

**SELF-PRESENTATION AND PHYSICAL ACTIVITY IN YOUNG WOMEN:  
THE ROLE OF SOCIAL PHYSIQUE ANXIETY AND  
PHYSICAL SELF-PERCEPTIONS**

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By

Nanette P. Kowalski

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## ABSTRACT

The purpose of this research was to assess the relationships among social physique anxiety, physical self-perceptions, and level of physical activity involvement in young women. Subjects were 354 female undergraduate students at a Canadian university who completed the Social Physique Anxiety Scale (SPAS), Physical Self-Perception Profile (PSPP), Self-Administered 7-Day Physical Activity Recall Questionnaire (PAR), and Leisure Time Exercise Questionnaire (LTEQ). Pearson product-moment correlation analysis indicated that scores of social physique anxiety had weak, but significant, negative relationships with scores for recent physical activity (PAR,  $r = -.16$ ) and typical physical activity (LTEQ,  $r = -.16$ ). Social physique anxiety was correlated with all of the physical self-perceptions, but only self-perceptions of body attractiveness accounted for significant variance in social physique anxiety scores. All of the physical self-perceptions were significantly related to physical activity levels, although results indicated that self-perceptions of conditioning were the only physical self-perceptions to account for significant variance in the prediction of physical activity levels. Hierarchical regression analyses showed weak moderator effects for the self-perceptions of general physical self-worth, strength, and body attractiveness on the relationships between social physique anxiety and both recent and typical physical activity levels. However, the moderator effects were so weak that the practical significance of these results was negligible. The moderator models with the significant moderator effects accounted for between 4% and 14% of the variance

in physical activity level, with the moderator effects accounting for only 1.0% to 1.6% of additional variance beyond the direct effects of social physique anxiety and the physical self-perceptions. The results of this study suggested that the effect of social physique anxiety, whether through direct or interaction effects with physical self-perceptions, on the physical activity levels of young women was negligible. In addition, the results of this study supported the structure of the PSPP model, suggesting that the PSPP is a valuable instrument for measuring self-perceptions in the physical domain.

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## DEFINITIONS

**Self-presentation:** refers to the processes by which people control how they are perceived and evaluated by others (Leary & Kowalski, 1990).

**Social anxiety:** anxiety resulting from the prospect or presence of personal evaluation in real or imagined situations (Schlenker & Leary, 1982).

**Social physique anxiety:** anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one's physique (Hart, Leary, & Rejeski, 1989).

**Physique:** refers to the body's form and structure, particularly its proportions, percent body fat, and muscle tone (Hart et al., 1989).

**Self-perceptions:** "an umbrella term that denotes all types of self-referent statements about the self, from those that are global to those that are specific in content" (Fox, 1997, p. xii).

**Physical self-perceptions:** self-referent statements about the self in the physical domain (Fox, 1997).

## CHAPTER 1

### 1.1 INTRODUCTION

Relatively little research has examined the influence that self-presentational concerns have on health-related behaviours (Leary, Tchividjian, & Kraxberger, 1994). However, because the “body and its appearance have become a focal point of social interaction, sexuality, functionality, and health” in our society (Fox, 1997, p. 123), researchers have begun to study how self-presentational concerns about one’s body and the anxiety that results from these concerns (social physique anxiety) may be associated with health-related behaviours (i.e., dietary practices, drug use, physical activity). The effect of social physique anxiety on physical activity behaviour is of particular interest to practitioners in the physical activity and sport domains. It is hypothesized that people’s behaviour within these two domains is often influenced by self-presentational constructs such as social physique anxiety (Biddle, 1997; Hart, Leary, & Rejeski, 1989; Leary, 1992).

This study examined the relationships among social physique anxiety, physical self-perceptions, and level of involvement in physical activity. It has been proposed that some individuals who experience high levels of social physique anxiety may avoid participating in physical activities because of their concerns about other’s impressions of their physiques (Hart et al., 1989; Leary, 1992). However, other individuals who experience social physique anxiety may be motivated to participate in physical activities in behavioural attempts to improve their physiques and lower the anxiety they experience. Research thus far has

provided inconsistent results as to the relationship between social physique anxiety and level of involvement in physical activity (Crawford & Eklund, 1994; Frederick & Morrison, 1996; Lantz, Hardy, & Ainsworth, 1997; Treasure, Lox, & Lawton, 1998). Studying the interrelationships among social physique anxiety and important theoretical constructs within the physical activity domain will help to clarify the social physique anxiety - physical activity level relationship (Eklund & Crawford, 1994; McAuley & Burman, 1993). Given the salience of physical self-perceptions in influencing physical activity and sport behaviour, this study assessed the associations among social physique anxiety, physical self-perceptions, and physical activity level. In particular, this study assessed whether physical self-perceptions moderated the relationship between social physique anxiety and level of physical activity involvement.

If physical self-perceptions were found to moderate the relationship between social physique anxiety and physical activity involvement, perhaps practitioners within physical activity and exercise settings could attempt to provide physical activity environments that not only minimize the amount of social evaluation, but that also enhance the participants physical self-perceptions. This may influence individuals with higher levels of social physique anxiety to feel comfortable being physically active in social settings.

## **1.2 REVIEW OF THE LITERATURE**

### **1.2.1 Self-presentation and Social Anxiety**

Self-presentation refers to how people attempt to monitor and control the impressions that other people form of them (Leary, 1992; Schlenker & Leary, 1982). Self-presentation is an essential aspect of social interaction because the impressions that people convey influence how they are perceived, evaluated, and treated by others (Leary & Kowalski,

1990). As a consequence of the importance of self-presentation as a mode for social influence, relatively few aspects of human behaviour are unaffected by self-presentational motives (Leary, 1995).

When people doubt their abilities for achieving their self-presentational goals they are likely to experience social anxiety (Leary & Kowalski, 1995). Social anxiety is defined as “anxiety resulting from the prospect or presence of personal evaluation in real or imagined situations” (Schlenker & Leary, 1982, p. 642). Based on the self-presentational perspective, the degree to which an individual will experience social anxiety is a function of two factors (Leary, 1995; Leary & Kowalski, 1995). The first factor is the individual’s level of impression motivation. Impression motivation is the degree to which the individual is motivated to present desirable impressions (Leary, 1995). A number of variables influence one’s level of impression motivation including: standards for self-presentation, importance placed on meeting the self-presentational standards, perceived value of the desired self-presentational outcomes, level of public self-awareness, evaluative salience of the social setting, and the number and characteristics of other people in the social setting (Leary & Kowalski, 1995; Schlenker & Leary, 1982). The second factor that influences one’s level of social anxiety is self-presentational efficacy (Leary, 1995). Self-presentational efficacy is the perceived probability of self-presentational success. Variables that might influence one’s self-presentational efficacy include: the uncertainty, novelty, or ambiguity of the social situation, the attributes of the other people in the situation, and evaluation of one’s own self-presentational resources (Leary & Kowalski, 1995).

The relationship between self-presentation and social anxiety is represented by Leary (1995) as:

$$SA = M \times (1 - p) \quad (1.1)$$



SA = amount of social anxiety experienced

M = level of impression motivation

p = perceived probability of self-presentational success

Social anxiety should not occur when a person is either not motivated to make a desired impression ( $M = 0$ ) or believes that the desired impression will be successfully created ( $p = 1$ ; Leary & Kowalski, 1995). On the other hand, if an individual is motivated to present a particular impression ( $M = \text{greater than } 0$ ) and has self-presentational doubts about his/her ability to project the desired image ( $p = \text{less than } 1$ ), social anxiety will likely occur. The higher the level of motivation and the lower the self-presentational efficacy the greater the amount of social anxiety.

Although one may interpret social anxiety to be a uniformly negative phenomenon, it is important to understand that when viewed from a self-presentational perspective, social anxiety can have both positive and negative aspects (Leary, 1995). A positive aspect of social anxiety is that it helps to keep people's behaviour within socially desirable limits. For example, people who are never concerned with other's perceptions and about making undesired impressions are more likely to behave inappropriately and be perceived as selfish, egocentric, unlikeable, and so on, and thus fare quite poorly in life (Leary, 1995; Leary & Kowalski, 1995). On the other hand, social anxiety can take on negative aspects if people's self-presentational concerns become excessive. People who are overly concerned with the impressions that they convey may experience personal distress (i.e., self-doubt, feelings of inadequacy, self-blame) and engage in behaviours that might not be in their best interests (i.e., sunbathing, alcohol and tobacco use; Schlenker & Leary, 1982; Leary, 1995).

Researchers have identified five kinds of social situations in which social anxiety is commonly experienced (Leary & Kowalski, 1995). These situations are characterized by

a high probability of interpersonal evaluation and involve interpersonal communication, interactions with the opposite sex, tests, sport performance, or encounters in which physical appearance is salient. Because the situational factors which precipitate the social anxiety differ, researchers have labelled the anxiety that results in these situations as speech anxiety, heterosexual anxiety, test anxiety, sport performance anxiety, and social physique anxiety, respectively.

