<td></td>
<td>(3.91)*</td>
<td>(3.43)</td>
<td>(3.28)</td>
<td>(3.23)</td>
<td>(3.72)</td>
<td>(5.20)</td>
<td>(4.14)</td>
</tr>
<tr>
<td>Curves</td>
<td>15.53</td>
<td>23.05</td>
<td>16.79</td>
<td>24.79</td>
<td>11.26</td>
<td>9.79</td>
<td>14.84</td>
</tr>
<tr>
<td></td>
<td>(3.12)</td>
<td>(4.67)</td>
<td>(4.50)</td>
<td>(3.77)</td>
<td>(4.48)</td>
<td>(4.45)</td>
<td>(4.07)</td>
</tr>
<tr>
<td>SBLHC</td>
<td>15.07</td>
<td>22.00</td>
<td>19.00</td>
<td>23.43</td>
<td>11.86</td>
<td>11.43</td>
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<td></td>
<td>(3.34)</td>
<td>(3.90)</td>
<td>(5.26)</td>
<td>(4.07)</td>
<td>(4.15)</td>
<td>(3.65)</td>
<td>(4.93)</td>
</tr>
</tbody>
</table>

*Standard deviations are in parentheses.

Exercise adherence was tracked over an eight-week period and average weekly attendance rates for each facility are shown in Figure 1. After the 8-week data collection period, a follow-up question was asked to each participant in regard to reasons why exercise attendance may have been interrupted (i.e., vacation, illness, injury, etc.). The majority of subjects reported no changes in exercise behavior, however several subjects gave reasons for missed attendance including minor injuries (n = 6), sickness (n = 3), vacation (n = 6), lack of time (n = 7), and working outdoors (n = 3). Only two subjects did not exercise at all during the 8 weeks due to a herniated disc and laziness, respectively. This information was valuable in distinguishing between effects of social physique anxiety, BMI results, and reasons for exercising upon attendance versus being sick, injured, or on vacation.
The Effect of Social Physique Anxiety and BMI on Reasons for Exercise and Exercise Adherence

It was examined whether there was a significant difference in reported reasons for exercise and adherence rates across high socially physique anxious and high body mass index subjects in comparison to low socially physique anxious and low body mass index subjects. Specifically, those who had high SPA and BMI were hypothesized to report greater self-presentational reasons for exercise and to have lower adherence rates than those with lower SPA and BMI. In order to test this hypothesis, a 2 x 4 (SPA level and BMI) MANOVA was performed on the dependent variables of exercise attendance (weekly attendance rate) and reasons for exercise subscale scores. A median split technique was used to partition subjects into high and low SPA groups (median SPA score = 32), therefore SPA scores below 32 were classified as low SPA group while subjects who scored 32 or above were classified as high SPA subjects. Results of the overall 2 x 4 MANOVA indicated a nonsignificant overall multivariate interaction on REI subscales and weekly average attendance, Wilk’s lambda = .67, $F$ (16, 66) = .90, $p = .57$. 
Figure 1

Average Weekly Attendance Rates for Adult Fitness Members, Curves Patrons, and Sarah Bush Lincoln Health Center Employee Wellness Members
Results also revealed a nonsignificant multivariate main effect for body mass index (Wilk’s lambda = .63, $F(24, 96) = .70, p = .84$), and a nonsignificant multivariate main effect for SPAS category (Wilk’s lambda = .77, $F(8, 33) = 1.23, p = .31$). Multivariate tests were followed up with univariate ANOVAs to examine the differences across SPA level and facility on individual REI scores and adherence, separately. There was a main effect for BMI classification that approached significance ($F(3, 46) = 2.77, p = .05$) for tone on the REI. Examination of REI means indicated that exercising for improvement of tone was more important for normal BMI females ($M = 15.61, SD \pm 3.50$) and Class I obese females ($M = 15.57, SD \pm 3.21$) compared to overweight females ($M = 12.29, SD \pm 4.73$). There were no other significant univariate interactions or main effects for SPA level and facility on adherence or individual reasons for exercise at the $p < .05$ significance level. Therefore, hypothesis one was not supported in the current sample in that social physique anxiety and body mass index did not differentially affect self-presentational reasons for exercise or exercise adherence rates across an 8-week period.