Generally, each type of social anxiety results in similar physiological, cognitive, affective, and behavioural responses (Leary & Kowalski, 1995). People who are socially anxious often experience increases in heart rate, respiration, muscle tension, and sweating. Cognitive and affective responses that might be experienced include apprehensive thoughts, dwelling on the negative, feeling nervous or tense, or experiencing negative emotions (Leary & Kowalski, 1995). Typically, common behavioural responses that result from social anxiety include avoidance, withdrawal, and engagement in “remedial” behaviours (Leary & Kowalski, 1995). Avoidance preempts the possibility of making undesired impressions and withdrawal limits the amount of social contact. Both strategies lower the chance of making undesired impressions and serve to reduce the amount of social anxiety experienced. “Remedial” behaviours are behaviours that are perceived to repair the damage done to one’s image from previous undesired impressions (Baumeister & Leary, 1995). Remedial behaviours that typically accompany episodes of social anxiety include apologies, verbal explanations of behaviour, or prosocial behaviour (Leary & Kowalski, 1995). People who are socially anxious might also engage in various remedial behaviours on a more regular basis (as a result of their self-presentational concerns) because they perceive these behaviours will help them convey the impressions they desire. For example, self-presentational concerns about physical appearance have been shown to influence people’s

dietary and physical activity behaviours (Leary et al., 1994). People might restrict their dietary intakes or participate in physical activities in attempts to improve their physical appearances and increase the probability of conveying desired impressions about their appearances.

### **1.2.2 Social Physique Anxiety**

It is not surprising that people experience anxiety related to the self-presentation of their physiques due to the high value and societal emphasis placed on physical appearance (Wilfley & Rodin, 1995). Physical appearance is a readily available source of information about a person and research has shown that other people do form impressions based on an individual's level of physical attractiveness (Cash, 1990; Leary & Kowalski, 1995). People who are perceived as being physically attractive are "viewed as being happier, more successful, smarter, more interesting, warmer, more poised, and more sociable" than individual's perceived as unattractive (Cash, 1990, p. 53). Because a significant determinant of the cultural ideal of attractiveness is maintaining an attractive physique (Davis, 1997; Rodin, 1993), many people are likely to experience concern over the self-presentation of their physiques, and thus social physique anxiety. Specifically, social physique anxiety has been defined as "anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one's physique" (Hart et al., 1989, p.96).

People predisposed to experiencing social physique anxiety are likely to perceive situations in which the physique can be scrutinized, is emphasized, or is on display as threatening to self-presentation (Hart et al., 1989). Physical activity and sport domains are often perceived as self-presentationally threatening. The potential for self-presentation of the physique and thus the potential for experiencing social physique anxiety in these

domains is relatively high because the majority of physical and sport activities occur in public settings (Crawford & Eklund, 1994; Hart et al., 1989). Furthermore, it is likely that the emphasis on the development of the physical self in physical activity and sport domains would serve to influence the amount of social physique anxiety experienced.

Due to the social nature and significance of the physical self in physical activity and sport domains, researchers have proposed that social physique anxiety is likely to influence physical activity behaviour (Crawford & Elkund, 1994; Frederick & Morrison, 1996; Hart et al., 1989). Some individuals with high levels of social physique anxiety may avoid participating in physical activities as a result of their concerns about the self-presentation of their physiques (Hart et al., 1989). However, other individual's who are high in social physique anxiety may be motivated to engage in physical activities as remedial behaviours, with intentions to improve or maintain their physical appearances through physical activity participation and thus decrease their social physique anxiety.

In an attempt to understand the influence of social physique anxiety on behaviour in the physical activity domain, Hart et al. (1989) developed the Social Physique Anxiety Scale (SPAS). The SPAS is a trait measure of self-presentational anxiety that is related to the physique. It is a unidimensional scale that measures a combination of physique-related concerns and fear of negative evaluation, both of which conceptually represent the construct of social physique anxiety (Martin, Rejeski, Leary, McAuley, & Bane, 1997). Adequate support for the psychometric properties of the SPAS has been established (Hart et al., 1989; Martin et al., 1997; McAuley & Burman, 1993).

### **1.2.3 Social Physique Anxiety Research in the Physical Activity Domain**

Researchers have used the SPAS to investigate how social physique anxiety might

be associated with cognitions and behaviour in the physical activity domain. Although few studies have been conducted, evidence suggests that social physique anxiety may be associated with choice of activities, reasons for participating in physical activity, preferred 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). For example, Frederick and Morrison (1996) found that individuals with higher social physique anxiety scores reported a preference for engaging in fitness-type activities (ie., weight machines, running) rather than individual or team sports. They also found that individuals who scored high in social physique anxiety reported greater body appearance motivation (ie., reasons related to physical attractiveness, body tone, weight control) for participating in physical activity than individuals who scored low in social physique anxiety. It was hypothesized that fitness-type activities may be preferred by people high in social physique anxiety because fitness-type activities are better suited to enhancing physical appearance than sport activities, and thus may help lower social physique anxiety more effectively. These results support the notion that some socially physique anxious people may engage in physical activities as remedial behaviours.

In addition to influencing people's preference for the type of activities they engage in and their reasons for participating, research also suggests that social physique anxiety may be related to one's preference for the type of physical activity setting. Spink (1992) found that women who scored higher in social physique anxiety preferred exercising in private settings (i.e., at home) rather than public settings (i.e., clubs or community centres). This would be expected as it is assumed that people who score high in social physique anxiety would prefer to be physically active in settings where their physiques could not be evaluated. However, if people who score high in social physique anxiety prefer to be active in private

settings, does this restrict the number of activities that they are able to participate in and lead to lower levels of overall participation in physical activity?

Research that has examined the relationship between social physique anxiety and level of involvement in physical activity has been sparse and has yielded inconclusive results. Crawford and Eklund (1994) found that the disposition to be socially physique anxious was not related to either the frequency (number of days per week exercised) or duration (number of minutes per day and minutes per week exercised) of physical activity behaviour in a sample of 104 female undergraduate students (18-25 years old). However, it was suggested that these results be interpreted with caution because the sample was, on average, quite an active group and no validity information was provided for the self-report instrument they used to measure physical activity level.

Frederick & Morrison (1996) also examined the relationship between social physique anxiety and physical activity level. Their sample was composed of 326 male and female members of a college fitness centre who ranged in age from 17 years to 48 years (mean = 20.6 years). Physical activity levels were measured by self-reported adherence to one's primary physical activity (ie., hours and days per week typically engaged in their primary physical activity). Results suggested that people who had higher levels of social physique anxiety reported a greater number of days per week that they participated in physical activity relative to people who had lower levels of social physique anxiety. However, the variance accounted for in social physique anxiety scores by days per week of activity was only 2%. In addition, the number of hours per week of physical activity were not significantly different between the high and low scorers, although the mean of the high scorers (6.8 hours) was higher than the mean of the low scorers (6.6 hours). The results of this study suggest that social physique anxiety is not strongly associated with physical activity level, as

measured by frequency and amount of physical activity. Nonetheless, the results should be interpreted with caution because validity data was not reported for the physical activity measure that was used. Also, a limitation of the study was that the analysis was not conducted separately for males and females and the effect that gender might have on the social physique anxiety - physical activity level relationship was not discussed. This may be important to examine due to previous results that suggest that women's scores for social physique anxiety are consistently higher than men's scores for social physique anxiety (Hart et al., 1989; Lantz et al., 1997; Martin & Mack, 1996).

In attempts to more fully understand the relationship between social physique anxiety and physical activity level two studies have explored whether there are variables that moderate the social physique anxiety - physical activity relationship. Lantz et al. (1997) examined the influence of gender, age, and depression as moderator variables of the social physique anxiety - physical activity level relationship. Their sample consisted of 300 males and females who ranged in age from 18 years to 60 years ( $m = 25.7$  years). The majority of subjects were university students (64%), while the remainder of subjects were from a variety of occupational backgrounds. It should be noted that this study was the only study to report using a validated physical activity questionnaire, the Minnesota Heart Health Physical Activity Questionnaire. Therefore, there was greater confidence that physical activity was being accurately measured with this study when compared with the other studies that have examined social physique anxiety and physical activity levels. Interestingly, results indicated that social physique anxiety scores were significantly related to physical activity levels for men ( $r = -.26, p < .05$ ) but not for women ( $r = -.12, n.s.$ ). No reasons were given as to why this gender difference may have occurred. To determine whether gender, age, and depression moderated the social physique anxiety - physical activity level relationship

hierarchical multiple regression was run with the entire sample. Results showed that social physique anxiety, gender, and age accounted for a combined variance of 14.86% in physical activity levels, but the variance was due to the direct effects of these variables on physical activity levels and not from significant moderator effects. Thus, social physique anxiety, gender, and age were independently related to physical activity levels but the interactions among these variables were not related to physical activity levels.

The second study to examine possible moderator variables of the social physique anxiety - physical activity level relationship was by Treasure et al. (1998). They examined whether physiological variables (ie., resting heart rate, body mass index, volume of oxygen consumption, body fat percentage) and age moderated the social physique anxiety - physical activity level relationship in 31 sedentary, obese women (mean age = 38 years). Hierarchical multiple regression analysis was used to test whether there were significant interactions among social physique anxiety, the physiological variables, and age that were related to physical activity levels. Although none of the physiological variables acted as moderator variables, results did support a weak moderating effect of age on the social physique anxiety - physical activity level relationship. The authors concluded that social physique anxiety appeared to be a more prominent determinant of frequency of physical activity participation in younger obese women (< 45 years old) than in older obese women (> 45 years old). However, the small sample size in this study might have restricted the variance of the variables resulting in lower correlations among the variables (Diekhoff, 1992). Restricted variance would make the regression equation sample specific because the sample correlations would not adequately reflect the population correlations.

Results of the studies that have examined social physique anxiety and level of involvement in physical activity have found either nonsignificant or weak relations between



social physique anxiety and physical activity level. These results may be partially attributed to the diverse samples used in the studies (i.e., from young active students to older obese females) and to the physical activity measures that were used (i.e., how valid were the physical activity measures?). It appears that further research is required.

The relationship between social physique anxiety and level of physical activity participation may be further understood by examining the interrelationships among social physique anxiety and important theoretical constructs within the physical activity domain (Eklund & Crawford, 1994; McAuley & Burman, 1993). In particular, it may be useful to examine physical activity constructs that might moderate the relationship between social physique anxiety and level of physical activity participation. Moderator variables affect the direction and/or the strength of the relation between two variables and are often introduced when weak or inconsistent relations appear to exist between two variables (Baron & Kenny, 1986). Perhaps there are constructs in the physical activity domain that act to moderate the relationship between social physique anxiety and physical activity behaviour (i.e., influencing people who experience social physique anxiety to either avoid or participate in physical activities). Based on speculation by Biddle (1997) that interrelationships among self-presentational factors and physical self-perceptions may influence behaviour in the physical activity domain, physical self-perceptions were proposed to moderate the relationship between social physique anxiety and level of physical activity behaviour. Examination of physical self-perceptions as moderator variables may yield information that helps to clarify the relationship between social physique anxiety and physical activity level.

#### **1.2.4 Physical Self-Perceptions**

Self-perceptions is “an umbrella term that denotes all types of self-referent statements

about the self, from those that are global to those that are specific in content” (Fox, 1997, p. xii). Self-perceptions are generally considered to be multidimensional and hierarchical, with more general and enduring self-perceptions at the top of the hierarchy and more specific and malleable self-perceptions towards the bottom (Marsh, 1997). At the apex of the hierarchy is the construct of global self-concept, which is a person’s self-description and evaluation of who they are (Marsh, 1997). Global self-concept is formed through the input of self-perceptions in different domains (i.e., social, emotional, academic, physical). Of interest to this study are self-perceptions in the physical domain. General perception of one’s self in the physical domain is labelled physical self-concept or physical self-worth. Physical self-worth is influenced by a number of self-perceptions in the physical domain. These self-perceptions are considered subdomain self-perceptions and are subordinate to physical self-worth. Typically, the subdomain self-perceptions involve perceptions of competence and adequacy in the physical domain (Marsh, 1997). Fox and Corbin (1989) have identified four subdomains of self-perceptions that appear to capture the salient self-perception content of the physical domain. These four subdomains include self-perceptions of physical condition, strength, sport competence, and body appearance.

In an attempt to test the proposed hierarchical and multidimensional structure of self-perceptions in the physical domain, Fox and Corbin (1989) developed the Physical Self-Perception Profile (PSPP). The PSPP is a self-administered questionnaire that is based on the Physical Self-Perception Profile model (i.e., domain self-perceptions of physical self-worth subsumed by subdomain self-perceptions of physical condition, strength, sport competence, and body attractiveness; see Figure 1.1). Each self-perception domain/subdomain is represented by a separate scale. The scales are composed of items that assess a range of perceptions including process (acquisition/maintenance), product

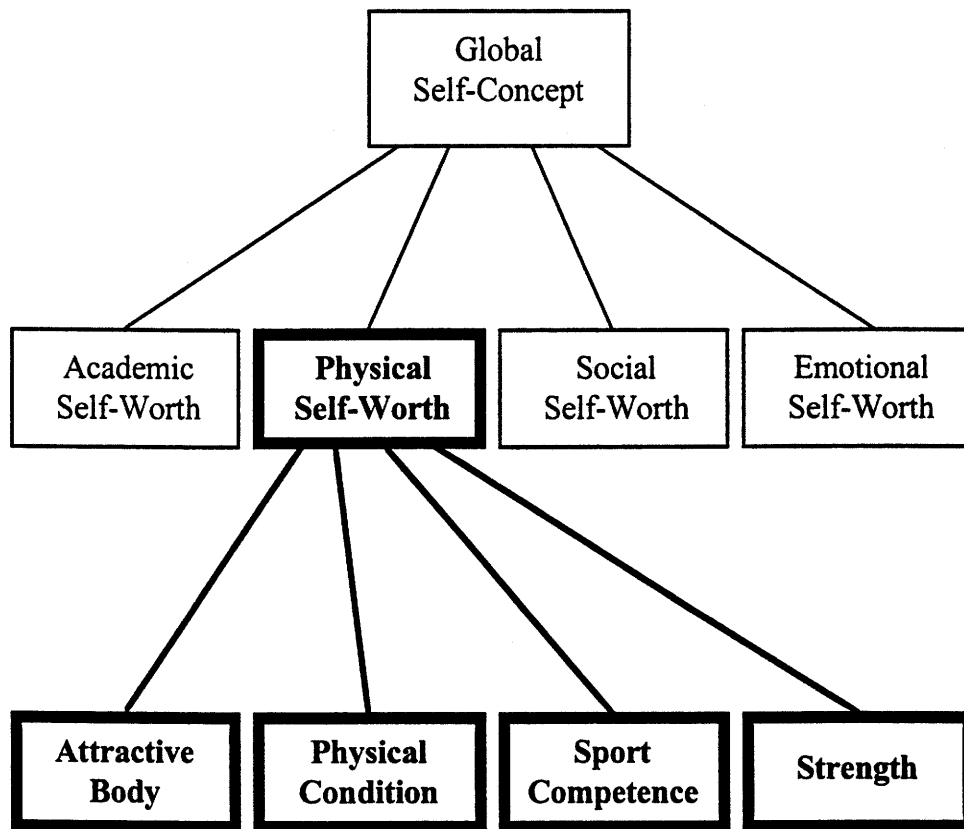


Figure 1.1 The Physical Self-Perception Profile Model

(competence/adequacy), and confidence (self-presentation) perceptions in the physical domain. Although the subdomain scales assess a range of perceptions, the physical condition, sports competence, and strength scales are generally considered to assess competence self-perceptions, whereas the body attractiveness component assesses physical appearance perceptions (Fox, 1997). All of the subdomain components measure independent but correlated constructs that combine to explain a high percentage of variance in physical self-worth (Fox & Corbin, 1989).

The PSPP has become a popular instrument used in physical activity research due to the importance of physical self-perception components to many theories and models of physical activity and sport behaviour (i.e., Fox & Corbin, 1989; Hayes, Crocker, & Kowalski, in press; Page, Ashford, Fox, & Biddle, 1993; Sonstroem, Speliotis, & Fava, 1992). Results have shown that people's physical self-perceptions are relevant to their physical activity behaviour. For example, the PSPP subdomain self-perceptions appear to be closely associated with the types of activities that people engage in. Fox and Corbin (1989) found that perceptions of sports competence were linked with participation in ball sports for both men and women. They also found that perceptions of physical conditioning were linked to women's participation in calisthenic and aerobic activities.

Results have also shown that the PSPP subdomain scales of physical conditioning, sports competence, and physical strength are capable of discriminating between high and low physical activity participation for both men and women (Fox & Corbin, 1989; Page et al., 1993; Sonstroem et al., 1992). In particular, the subdomain scale of physical conditioning has consistently been reported to be the strongest predictor of physical activity involvement, suggesting that self-perceptions of physical conditioning are the most reflective of physical activity level in both men and women (Fox & Corbin, 1989; Hayes et al., in press;

Sonstroem et al, 1992). In fact, Hayes et al. (in press) found that perceptions of physical conditioning were the only physical self-perceptions to be related to physical activity levels in women. It should be noted that the Hayes et al. study was the only study to provide evidence for the validity of the physical activity measure that they used (Leisure Time Exercise Questionnaire; Godin & Shephard, 1985).

### **1.2.5 Physical Activity Assessment**

Accurate and valid assessment of physical activity is essential when examining the relations among theoretical constructs and physical activity behaviour. Most of the studies that have examined the relationship between social physique anxiety and physical activity level have not reported evidence for the validity of their physical activity measures. Furthermore, many of the studies that have examined the relations among the physical self-perceptions and physical activity behaviour have also failed to report validity data for the physical activity measures that were used. It has been proposed by Marsh and Johnson (1994) that the weak relationships found between physical activity measures and other variables may be the result of problems in the assessment of physical activity levels.

Physical activity questionnaires are often the instrument of choice when measuring physical activity levels. Questionnaires are typically practical, applicable, and accurate (reliable and valid; Kriska & Caspersen, 1997).

Questionnaires that have been developed assess either recent or typical involvement in physical activity. Questionnaires that assess recent physical activity behaviour often ask participants to recall the physical activities they have participated in over the last one, three, or seven days. Recent physical activity measures are less vulnerable to recall bias, but are less likely to reflect usual levels of physical activity involvement (Kriska & Caspersen,

1997). Questionnaires that assess typical physical activity levels often assess a person's physical activity behaviour over a long period of time (i.e., 1 month or 3 months) or ask the respondents to report usual physical activity participation. It has been suggested that the best estimate of physical activity level results from assessing both recent and typical physical activity levels (Kriska & Caspersen, 1997).

A variety of questionnaires have been developed to measure recent and typical physical activity levels (Kriska & Caspersen, 1997). The Self-Administered 7-Day Physical Activity Recall Questionnaire (PAR; Miller, Freedson, & Kline, 1994) and the Leisure Time Exercise Questionnaire (LTEQ; Godin & Shephard, 1985) are two such instruments. The PAR assesses recent physical activity levels by measuring the participants' levels of participation in occupational, leisure, and home activities over the last seven days. The LTEQ assesses typical physical activity levels by measuring the amount of leisure-time physical activity that the participants typically engage in over a seven day period. This study used both the PAR and LTEQ to assess physical activity levels.