Facility and Age Effects on SPA, Reasons for Exercise, and Exercise Adherence

It was examined whether females exercising at three different facilities and two age cohorts would display significant differences on the dependent variables of social physique anxiety, reasons for exercise, and average weekly attendance. In order to test this hypothesis, a $3 \times 2$ (facility x age group)
MANOVA was performed using SPA, reasons for exercise, and average weekly attendance rates as dependent variables. Results from this MANOVA revealed a nonsignificant overall multivariate interaction (Wilk’s Lambda = .76, $F_{(18, 66)} = .53$, $p = .93$), indicating that facility and age did not interact to differentially affect the dependent variables. MANOVA results also indicated nonsignificant main effects for age group (Wilk’s Lambda = .82, $F_{(9, 33)} = .81$, $p = .61$) and facility (Wilk’s Lambda = .74, $F_{(18, 66)} = .59$, $p = .89$).

Follow-up univariate ANOVAs were performed to determine the effects of age and facility on each individual dependent variable within this hypothesis. Results of univariate ANOVAs revealed a significant main effect for age group on REI attractiveness ($F_{(1, 46)} = 5.17$, $p < .05$). A post-hoc Tukey’s Studentized Range Test was significant ($F_{(1, 46)} = 5.40$, $p < .05$) indicating that younger females exercised more for attractiveness reasons ($M = 12.71$, $SD = 3.78$) compared to older females ($M = 10.04$, $SD = 4.04$). Figure 2 displays age cohort comparisons for SPA, BMI, attendance, and REI subscales. In addition, there was a significant univariate main effect for age on SPA ($F_{(1, 46)} = 4.82$, $p < .05$). A follow-up Tukey’s Studentized Range Test was significant ($F_{(1, 46)} = 5.26$, $p < .05$) indicating that younger females had significantly higher SPA levels ($M = 37.57$, $SD = 11.62$) compared to older females ($M = 31.19$, $SD = 7.33$). Finally for REI mood improvement, the main effect for age group approached significance ($F_{(1, 46)} = 3.94$, $p = .05$). Inspection of age group means indicated that younger females perceived mood improvement to be a more important reason for exercise than older females.
Figure 2

Comparisons Across Age Groups (30-50, 51+) Among Mean Social Physique Anxiety, Body Mass Index (m/kg$^2$), Weekly Attendance Rates (days/week), and Reasons for Exercise Inventory Scores

*significant at p .05 level.
*approached significance p = .05.
While not part of the original hypothesis, Figure 1 shows adherence rates by facility across the 8-week period. While there was a nonsignificant main effect for facility on average weekly attendance, this figure indicates a trend for higher adherence rates at the gender-specific facility, contrary to originally hypothesized. However, the gender-specific facility is opened more hours and days per week for exercise than both the adult fitness program and the worksite fitness facility, which may explain why higher adherence rates were reported. In addition, Figure 3 shows study variable means across facility on SPA, BMI, adherence and REI subscales. Pearson-Product nominal correlations were calculated for study variables and separated by age group within Tables 3 and 4. Examination of variable intercorrelations across age allowed for examination of the relative relationship among study variables for younger and older females.