### **1.3 STATEMENT OF THE PURPOSE AND HYPOTHESES**

The purpose of this study was to assess the relationships among social physique anxiety, physical self-perceptions, and level of physical activity involvement in young women.

#### **1. Primary hypothesis**

The physical self-perceptions were expected to moderate the relationship between social physique anxiety and level of physical activity involvement. Therefore, it was expected that the relationship between social physique anxiety and physical activity level

would differ depending on the levels of the physical self-perceptions. Specifically, it was expected that at all levels of social physique anxiety women with higher physical self-perceptions would have higher levels of physical activity involvement than women with lower physical self-perceptions. Furthermore, it was expected that level of social physique anxiety would have no effect on the physical activity levels of women with higher physical self-perceptions. This was expected because it was hypothesized that although women with higher physical self-perceptions might also have high social physique anxiety, their positive physical self-perceptions would motivate them to stay as physically active as women who were lower in social physique anxiety or even motivate them to be more physically active (ie., possibly using physical activity as a remedial behaviour to decrease their social physique anxiety). In addition, it was expected that a negative relationship would exist between social physique anxiety and physical activity levels for women with lower physical self-perceptions. The reasoning behind this hypothesis was that women who have lower physical self-perceptions and low social physique anxiety might have lower levels of physical activity involvement because they are not as attracted to participating in physical activities and perhaps not as motivated by self-presentational concerns to participate in physical activities. However, women who have lower physical self-perceptions yet have high social physique anxiety might have even lower levels of physical activity involvement. Not only might they be less attracted to participating in physical activity, but they may avoid certain physical activities in attempts to limit the exposure of their physiques to social evaluation.

2. Secondary hypotheses included:

- a) The Physical Self-Perception scales were expected to be related to levels of

physical activity involvement.

b) The Physical Self-Perception Model was expected to be internally consistent and the four subdomain scales were expected to be significant predictors of physical self-worth.

#### **1.4 ASSUMPTIONS**

It was assumed that the subjects answered the self-report questionnaires honestly.

#### **1.5 DELIMITATION**

Generalizability of the results is limited to female undergraduate populations.

#### **1.6 LIMITATIONS**

1. There was a lack of control over standardizing the conditions in which the subjects completed the questionnaires.
2. The subjects were self-selected into the sample due to the voluntary nature of the study.



## **CHAPTER 2**

### **2.1 METHOD**

#### **2.1.1 Subjects**

The subjects were 354 female undergraduate students who ranged in age from 18 to 24 years (mean = 20.25, SD = 1.7) and were enrolled at the University of Saskatchewan. The students were recruited from courses offered by the colleges of Agriculture, Arts and Science, Nursing, and Kinesiology. Students were recruited from courses offered by a variety of colleges in an attempt to get a sample that was representative of the female undergraduate population at the University of Saskatchewan.

#### **2.1.2 Measures**

##### **2.1.2.1 Social Physique Anxiety Scale (SPAS)**

The SPAS is a 12-item self-report scale developed by Hart et al. (1989) to assess the degree of anxiety an individual experiences as a result of perceived observation or evaluation of his/her physique. The items are presented on a 5-point Likert scale and respondents are asked to indicate the degree to which the statements are characteristic or true of them (not at all, slightly, moderately, very, and extremely). The items are summed to give a total social physique anxiety score. Total scores range from 12 to 60 with 12 representing a low level of social physique anxiety and 60 representing a high level of social physique anxiety.

Evidence suggests that the SPAS demonstrates adequate internal consistency (alpha

= .87 - .93) (Bartlewski et al., 1996; Crawford & Eklund, 1994; Eklund & Crawford, 1994; Hart et al., 1989; McAuley & Burman, 1993; Petrie, Diehl, Rogers, & Johnson, 1996) and test-retest reliability over an eight week period ( $r = .82$ ) (Hart et al., 1989) with adult female populations. Construct validity for the SPAS with female undergraduate populations has been demonstrated as scores of social physique anxiety have been found to be moderately correlated with measures that assess people's general concerns with others' evaluations including: fear of negative evaluation ( $r = .47$ ), interaction anxiousness ( $r = .40$ ), and public self-consciousness ( $r = .30$ ; Hart et al., 1989), and physical self-presentational confidence ( $r = -.69$ ; Martin & Mack, 1996). Social physique anxiety scores have also been shown to be correlated with measures relevant to weight and appearance concerns including: weight satisfaction ( $r = .58$ ), body size satisfaction ( $r = .78$ ), body tone ( $r = .51$ ), physical attractiveness ( $r = .37$ ; Crawford & Eklund, 1994), body cathexis ( $r = -.58$ ; Hart et al., 1989), body mass index ( $r = .28$ ) and concern about body size and shape ( $r = .79$ ; Petrie et al., 1996). Criterion-related validity was demonstrated by Hart et al. (1989) who found that individuals with high scores of social physique anxiety reported they were less comfortable, experienced more stress, and had more frequent negative thoughts regarding their bodies during physical evaluations than individuals who scored low in social physique anxiety (Hart et al., 1989). Correlational results with the Marlowe-Crowne Social Desirability Scale show minimal social desirability bias for the SPAS for female undergraduate samples ( $r = -.003$ ; Hart et al., 1989) and ( $r = -.005$ ; Petrie et al., 1996).

Upon recommendations by Martin et al. (1997), this study reduced the SPAS to a 9-item measure prior to examining the relations among the variables and testing the hypotheses. The 9-item SPAS has items 1, 2, and 5 eliminated from the scale. The three items were eliminated from the scale to strengthen the unidimensionality of the scale in

measuring the construct of social physique anxiety and to dispute empirical evidence which showed that the social physique anxiety scale might be multidimensional. Modifying the 12-item SPAS to the 9-item SPAS does not compromise the reliability or validity of the scale (Martin et al., 1997). In the present study, the Pearson correlation between the 9-item and 12-item scales was  $r = .99$ , suggesting it was appropriate to use the 9-item scale for all subsequent analysis.

### **2.1.2.2 Physical Self-Perception Profile (PSPP)**

The PSPP (Fox & Corbin, 1989) is a 30-item inventory developed to assess self-perceptions in the physical domain. The inventory is composed of five 6-item scales consisting of one scale at the domain level and four at the subdomain level. The domain scale is labelled physical self-worth (PSW) and assesses general feelings of pride, satisfaction, happiness, and confidence in the physical self. The four subdomain scales measure self-perceptions of sport competence (SPORT; athletic ability, ability to learn sport, and confidence in sport), body attractiveness (BODY; attractive physique, ability to maintain an attractive body, and confidence in appearance), physical condition (CONDITION; condition, stamina, fitness, ability to maintain exercise, and confidence in an exercise setting), and muscular strength (STRENGTH; strength, muscle development, and confidence in situations requiring strength). The items within each scale were developed to assess a range of perceptions including process (acquisition/maintenance), product (competence/adequacy), and confidence (self-presentation) perceptions (Fox, 1997).

The PSPP uses a 4-choice structured alternative format that was designed to minimize the tendency to give socially desirable answers. Respondents are presented with two opposing descriptive statements and asked which statement best describes them, and

whether the statement is “sort of true” or “really true” for them. Item scores range from 1, reflecting low self-perceptions, to 4, reflecting high self-perceptions. Scale scores range from a minimum of 6 to a maximum of 24 and are calculated by summing the six items that comprise each scale. In this study the scale scores were reported as the summary scores divided by the number of items in the scale, thus showing the mean score on a scale from 1 to 4.

Adequate psychometric support for the PSPP has been well-established for college-age through middle-age adults. Internal consistency of the scales has ranged from .81 to .92 (Fox & Corbin, 1989; Hayes et al., in press). Test-retest reliability coefficients have ranged from .74 to .92 for a 16-day period and .81 and .88 for a 23-day period (Fox & Corbin, 1989). Research also suggests that the responses on the PSPP have minimal social desirability bias as none of the PSPP scales, and only 2 out of 30 items, correlated significantly ( $p < .05$ ) with scores on the short form of the Marlowe-Crowne Social Desirability Scale (Fox & Corbin, 1989).

Evidence for construct validity was demonstrated by Fox and Corbin (1989) who found that the PSPP scale scores were related to participation in “logically related activities”. For example, scores on the SPORT scale were related to self-reported participation in ball-sport activities and scores on the CONDITION scale were related to participation in endurance and calisthenic activities (Fox & Corbin, 1989). In addition, PSPP scale scores enabled Fox and Corbin (1989) and Sonstroem et al. (1994) to discriminate between active and non-active individuals, thus showing some support for the predictive validity of the PSPP. The above results are consistent with a competence motivation perspective that suggests that an individual who has high perceptions of competency or adequacy in a domain will be motivated to engage in behaviours within that domain. However, a limitation of

these studies is that evidence for the validity of the physical activity measures that were used was not provided. When evidence for the validity of a physical activity measure is unknown it is difficult to determine whether physical activity has been adequately assessed by the measure.

### **2.1.2.3 Self-administered 7-Day Physical Activity Recall (PAR)**

The self-administered PAR (Miller et al., 1994) is a questionnaire that assesses level of participation in occupational, leisure, and home activities over the previous seven-day period. The activities are categorized as sleep, light, moderate, hard, and very hard physical activities through a series of open-ended questions (questions 1 through 8). The energy cost of each activity category is calculated by multiplying the hours spent in activity by the estimated amount of energy expended (average metabolic equivalent value;  $\text{kcal} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$ ) for that category of activity (Sallis et al., 1985). A summary score for physical activity is attained by summing the energy costs of all the activity categories and is indicative of an individual's recent level of physical activity. Question 9 was not used in the analysis because it was not part of the summary score for physical activity and because evidence for the reliability and validity of the question has not been reported.

The self-administered PAR is a modified version of the interviewer-administered PAR (Sallis et al., 1985). The self-administered PAR was reproduced verbatim from Sallis et al. (1985) PAR questionnaire and requires the respondents to read the instructions and respond in writing. Two-week test-retest reliability for the interviewer-administered PAR was reported to be .75 for moderate activities, and .83 for vigorous (hard and very hard) activity (Sallis et al., 1985). Convergent validity for scores on the self-administered PAR was shown by Miller et al. (1994) as the PAR scores were highly correlated with a direct

measure of physical activity ( $r = .79$ , Caltrac accelerometer).

#### **2.1.2.4 Leisure Time Exercise Questionnaire (LTEQ)**

The LTEQ was developed by Godin and Shephard (1985) to assess typical patterns of leisure-time physical activity over a seven day period. The instrument is composed of two questions. Question One assesses the frequency (times per week) of mild, moderate, and strenuous activities that the respondent engages in for more than 15 minutes. A total weekly activity score is calculated by multiplying the estimated metabolic equivalent value (MET) for each intensity level of activity (mild = 3 METS, moderate = 5 METS, strenuous = 9 METS) by the frequency of participation for that intensity level and summing these values. Question Two assesses how often the individual engages in “regular activity long enough to work up a sweat” (often, sometimes, never/rarely). Question Two was not used in the analysis but was included in the questionnaire so as not to change the structure of the questionnaire.

Test-retest reliability for the LTEQ with adults has been reported to be .74 for Question One and .80 for Question Two over a two week period and  $r = .62$  and  $r = .69$  (Question One and Two, respectively) over a one month period (Godin & Shephard, 1985; Jacobs, Ainsworth, Hartman, & Leon, 1993). Evidence of convergent validity has been demonstrated as LTEQ scores were found to be related to accelerometer motion scores (Question One  $r = .32$  and Question Two  $r = .29$ ) and VO<sub>2</sub> max scores (Question One  $r = .56$  and Question Two  $r = .57$ ; Jacobs et al., 1993).

#### **2.1.3 Procedure**

Prior to data collection ethical approval for the study was obtained from the

University of Saskatchewan Advisory Committee on Ethics in Human Experimentation. Volunteers were recruited from a variety of courses offered by the University of Saskatchewan. Data was collected by two methods. The first method involved classes whose professors granted permission for their students to complete the questionnaires during class time (n = 140). The researcher made a classroom visit during which the students were briefed on the purpose, procedures, and voluntary and anonymous nature of the study. Students interested in participating were given the cover letter, consent form, and the battery of questionnaires (SPAS, PSPP, PAR, and LTEQ).<sup>1</sup> The questionnaires were randomized to control for potential order effects. The students completed the questionnaires during the class time. The researcher was available to answer any questions.

The second method involved similar recruiting methods, but the students were given the questionnaires to complete on their own time (n = 214). This method of data collection was used when permission was not granted by the professor to use class time for the completion of the questionnaires (i.e., often due to time constraints related to the amount of course material they needed to cover). The classes were visited at either the beginning or the end of the class and the purpose and procedures of the study were explained to the students. Students interested in participating were given the cover letter, consent form, battery of questionnaires, and instructions on completing the questionnaires. The students were then asked to complete the questionnaires on their own time and told that the questionnaires would be collected at the beginning of class the next time that course assembled. Students were instructed to phone the researcher if they had any questions regarding the questionnaires or the study. The response rate for students who took

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<sup>1</sup> Data on smoking and eating behaviour was also collected but was not used for the thesis.

questionnaires to complete on their own time was 41%.

The group of students who completed the questionnaires during class time were similar in age and had similar scores on the SPAS, PAR, and the BODY scale of the PSPP when compared to the group of students who completed the questionnaires on their own time. Scores differed between the two groups on the PSPP scales of PSW, CONDITION, SPORT, and STRENGTH, with the group of students that completed the questionnaires during class time having higher mean scores. These differences were likely due to the fact that the majority of students who completed the questionnaires during class time were enrolled in courses offered by the College of Kinesiology.

#### **2.1.4 Data Analysis**

Prior to running the statistical analysis the data was screened for missing data and outliers. Subjects with no age data or two or more missing data points from at least two of the questionnaires were eliminated prior to the analysis (7 subjects). Subjects with only one missing data point were retained and the missing value was estimated by inserting the mean value from the available data (14 subjects; Tabachnick & Fidell, 1989). Outliers were subjects whose standard score was greater than four standard deviations above the mean on any of the measures. Subjects who had one or more outliers were eliminated from the analysis (3 subjects).

The variables were examined to test the assumptions of multiple regression (i.e., normality, linearity, and homoscedasticity). Normality was assessed through examination of the distributions of the variables and histograms of the standardized residuals. Linearity and homoscedasticity were examined through scatterplots of the residuals. The variables were approximately normally distributed except for the PAR and LTEQ physical activity



scores which were positively skewed. The distribution of PAR scores was normalized by logarithmic transformation, as recommended by Tabachnick and Fidell (1989), because the distribution differed substantially from normality. The LTEQ scores were normalized by a square-root transformation because the distribution only differed moderately from normality (Tabachnick & Fidell, 1989).

Prior to testing the hypotheses, the internal consistency of the PSPP and SPAS were examined using Cronbach's alpha. Next, the relationships among all of the variables were examined through Pearson product moment correlations and regression analyses.

To test the primary hypothesis, that physical self-perceptions (PSW, BODY, CONDITION, SPORT, STRENGTH) would moderate the social physique anxiety - physical activity level relationship, a series of hierarchical regression analyses were conducted. The dependent variable was physical activity level, measured by either the PAR (recent physical activity) or the LTEQ (typical physical activity). Separate regression analyses were run with each physical activity measure as the dependent variable thus allowing for a comparison between the influence of social physique anxiety and physical self-perceptions on recent and typical physical activity levels. The independent variables included social physique anxiety entered on the first step, the physical self-perception(s) on the second step, and the interaction terms of social physique anxiety and the physical self-perception(s) on the final step. If the results showed that the interaction term(s) add significantly to the explained variance of physical activity level, there would be support for a moderating effect of the physical self-perception(s) on the social physique anxiety - physical activity level relationship and the primary hypothesis would be supported. Alternatively, if social physique anxiety and the physical self-perceptions contributed independently to the variance in physical activity levels, a direct effects model would be supported.

The secondary hypotheses were also tested using multiple regression. Stepwise multiple regression analysis was run to test whether the PSPP scales were significantly related to physical activity level. If the PSPP scales accounted for significant variance in physical activity level then the hypothesis would be supported. To test the PSPP model (ie., that the four PSPP subdomain scales were significantly related to general physical self-worth) hierarchical regression analysis was run. Support for the hypothesis would be shown if each of the PSPP subdomain scales contributed significantly to the explained variance in physical self-worth. Level of significance was set at  $p < .05$  prior to all analyses.

## CHAPTER 3

### 3.1 RESULTS

#### 3.1.1 Scale Reliabilities and Descriptive Statistics

Internal consistency reliabilities of the SPAS and PSPP were examined using Cronbach's alpha. The contribution of the individual scale items was determined through corrected item-total correlation coefficients. The SPAS exhibited acceptable internal consistency ( $\alpha = .92$ ) and corrected item-total correlations ranged from .61 to .79. The PSPP scales also demonstrated acceptable internal consistencies ( $\alpha = .907 - .914$ ), with corrected item-total correlations ranging from .65 to .85.

Descriptive statistics for the SPAS, PSPP, PAR, and LTEQ are shown in Table 3.1. Examination of the descriptives indicated that the sample had PSPP scale scores that were similar to those reported by Fox and Corbin (1989) and Hayes et al. (in press) for female undergraduate students. Physical activity scores on the PAR were similar to scores reported for adults by Sallis et al. ( $m = 38.37$ ,  $SD = 5.8$ ;  $m = 38.71$ ,  $SD = 7.1$ ; 1985). LTEQ physical activity scores were similar to those reported by Hayes et al. ( $m = 52.79$ ,  $SD = 22.80$ ; in press). Due to the recent recommendations to use the 9-item SPAS (Martin et al., 1997), there were no data sets available for comparison of the 9-item summary social physique anxiety scores. However, as mentioned previously, this study administered the 12-item SPAS to the subjects and then modified the scale to the 9-item SPAS for the analyses. The mean value for the 12-item SPAS for this study ( $m = 36.8$ ,  $SD = 9.5$ ) was similar to mean

Table 3.1

Descriptive Statistics for SPA, PSPP, PAR, and LTEQ

Variable	n	Mean	SD	Fox & Corbin (1989) Mean*	Hayes et al. (in press) Mean*
SPA	344	27.49	8.15		
PSW	338	2.51	0.73	2.47	2.56
BODY	339	2.25	0.76	2.31	2.21
CONDITION	339	2.61	0.77	2.48	2.80
SPORT	339	2.62	0.80	2.44	2.72
STRENGTH	339	2.64	0.69	2.53	2.55
PAR	339	38.73	5.88		
PAR <sup>t</sup>	339	3.65	0.41		
LTEQ	331	51.47	29.47		
LTEQ <sup>t</sup>	331	6.85	2.12		

Note.