As can be seen by inspection of the correlations in Tables 3 and 4, the subscales for the REI were much more significantly correlated for younger females compared to older females, with the only REI subscales significantly related being health and fitness. The significant correlation between SPA and tone supports the significant finding that younger females exercised for self-presentational reasons more than older females. Finally, with the current sample, BMI was not significantly correlated with SPAS in either age group.
Figure 3

Comparisons Between Adult Fitness, Curves, and Sarah Bush Lincoln Employees on Mean SPA, BMI, Adherence, and REI Domain Scores
Table 3

Intercorrelations for Study Variables for Younger Females

<table>
<thead>
<tr>
<th></th>
<th>SPAS</th>
<th>BMI</th>
<th>Attend.</th>
<th>Weight</th>
<th>Fitness</th>
<th>Mood</th>
<th>Health</th>
<th>Attract.</th>
<th>Enjoy.</th>
<th>Tone</th>
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</thead>
<tbody>
<tr>
<td>SPAS</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
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<td>-</td>
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<td></td>
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<tr>
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<td>.02</td>
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<tr>
<td>Mood</td>
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<td>.35</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
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<td>.19</td>
<td>.15</td>
<td>.34</td>
<td>.56*</td>
<td>.61*</td>
<td>.61*</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Attract.</td>
<td>.31</td>
<td>.21</td>
<td>.14</td>
<td>.26</td>
<td>.52*</td>
<td>.67*</td>
<td>.63*</td>
<td>.63*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoy.</td>
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<td>.25</td>
<td>-.12</td>
<td>-.04</td>
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<td>.72*</td>
<td>.41</td>
<td>.69*</td>
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<tr>
<td>Tone</td>
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<td>.21</td>
<td>.65*</td>
<td>.50*</td>
<td>.56*</td>
<td>.70*</td>
<td>.57*</td>
<td>.35</td>
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</table>

*significant correlation, p < .05
### Table 4

**Intercorrelations for Study Variables for Older Females**

<table>
<thead>
<tr>
<th></th>
<th>SPAS</th>
<th>BMI</th>
<th>Attend.</th>
<th>Weight</th>
<th>Fitness</th>
<th>Mood</th>
<th>Health</th>
<th>Attract.</th>
<th>Enjoy.</th>
<th>Tone</th>
</tr>
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<tbody>
<tr>
<td>SPAS</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<tr>
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<tr>
<td>Fitness</td>
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<td>-.39*</td>
<td>.01</td>
<td>-.10</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood</td>
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<td>.25</td>
<td>-.16</td>
<td>.24*</td>
<td></td>
<td></td>
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<td>.76*</td>
<td>.07</td>
<td></td>
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<tr>
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<td>-.05</td>
<td>.24</td>
<td>.11</td>
<td>.23</td>
<td>.09</td>
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<tr>
<td>Enjoy.</td>
<td>-.22</td>
<td>-.13</td>
<td>.06</td>
<td>.04</td>
<td>.38</td>
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</tr>
<tr>
<td>Tone</td>
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<td>-.43*</td>
<td>-.27</td>
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<td>-.39</td>
<td>.28</td>
<td>.22</td>
<td>.30</td>
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</tbody>
</table>

*significant correlation, p < .05
CHAPTER V

DISCUSSION

The purpose of this study was to compare adult females across various age groups, body mass index classification, and exercise facilities on social physique anxiety, reasons for exercise, and exercise adherence rates over an 8-week period. Adult females were compared because the majority of previous studies done on SPA have been comprised of college-age females. A total of 47 females from the Eastern Illinois University Adult Fitness Program, Curves for Women, and the Sarah Bush Lincoln Health Center Employee Wellness Program took part in the study. Mean scores from the Social Physique Anxiety Scale, Reasons for Exercise Inventory, body mass index, and weekly exercise attendance were compared in relation to age group and facility in order to test directional hypotheses.

Hypothesis One

The differences between reasons for exercise and adherence rates between females of high and low social physique anxiety and body mass index classification were examined to test the first hypothesis. It was hypothesized that those with higher SPA and BMI would report greater self-presentational reasons for exercise and have lower adherence rates than those with lower SPA and BMI.
This hypothesis was largely unsupported, showing no significant differences between the two groups with the exception of BMI and tone approaching significance. Tone is a self-presentational reason for exercise and it could be inferred from the results that one with a higher BMI exercises to a large extent in order to improve body tone. No other significant results for SPA level and BMI were found for reasons for exercise and adherence rates.