SPA = level of social physique anxiety

PSW = self-perceptions of physical self-worth

BODY = self-perceptions of body attractiveness

CONDITION = self-perceptions of physical conditioning

SPORT = self-perceptions of sport competence

STRENGTH = self-perceptions of muscular strength

PAR = recent physical activity level ( $\text{kcal} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$ )PAR<sup>t</sup> = PAR normalized by logarithmic transformation

LTEQ = typical physical activity level (weighted times per week)

LTEQ<sup>t</sup> = LTEQ normalized by square-root transformation

\* = means were transformed to values on a 4-point scale for comparison

values reported by Eklund and Crawford ( $m = 37.3$ ,  $SD = 9.8$ ; 1994) and Hart et al. ( $m = 37.9$ ,  $SD = 9.8$ ;  $m = 37.0$ ,  $SD = 10.0$ ; 1989).

Pearson product moment correlations among the variables are presented in Table 3.2. Preliminary regression analysis indicated that SPAS scores were weakly related to PAR scores of recent physical activity ( $r = -.16$ ,  $p < .05$ ) and LTEQ scores of typical activity ( $r = -.16$ ,  $p < .05$ ). Preliminary regression analysis also indicated that all of the PSPP self-perception scales were related to social physique anxiety. However, to further examine the relations among the physical self-perceptions and social physique anxiety hierarchical regression analysis was run. Regression analysis with all of the PSPP subdomains entered into the model indicated that BODY was the only subdomain that accounted for significant variance in social physique anxiety ( $R^2 = .68$ ,  $p < .05$ ; see Table 3.3).

### **3.1.2 Tests of the Hypotheses**

#### **3.1.2.1 Primary Hypothesis**

It was expected that the physical self-perceptions (PSW, BODY, CONDITION, SPORT, STRENGTH) would moderate the relationship between social physique anxiety and level of physical activity involvement. This hypothesis was tested through hierarchical multiple regression analysis. Social physique anxiety, the physical self-perceptions, and the SPAS x PSPP interactions were the independent variables and physical activity level was the dependent variable. Regression analyses were first completed for recent physical activity level (PAR scores) and then for typical physical activity level (LTEQ scores).

##### **3.1.2.1.1 Hierarchical Multiple Regression Analyses for Recent Physical Activity Level**

The first hierarchical regression analysis examined the relations among social

Table 3.2

Pearson Correlations Among SPA, PSPP, PAR, and LTEQ

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. SPA	----							
2. PSW	-.73* (337)	----						
3. BODY	-.82* (338)	.77* (338)	----					
4. CONDITION	-.43* (338)	.63* (338)	.44* (339)	----				
5. SPORT	-.29* (338)	.52* (338)	.30* (339)	.61* (339)	----			
6. STRENGTH	-.25* (338)	.49* (338)	.24* (339)	.56* (339)	.55* (339)	----		
7. PAR	-.16* (338)	.25* (332)	.16* (333)	.49* (333)	.32* (333)	.32* (333)	----	
8. LTEQ	-.16* (330)	.31* (324)	.17* (325)	.55* (325)	.35* (325)	.36* (325)	.52* (325)	----

Note. Correlation matrix is based on pair-wise comparisons and n (in parentheses) values may differ.

\*  $p < .05$  (two-tailed significance)

Table 3.3

Summary of Hierarchical Regression Analysis of PSPP Subdomain Scales on Prediction of SPAS

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
BODY	-8.42	.373	-.780*	.678	.678*
CONDITION	-.891	.472	-.083		
SPORT	.115	.427	.011		
STRENGTH	-.291	.474	-.024		

\*  $p < .05$

physique anxiety, physical self-worth, and recent physical activity level. The potential moderating effect of self-perceptions of physical self-worth was analysed first because the PSW scale is at the domain level in the PSPP model. Thus, the PSW scale represents the combined outcome of the subdomain self-perceptions and is proposed to account for a large portion of the common variance for participation in physical activity. The analysis involved SPAS scores entered on Step 1, PSW on Step 2, and the SPAS x PSW interaction on Step 3 (see Table 3.4). Results showed the total model accounted for 7.7% of the variance in recent physical activity level. The SPAS x PSW interaction accounted for 1.6% of the total variance in physical activity level in addition to the variance accounted for by social physique anxiety and PSW. Therefore, some support was shown for a moderating effect of self-perceptions of physical self-worth on the social physique anxiety - physical activity level relationship.

The second regression analysis involved entry of all of the PSPP subdomain scales into the analysis (ie. Step 1: SPAS, Step 2: BODY, CONDITION, SPORT, STRENGTH, Step 3: SPAS x PSPP subdomain interactions). There was no support for the primary hypothesis as results showed there were no significant moderator effects for the subdomain self-perceptions on the social physique anxiety - physical activity level relationship (see Table 3.5). However, the analysis did indicate that on the first step there was a linear relationship between scores of social physique anxiety and recent physical activity, with social physique anxiety accounting for 2.6% of the variance in physical activity level. On the second step, self-perceptions of CONDITION was the only significant contributor to the explained variance in physical activity level, accounting for an additional 21.7 % of the variance.

Next, regression analyses were completed for each PSPP subdomain scale separately.



Table 3.4

Summary of Hierarchical Regression Analysis of SPA and PSW on Prediction of PAR

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0028	.001	-.161*	.026	.026*
Step 2					
SPA	.0007	.001	.038		
PSW	.0528	.015	.273*	.061	.035*
Step 3					
SPA	.0077	.003	.444		
PSW	.1280	.035	.661		
SPA x PSW	-.0029	.001	-.318	.077	.016*

\*  $p < .05$

Table 3.5

Summary of Hierarchical Regression Analysis of SPA and PSPP Subdomain Scales on Prediction of PAR

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0028	.001	-.161*	.026	.026*
Step 2					
SPA	.0000	.001	.000		
BODY	-.0131	.016	-.071		
CONDITION	.0834	.013	.468*	.243	.217*
SPORT	.0040	.011	.022		
STRENGTH	.0129	.013	.063		
Step 3					
SPA	.0077	.004	.447		
BODY	.0345	.040	.187		
CONDITION	.0282	.047	.153		
SPORT	.0411	.040	.231		
STRENGTH	.0713	.044	.347		
SPA x BODY	-.0018	.001	-.165		
SPA x CONDITION	.0020	.002	.330		
SPA x SPORT	-.0013	.001	-.251		
SPA x STRENGTH	-.0020	.001	-.380		

\*  $p < .05$

Results showed that the self-perceptions of BODY and STRENGTH had weak moderating effects on recent physical activity level. The SPAS x BODY interaction accounted for an additional 1.3% of the explained variance in recent physical activity beyond the 2.6% of variance accounted for by social physique anxiety (see Table 3.6). The SPAS x STRENGTH interaction accounted for an additional 1.4% of the explained variance in physical activity level after social physique anxiety and STRENGTH were entered into the model (see Table 3.7). These results showed some support for the moderator model hypothesis. There were no moderator effects for the SPAS x CONDITION and SPAS x SPORT interactions, although both the CONDITION and SPORT self-perceptions contributed unique variance in recent physical activity level (21.2% and 8.1% of the variance, respectively; see Tables 3.8 and 3.9).

In summary, weak moderator effects were shown for the self-perceptions of PSW, BODY, and STRENGTH on the relation between social physique anxiety and recent physical activity level. These moderator effects accounted for only 1.3% to 1.6% of additional variance in physical activity levels within the moderator models (see Table 3.10). On a practical level, the low amount of variance accounted for by the moderator effects is insignificant. In addition, because the significant moderator effects were found when the regressions were run with each PSPP scale separately, the probability of the overall Type I error rate was inflated and the findings of statistical significance for one or more of the moderator effects could have occurred as a result of the multiple analyses (Stevens, 1992).

#### **3.1.2.1.2 Hierarchical Multiple Regression Analyses for Typical Physical Activity Level**

The first regression analysis tested whether self-perceptions of physical self-worth moderated the relationship between social physique anxiety and typical physical activity

Table 3.6

Summary of Hierarchical Regression Analysis of SPA and BODY on Prediction of PAR

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0028	.001	-.161*	.026	.026*
Step 2					
SPA	-.0018	.002	-.102		
BODY	.0131	.018	.071	.027	.002
Step 3					
SPA	.0041	.003	.238		
BODY	.0842	.038	.455		
SPA x BODY	-.0027	.001	-.248	.041	.013*

\*  $p < .05$

Table 3.7

Summary of Hierarchical Regression Analysis of SPA and STRENGTH on Prediction of PAR

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0028	.001	-.161*	.026	.026*
Step 2					
SPA	-.0015	.001	-.089		
STRENGTH	.0608	.011	.296*	.108	.082*
Step 3					
SPA	.0063	.003	.365		
STRENGTH	.140	.036	.683		
SPA x STRENGTH	-.0029	.001	-.534	.123	.014*

\*  $p < .05$

Table 3.8

Summary of Hierarchical Regression Analysis of SPA and CONDITION on Prediction of PAR

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0028	.001	-.161*	.026	.026*
Step 2					
SPA	.0009	.001	.054		
CONDITION	.0937	.010	.508*	.238	.212*
Step 3					
SPA	.0033	.003	.189		
CONDITION	.1180	.030	.639		
SPA x CONDITION	-.0009	.001	-.148	.240	.002