Results from this study do not concur with findings from Hausenblas & Mack (1999), who found that SPA scores were significantly lower among divers versus athletic and nonathletic control groups, using body mass index as a covariate. Furthermore, Diehl et al. (2000) found that body mass does indeed influence SPA, which in turn affects protective self-presentational motives and protective self-presentational behaviors. When looking at BMI classifications in the present study, 39 of 47 subjects could be classified as normal or overweight (n = 18, n = 21, respectively). Therefore, the sample may not have included enough females with high physiological indices of body mass for this to reflect lower adherence rates or different reasons for exercise; this may also have accounted for the lack of relationship between SPA and BMI. As women get older, there is the potential for becoming more accepting of a higher fat percentage, which then has less impact on motivating exercise and does not increase self-presentational reasons for exercise. Also, previous exercise history was not controlled; in order to control this, it would have been better to select exercisers who had been previously exercising for the same amount of time. It may be that females with higher BMI might report greater health related reasons
for exercise to reduce health risks associated with high body fat. The subject sample in the present study was low (N = 47) and because multivariate analyses were performed using a large number of variables, the lack of a large enough sample size to have enough statistical power may have affected results.

Eklund & Crawford (1994) found SPA to be correlated with self-presentational reasons for exercise while studying females in the exercise setting. Crawford & Eklund (1994) found that three of the seven REI subscales were significantly correlated with SPA in that females with higher SPA reported greater self-presentational reasons for exercise. The current study found no relationship. However, Crawford & Eklund's (1994) subjects were young (M = 20.8 years) healthy females who exercised at much higher rates. It seems that there were no strong relationships between SPA and REI in the current study because females were less sensitive regarding their physique as there was no significant correlation between BMI and SPA. There is agreement that fitness was correlated with SPA, but for older females, health was also significantly correlated with SPA. Current correlations also concur that self-presentational reasons for exercise appear to be more important in predicting SPA for younger females (30-50) compared to older females (51+). However, it was found that SPA was not significantly related to reasons for exercise. Finkenberg et al. (1998) also found significant relationships between SPA and exercise behavior, in that high SPA scores were associated with the lowest commitment levels to physical activity. In contrast to Finkenberg et al.'s study, Frederick & Morrison (1996) found that those who had high SPA scores exercised more days per week
than those with low SPA scores. For the present study, there was no significant overall main effect for SPA category and BMI classification on REI and attendance. It may be that as females age, they may be motivated to exercise with greater levels of obesity than women in the current study since very few could be classified as obese.

Hypothesis Two

The second hypothesis stated that females across three exercise facilities and in the two age-group categories (30-50, 51+) would significantly differ on their social physique anxiety, reasons for exercise, and attendance rates during the 8-week data collection period. Results from the 3 x 2 MANOVA showed a significant main effect for age group on SPA, indicating younger females had higher levels of SPA (M = 37.57, SD ± 11.62) than older females (M = 31.19, SD ± 7.33). This result is consistent with findings from Treasure et al. (1998) who found that SPA was likely to decrease with advancing age; their study examined SPA in predicting exercise adherence in older females and also found that middle-age participants had lower SPA levels and exercised more frequently than younger subjects. McAuley et al. (1995) studied physique anxiety and exercise in middle-aged adults and found that younger subjects had higher levels of physique anxiety when compared to older subjects. Initial physique anxiety was used as a covariate in the analysis because changes in SPA before and after the 20-week exercise program study period may have been significant in determining reasons
for exercise. Furthermore, Lantz et al. (1997) found a relationship between SPA and frequency of exercise behavior in that older females with higher SPA were lowest in exercise behavior. Although Lantz et al.'s (1997) findings showed that older females can possess higher SPA levels, this was not found in the present study, nor was there a relationship found between SPA level and exercise adherence. The current study supports that older females may be more disinterested in how others view their body, but that SPA may still be an important perceptual adherence variable for middle-age females. No differences were observed across age and facility on adherence rates, which may be explained in that the majority of subjects had been exercising on a regular basis with less than a one-month break for at least one year (n = 36). This extensive exercise experience may have resulted in lowering SPA, supporting findings from McAuley et al. (1995), and improving overall adherence rates among subjects. Past activity history and experience increase both self-efficacy and competence in performing an activity (Dishman, 1991), thereby positively affecting adherence rates within the exercise setting.

Results for the Reasons for Exercise Inventory in relation to age group approached significance for mood improvement. Younger females were more likely than older females to exercise for this reason. Furthermore, there was a significant main effect for age group upon exercising for attractiveness as females in the younger group exercised significantly more for attractiveness reasons in comparison to the older group. These results support the notion that younger females exercise more for self-presentational reasons (Silberstein et al., 1988) and
report significantly higher social physique anxiety levels (Treasure et al., 1998; McAuley et al., 1995). However, no other significant differences were observed in relation to attendance rates in the present study. There was also no significant overall multivariate main effect for facility or age group on SPA, REI, and attendance rates.

**Follow-Up Question on Adherence Rates**

Upon conclusion of the study, each subject was asked whether anything affected her regular exercise attendance during the 8-week study period. Results were encouraging in that the majority of subjects were consistent in their exercise attendance. Improvements in exercise frequency can always be made, yet consistency is important. For those who gave reasons for exercise being interrupted, this was true for only a short time, and exercise was resumed as soon as possible. Few significant findings were discovered in the data analysis; this could be attributed to the subjects’ exercise consistency. Overall weekly attendance means for the younger (M = 3.04) and older (M = 2.70) females indicated that they were fairly regular in exercise attendance. It is hoped that those who exercise regularly are intrinsically motivated to do so, and that they also exercise for enjoyment. Self-presentational reasons for exercise may not have affected the women in the current study due to this. Exercising for a significant amount of time also brings about physical benefits (increased muscle
tone, weight loss, etc.); therefore, anxiety about physique may not have been as detrimental in affecting exercise attendance rates.

**Limitations**

There were several limitations from the data collected within the current study that may have accounted for the lack of significant findings. The largest limitation was the low response rate at each facility. This may have been due to a response bias, in that those females who had high SPA chose not to participate after reading through the packet. Part of the subjects' responsibilities included having their height and weight measured by the principle investigator. It is possible that the prospect of having this done also deterred people from participating. Finally, the low response rate may have been due to a design issue. Subjects took the packets home to complete in their own time. It might have improved the response rate if the investigator was able to be present in order to explain the study in more detail as well as to answer any questions they came up.

Another limitation may have been due to those initially possessing high levels of social physique anxiety. The mean score for SPA among all participants was 34.04 (SD ± 9.9). The highest score one can receive on the SPAS is 60. Only four subjects scored 50 or greater. Making comparisons between mean SPA scores in previous studies to the current study showed: McAuley et al. (1995) found that mean pre-program SPAS scores by age group were as follows: 45-49: \( M = 43.00 (SD \pm 10.80) \); 50-54: \( M = 41.50 (SD \pm 4.97) \); 55-59: \( M = 37.17 (SD \)
± 5.27); 60-64: M = 33.92 (SD ± 5.96); Crawford & Eklund's (1994) mean SPA score was 40.12 (SD ± 9.75); Frederick & Morrison (1996) divided SPA scores into low and high groups with mean scores of 30.1 (SD ± 3.3) and 40.2 (SD ± 3.6), respectively. Therefore, SPA scores in the present study did not strongly differ from those in previous studies. Those with extremely high SPA scores may not be involved in regular exercise programs, especially those taking place in open social situations. Lack of higher SPA subjects may have limited the study results as well. When examining the overall mean of SPA (M = 34.04, SD ± 9.91), the current group may have been relatively low in SPA compared to previous samples.