\*  $p < .05$

Table 3.9

Summary of Hierarchical Regression Analysis of SPA and SPORT on Prediction of PAR

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0028	.001	-.161*	.026	.026*
Step 2					
SPA	-.0013	.001	-.077		
SPORT	.0526	.010	.296*	.107	.081*
Step 3					
SPA	.0043	.003	.247		
SPORT	.1110	.032	.622		
SPA x SPORT	-.0021	.001	-.402	.116	.009

\*  $p < .05$

Table 3.10

Summary of Hierarchical Regression Analyses with PAR

	PSW	BODY	CONDITION	SPORT	STRENGTH
	$\Delta R^2$	$\Delta R^2$	$\Delta R^2$	$\Delta R^2$	$\Delta R^2$
Step 1	.026*	.026*	.026*	.026*	.026*
Step 2	.035*	.002	.212*	.081*	.082*
Step 3	.016*	.013*	.002	.009	.014*
Total R <sup>2</sup>	.077	.041	.240	.116	.123

\* p &lt; .05



level (see Table 3.11). Results showed that SPAS scores accounted for 2.7% of the variance in physical activity level. On Step 2, PSW accounted for an additional 7.3% of the variance in physical activity level. However, the SPAS x PSW interaction did not account for any additional variance when entered on Step 3 of the model. Thus, no moderator effect was found for the self-perceptions of PSW on the social physique anxiety - physical activity level relationship and the hypothesis was not supported.

Next, regression analysis was run with all of the PSPP subdomain scales included in the model (see Table 3.12). Results showed no support for the moderator model hypothesis. There were no significant moderator effects for any of the PSPP subdomain self-perceptions. Social physique anxiety did account for 2.8 % of the variance in typical physical activity level on Step 1. On Step 2 self-perceptions of CONDITION was the only scale to account for additional variance in typical physical activity level (27.7% of additional variance).

Finally, regression analyses were performed for each of the individual PSPP subdomain scales separately. Self-perceptions of STRENGTH was the only subdomain scale that was found to moderate the social physique anxiety - typical physical activity level relationship (see Table 3.13). The SPAS x STRENGTH interaction accounted for 1.0% of additional explained variance in physical activity level in addition to the 2.8% accounted for by social physique anxiety and the 10.5% accounted for by self-perceptions of STRENGTH. This significant moderator effect has to be interpreted with caution because it had a small effect and there was an increase in the Type I error rate resulting from completing separate regression analyses for each PSPP scale (Stevens, 1992). No moderator effects were found for the other PSPP subdomain self-perceptions. Results supported a direct effects model for the self-perceptions of CONDITION and SPORT (see Tables 3.14 and 3.15). Self-perceptions of CONDITION accounted for 27.4% of the explained variance in physical

Table 3.11

Summary of Hierarchical Regression Analysis of SPA and PSW on Prediction of LTEQ

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0422	.014	-.166*	.027	.027*
Step 2					
SPA	.0347	.020	.137		
PSW	1.149	.226	.405*	.100	.073*
Step 3					
SPA	.108	.048	.424		
PSW	1.920	.507	.677		
SPA x PSW	-.0301	.018	-.219	.108	.008

\*  $p < .05$

Table 3.12

Summary of Hierarchical Regression Analysis of SPA and PSPP Subdomain Scales on Prediction of LTEQ

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0429	.014	-.168*	.028	.028*
Step 2					
SPA	.0144	.021	.056		
BODY	-.1070	.232	-.039		
CONDITION	1.506	.185	.552*	.305	.277*
SPORT	-.0204	.167	-.008		
STRENGTH	.2060	.183	.067		
Step 3					
SPA	.0893	.056	.349		
BODY	.1300	.564	.047		
CONDITION	.7970	.683	.292		
SPORT	.6020	.589	.227		
STRENGTH	.8540	.645	.280		
SPA x BODY	-.0090	.019	-.055		
SPA x CONDITION	.0236	.023	.267		
SPA x SPORT	-.0217	.020	-.279		
SPA x STRENGTH	-.0222	.022	-.279		

\*  $p < .05$

Table 3.13

Summary of Hierarchical Regression Analysis of SPA and STRENGTH on Prediction of LTEQ

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0429	.014	-.168*	.028	.028*
Step 2					
SPA	-.0216	.014	-.084		
STRENGTH	1.022	.164	.335*	.133	.105*
Step 3					
SPA	.0775	.052	.303		
STRENGTH	2.019	.531	.661		
SPA x STRENGTH	-.0360	.018	-.451	.144	.010*

\*  $p < .05$

Table 3.14

Summary of Hierarchical Regression Analysis of SPA and CONDITION on Prediction of LTEQ

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0429	.014	-.168*	.028	.028*
Step 2					
SPA	.0222	.013	.087		
CONDITION	1.589	.142	.582*	.302	.274*
Step 3					
SPA	.0428	.042	.167		
CONDITION	1.800	.429	.659		
SPA x CONDITION	-.0078	.015	-.087	.303	.001

\*  $p < .05$

Table 3.15

Summary of Hierarchical Regression Analysis of SPA and SPORT on Prediction of LTEQ

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0429	.014	-.168*	.028	.028*
Step 2					
SPA	-.0184	.014	-.072		
SPORT	.8600	.145	.324*	.124	.096*
Step 3					
SPA	.0585	.047	.229		
SPORT	1.649	.484	.622		
SPA x SPORT	-.0285	.017	-.366	.132	.008

\*  $p < .05$

activity level in addition to the 2.8% accounted for by social physique anxiety. Similarly, self-perceptions of SPORT accounted for an additional 9.6% of the explained variance in physical activity level after social physique anxiety was entered into the model. Neither a moderator model or a direct effects model was supported by the analyses completed with self-perceptions of BODY. Self-perceptions of BODY were found to be unrelated to typical physical activity level (see Table 3.16). A summary of the regression analyses for the moderator models with LTEQ are shown in Table 3.17.

### **3.1.2.1.3 Interpretation of the Moderator Effects**

To further interpret the significant interaction effects identified by the hierarchical regression analyses, the form of the interaction effects were evaluated by a procedure outlined by Aiken and West (1991). First, social physique anxiety and the PSPP variables from the models with the significant interaction effects were centred (i.e., put in deviation score form so their means were equal to zero). Next, SPAXPSPP interaction terms were formed by multiplying the centred social physique anxiety and PSPP variables together. Hierarchical regression analyses were then completed for each of the models (i.e., SPAXPSW regressed on PAR, SPAXBODY regressed on PAR, SPAXSTRENGTH regressed on PAR and LTEQ) with SPA entered on Step 1, the PSPP entered on Step 2, and the SPAXPSPP interaction entered on Step 3. Running the regression analyses with the centred scores and the newly formed interaction terms eliminated the multicollinearity among social physique anxiety and the physical self-perceptions with the interaction terms (Aiken & West, 1991). Although the transformations affected the regression coefficients for Steps 1 and 2 of the analyses (when compared to the regression coefficients from analyses without the transformations), the interaction coefficients do not change and the interpretation of the

Table 3.16

Summary of Hierarchical Regression Analysis of SPA and BODY on Prediction of LTEQ

Predictor Variable	B	SE B	$\beta$	R <sup>2</sup>	$\Delta R^2$
Step 1					
SPA	-.0429	.014	-.168*	.028	.028*
Step 2					
SPA	-.0211	.025	-.083		
BODY	.2860	.269	.103	.032	.003
Step 3					
SPA	.0372	.048	.146		
BODY	.9880	.559	.358		
SPA x BODY	-.0269	.019	-.164	.038	.006

\*  $p < .05$



Table 3.17

Summary of Hierarchical Regression Analyses with LTEQ

	PSW	BODY	CONDITION	SPORT	STRENGTH
	$\Delta R^2$	$\Delta R^2$	$\Delta R^2$	$\Delta R^2$	$\Delta R^2$
Step 1	.027*	.028*	.028*	.028*	.028*
Step 2	.073*	.003	.274*	.096*	.105*
Step 3	.008	.006	.001	.008	.010*
Total R <sup>2</sup>	.108	.038	.303	.132	.144

\* p &lt; .05

interactions is the same as when the scores are not transformed (Aiken & West, 1991).

To interpret the interaction effects three regression lines were plotted for each regression analysis. Plotting three regression lines allowed for the analysis of the regression of level of physical activity involvement as a function of low, moderate, or high physical self-perceptions on low, moderate, and high levels of social physique anxiety. The low, moderate, and high levels of the physical self-perceptions and social physique anxiety corresponded to one standard deviation below the mean, the mean, and one standard deviation above the mean for each centred variable (Aiken & West, 1991). Once the low, moderate, and high values for the centred variables were calculated, they were substituted into their respective regression equations and a series of simple regression equations of physical activity on social physique anxiety at specific values of the self-perceptions were generated (see Appendices A, B, C, and D). These simple regression equations were then plotted to display the interactions.

It was expected that at all levels of social physique anxiety women who had higher physical self-perceptions would have higher levels of physical activity involvement than women who had lower physical self-perceptions. It was also expected that there would be either no relationship between social physique anxiety and physical activity levels for women with higher physical self-perceptions and a negative relationship between social physique anxiety and physical activity levels for women with lower physical self-perceptions.