The current study examined exercise attendance specific to the facility each female attended. The results did not take into account any additional aerobic activity that may have occurred outside the facility setting, or previous exercise experience of the subjects. While assessment of adherence rates was started at the same point, some females had been involved in regular exercise for longer periods of time than others, as examined in the demographic information sheet. Consequently, both SPA and adherence levels may have been affected. Furthermore, SPA may have influenced both the intensity and duration of workouts of participants. This may have limited results as greater exercise involvement has the potential to reduce SPA levels, yet the study focused upon differences between facilities in regard to study variables.

Two other factors need to be considered as well: 1) The REI has shown some weak psychometrics as Crawford & Eklund (1994) reported that the
enjoyment subscale was .65 (internal consistency) which means that inter-item correlations may not be as high as they should be; 2) An assumption was made that females exercising at Curves would have higher SPAS and would show greater self-presentational anxiety because they feel uncomfortable about their physical appearance in the presence of the opposite sex, thereby explaining why Curves was chosen for an exercise facility. However, this may not have been the case at the time they were being assessed; when in a gender-specific setting, their self-presentational concerns would be reduced.

Recommendations for Future Study

Future study in this area should attempt to include a much larger number of subjects from each facility that is being examined to increase the accuracy and reliability of the results. Also, it would be important for the investigator to be present as inventories are filled out; questions could be answered much more easily and this might help to increase the number of participants as well. In addition, it may be beneficial to monitor the volume of all aerobic activity whether it takes place within or outside the particular program. Extra activity has the potential to affect adherence rates and may help to explain the relationship between SPA, BMI, and REI scores more accurately. Finally, it would be useful to examine exercisers who are all at the same exercise experience (i.e., all starting structured exercise at the same time), and to assess not only weekly exercise
frequency, but other exercise variables potentially influenced by SPA such as intensity and duration.

Conclusions

The current study found the following:

1. Exercising for improvement of body tone was shown to be more important for normal BMI females and Class I obese females compared to overweight females.

2. Younger females were found to exercise more for attractiveness reasons in comparison to older females.

3. Younger females had significantly higher SPA levels compared to older females.

4. Younger females perceived mood improvement to be a more important reason for exercise than older females.

Few significant relationships were discovered between the study variables of SPA, BMI, REI, facility, age group, and adherence rates in the current study. However, significant observations, such as between SPA and age group, were supported by previous literature (Treasure et al., 1998; McAuley et al., 1995). Social physique anxiety levels did not relate to self-presentational reasons for exercise or negatively influence attendance rates in the current study. The study population was older than typical college-age females that have been studied in the past. Therefore, results could be expected to differ from previous research.
findings. There is a broad area of research that can be examined when studying an older age group. Learning more about how the variables studied here interrelate has the potential to improve fitness program designs, thereby affecting participation and adherence rates. The lack of significance for the impact of SPA on adherence indicates that self-presentational anxiety may be less of a problem in older females and that exercise professionals should focus on developing self-efficacy for exercise in older female populations.
REFERENCES


exercise. Poster presented at the annual meeting of the Association for the Advancement of Applied Sport Psychology, Nashville, TN.


APPENDIX A – Informed Consent
APPENDIX A

Informed Consent

Principal Investigators: Colleen Vandever and Dr. William Russell (Thesis Advisor)

Subject involvement in this study is voluntary.

Participation in the study will consist of:

A. Filling out a Demographic/Background Information sheet.
B. Filling out two pencil and paper inventories to assess anxiety and reasons for exercise.
C. Having my weight and height measured by the principal investigator.
D. Signing an exercise attendance sheet for each session I attend, and/or filling out my Wellness Card (for Sarah Bush Lincoln Wellness members).
E. Returning to the principal investigator or director of the appropriate fitness facility my completed packet.
F. Filling out a post-experimental assessment of adherence patterns.

All responses will be kept confidential and subjects will be identified by number when results are calculated.

If at any time a subject desires to withdraw from the study, this request will be granted.

Should questions or concerns arise at any time during the study, the subject should contact the principle investigator, Colleen Vandever, who can be reached at (217) 348-5997, or her thesis advisor, Dr. William Russell, who can be reached at (217) 581-2418.

______________________________
I have read the above description of the research study and wish to be involved as a subject. I understand the responsibilities of my involvement.

______________________________  ______________________________
Signature of Participant   Date
APPENDIX B – Demographic Information
APPENDIX B

Demographic Information

Please take time to complete the following background information:

**GENDER – please circle response**

1. Male  Female

**DATE OF BIRTH – please include month, day, and year**

2.

**EXERCISE HISTORY**

3. How long have you exercised on a regular basis with no more than a one month break?

4. What type of exercise activity do you take part in? (i.e. walking, jogging, swimming, weight training, etc.). Please list all if more than one applies.

5. How many days do you exercise per week?

6. How much time do you spend during each exercise session?
APPENDIX C – SPAS
APPENDIX C

**SPAS**

Social physique anxiety can be described as the anxiety one experiences when it is perceived that others are evaluating his/her physique. Please rate the degree to which the following statements are characteristic of you. Answer each item in an honest manner.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Very</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I am comfortable with the appearance of my physique/figure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>I would worry about wearing clothes that might make me look too thin or overweight.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>I wish I wasn’t so uptight about my physique/figure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>When I look in the mirror I feel good about my physique/figure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>Unattractive features of my physique/figure make me nervous in certain social settings.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>In the presence of others, I feel apprehensive about my physique/figure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>I am comfortable with how fit my body appears to others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>It would make me uncomfortable to know that others were evaluating my physique/figure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>When it comes to displaying my physique/figure to others, I am a shy person.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>I usually feel relaxed when it is obvious that others are looking at my physique/figure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>When in a bathing suit, I often feel nervous about the shape of my body.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
APPENDIX D

REI

People exercise for a variety of reasons. When people are asked why they exercise, their answers are sometimes based on the reasons they believe they should have for exercising. What we want to know are the reasons people actually have for exercising. Please respond honestly to the items below by circling the number that corresponds to your answer. 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:

<table>
<thead>
<tr>
<th>Not at all important</th>
<th>Extremely important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Name:

EXERCISE PARTICIPATION LOG

WEEK 1

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
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<th>Saturday</th>
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WEEK 2

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WEEK 3

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WEEK 4

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WEEK 5

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<th>Saturday</th>
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WEEK 6

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<th>Sunday</th>
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WEEK 7

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<th>Sunday</th>
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<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
</table>

WEEK 8

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
APPENDIX F – Post-Experimental Assessment of Adherence
APPENDIX F

Post-Experimental Assessment of Adherence Patterns

During the past 8 weeks, has there been anything that has kept you from regular exercise participation (such as sickness, injury, travel, etc.)? If so, please explain to the extent that you are comfortable in sharing.

Thank you.
APPENDIX G – Raw Data
options linesize=79;
/* This data set is for Colleen Vandever's Thesis. This project is examining the relationship between level of social physique anxiety, body mass index on reasons for exercise and exercise adherence. A second focus of this project is to whether facility type and age have an effect on social physique anxiety, reasons for exercise, and exercise adherence. There are two primary hypotheses. The first hypothesis is that females with higher SPA will report greater self-presentational reasons for exercise and lower adherence rates. The second hypothesis is there will be significant differences in SPA, reasons for exercise, and adherence rates across age group and exercise facility.*/

01-02 subject number
04 exercise facility (1=Sara Bush, 2=EIU, 3=Curves)
06 subject age group (1=30-50, 2=51+)
08-09 subject age
11-15 subject BMI
17-20 weekly attendance
22-23 social physique anxiety score
25-26 REI weight control
28-29 REI fitness
31-32 REI mood
34-35 REI health
37-38 REI attractiveness
40-41 REI enjoyment
43-44 REI tone
46 BMI classification (1=underweight <18.5, 2=normal 18.5-24.9, 3=overweight 25.0-29.9,
4=class I obesity 30.0-34.9, 5=class II obesity 35.0-39.9, 6=extreme obesity 40.0+)
*/

data colleen;
input subj 1-2 facil 4 agegr 6 age 8-9 BMI 11-15 attend 17-20 SPAS 22-23 REIweight 25-26
   REIfit 28-29 REImood 31-32 REIhealth 34-35 REIatt 37-38 REIenjoy 40-41 REItone 43-44 BMIClass 46;
if SPAS<=33 then SPAScore=1;
if SPAS>=34 then SPAScore=2;
label subj = 'subject'
   facil = 'exercise facility'
   agegr = 'age group category'
   age = 'subject age'
   BMI = 'body mass index'
   attend = 'weekly average attendance'
   SPAS = 'social physique anxiety'
   REIweight = 'weight concern'
   REIfit = 'fitness'
   REImood = 'mood improvement'
   REIhealth = 'health'
   REIatt = 'attractiveness'
   REIenjoy = 'enjoyment'
   REItone = 'tone'
   BMIClass = 'BMI classification';
proc format;
   value SPASscore 1='low social physique anxiety' 2='high social physique anxiety'.
proc means data=colleen;
   var age BMI attend SPAS REIweight REIfit REImood RELhatt RElenjoy RELitone;
proc sort; by agegr;
proc means; by agegr;
   var age BMI attend SPAS REIweight REIfit REImood RELhatt RElenjoy RELitone;
proc sort; by facil;
proc means; by facil;
   var age BMI attend SPAS REIweight REIfit REImood RELhatt RElenjoy RELitone;
proc sort; by BMImclass;
proc means; by BMImclass;
   var age BMI attend SPAS REIweight REIfit REImood RELhatt RElenjoy RELitone;
proc univariate;
   var SPAS;
proc corr;
   var age SPAS BMI attend REIweight REIfit REImood RELhatt RElenjoy RELtone;
proc sort; by agegr;
proc corr; by agegr;
   var SPAS BMI attend REIweight REIfit REImood RELhatt RElenjoy RELtone;
proc sort; by facil;
proc corr; by facil;
   var SPAS BMI attend REIweight REIfit REImood RELhatt RElenjoy RELtone;
proc sort; by SPASscore;
proc corr; by SPASscore;
   var age BMI attend REIweight REIfit REImood RELhatt RElenjoy RELtone;
proc glm data=colleen;
title'hypothesis 1-2 x 4 MANOVA on REI scores and attendance';
class SPASscore BMImclass;
model attend REIweight REIfit REImood RELhatt RElenjoy RELtone = SPASscore BMImclass
   SPASscore*BMImclass;
MANOVA H = SPASscore;
MANOVA H = BMImclass;
MANOVA H = SPASscore*BMImclass;
proc glm data=colleen;
title'hypothesis 2-3 x 2 MANOVA on SPA, REI, and attendance';
class facil agegr;
model SPAS attend REIweight REIfit REImood RELhatt RElenjoy RELtone = facil agegr
   facil*agegr;
MANOVA H = facil;
MANOVA H = agegr;
MANOVA H = facil*agegr;
proc glm data=colleen;
class BMImclass;
model RELtone = BMImclass;
means BMImclass / tukey;
means BMImclass;
proc glm data=colleen;
  class agegr;
  model RELatt = agegr;
  means agegr / tukey;
  means agegr;

proc glm data=colleen;
  class agegr;
  model SPAS = agegr;
  means agegr / tukey;
  means agegr;