First, the interaction effects of the regressions run with PAR scores of recent physical activity were examined. The moderator effects of self-perceptions of PSW are shown in Figure 3.1. Results indicated that women who had higher perceptions of PSW had higher levels of recent physical activity than women who had lower perceptions of PSW at all levels

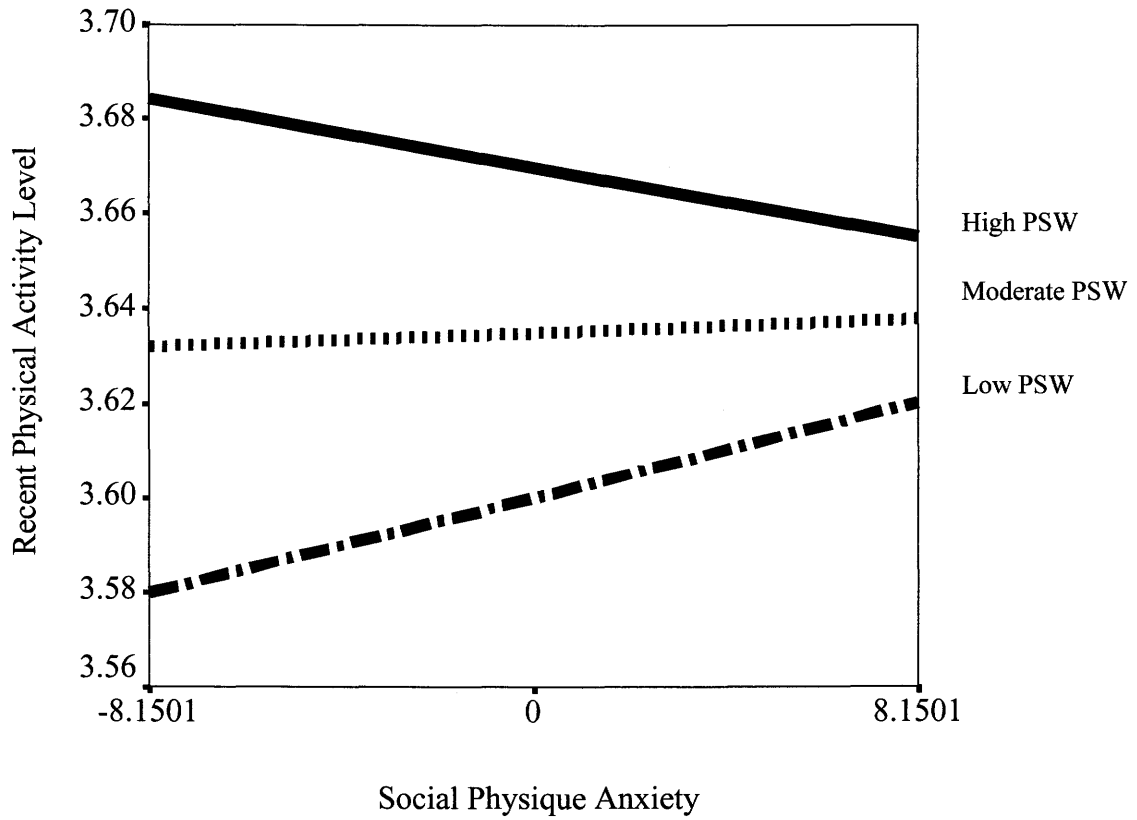


Figure 3.1 Interaction effect of PSW and SPA on recent physical activity levels

of social physique anxiety. These results supported the hypothesized moderator effects of self-perceptions of PSW. Interestingly, the directions of the moderator effects were in the opposite directions to those hypothesized. The physical activity levels of women who had higher perceptions of PSW appeared to decrease as levels of social physique anxiety increased and the physical activity levels of women with lower perceptions of PSW increased as levels of social physique anxiety increased.

The moderator effects of self-perceptions of BODY on the social physique anxiety - recent physical activity level relationship are shown in Figure 3.2. Results indicated that at lower levels of social physique anxiety, women who had higher self-perceptions of BODY had higher levels of physical activity than women who had lower perceptions of BODY. Alternatively, the opposite results were shown at higher levels of social physique anxiety. Women who had lower perceptions of BODY had the highest levels of physical activity involvement (although levels of physical activity appeared no different for women with low BODY or high BODY), and women who had higher perceptions of BODY had the lowest levels of physical activity involvement. These results indicated that the moderator effects of BODY were in the opposite directions to those hypothesized and did not show that at all levels of social physique anxiety women with higher perceptions of body attractiveness had higher levels of physical activity involvement than women with lower perceptions of body attractiveness.

The moderator effects of self-perceptions of STRENGTH on physical activity level were similar for both recent and typical physical activity levels, therefore, the results are reported only once. Results suggested that at all levels of social physique anxiety women who had higher self-perceptions of STRENGTH had higher levels of physical activity involvement than women who had lower self-perceptions of strength, thus showing support

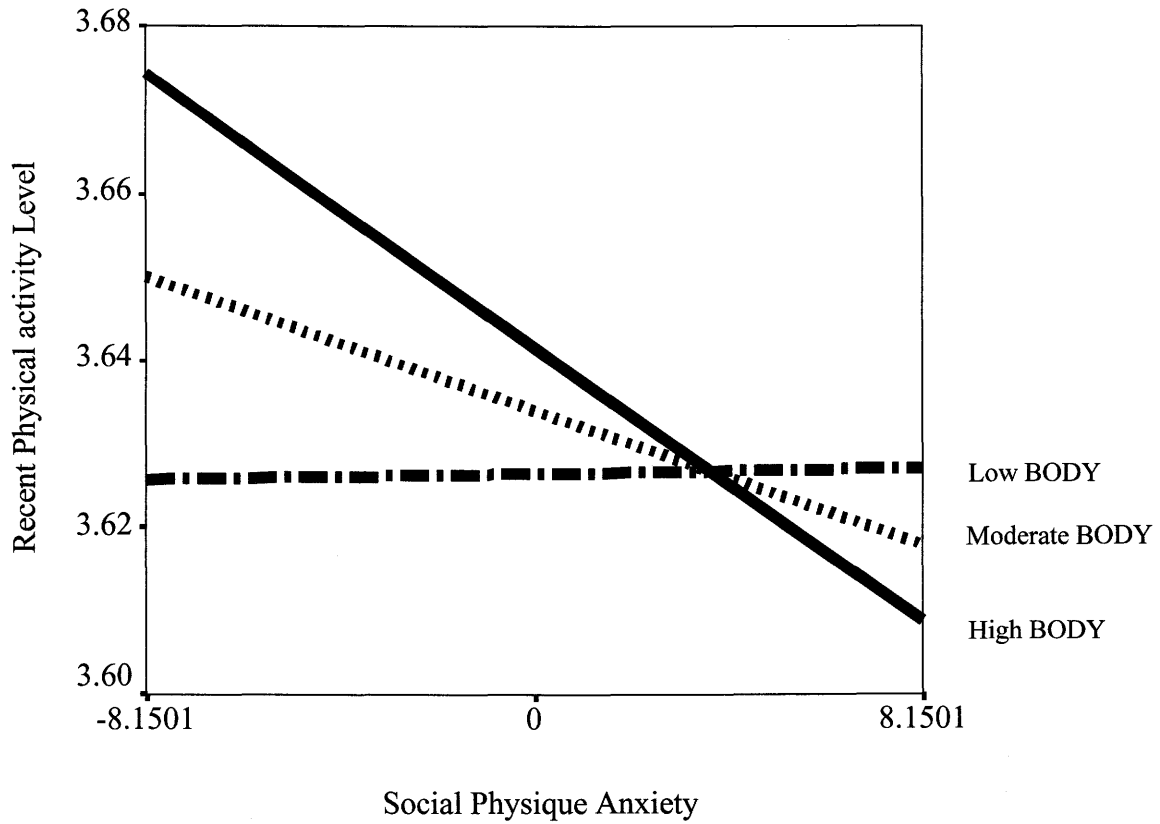


Figure 3.2 Interaction effect of BODY and SPA on recent physical activity levels

for the moderator hypothesis (see Figures 3.3 and 3.4). However, the directions of the moderator effects were contrary to those hypothesized. The physical activity levels of women with higher perceptions of STRENGTH appeared to decrease as levels of social physique anxiety increased and the physical activity levels of women with lower perceptions of STRENGTH appeared to slightly increase as levels of social physique anxiety increased.

### **3.1.2.2 Secondary Hypotheses**

It was expected that the PSPP self-perceptions would be related to levels of physical activity involvement. Correlation analysis showed that all of the PSPP scales were related to recent and typical physical activity levels, thus supporting the hypothesis. Stepwise multiple regression analysis was used to further analyse the relationships among the PSPP subdomain scores and physical activity levels. Results indicated that CONDITION was the only PSPP subdomain that accounted for significant variance in recent physical activity levels ( $R^2 = .24$ ;  $F(1,331) = 102.76$ ,  $p < .05$ ) and typical physical activity levels ( $R^2 = .30$ ,  $F(1,323) = 137.22$ ,  $p < .05$ ).

This study also hypothesized that the structure of the PSPP model would be supported. Thus, each of the PSPP subdomain scales were expected to be significantly related to the domain scale of PSW. To test this hypothesis Pearson product-moment correlations were examined and hierarchical multiple regression was run. Results supported the hypothesis as each of the subdomain scales was correlated with PSW and contributed significantly to the variance in PSW ( $R^2 = .74$ ; BODY,  $\beta = .61$ ; CONDITION,  $\beta = .19$ ; SPORT,  $\beta = .13$ , STRENGTH,  $\beta = .17$ ,  $p < .05$ ; see Figure 3.5).

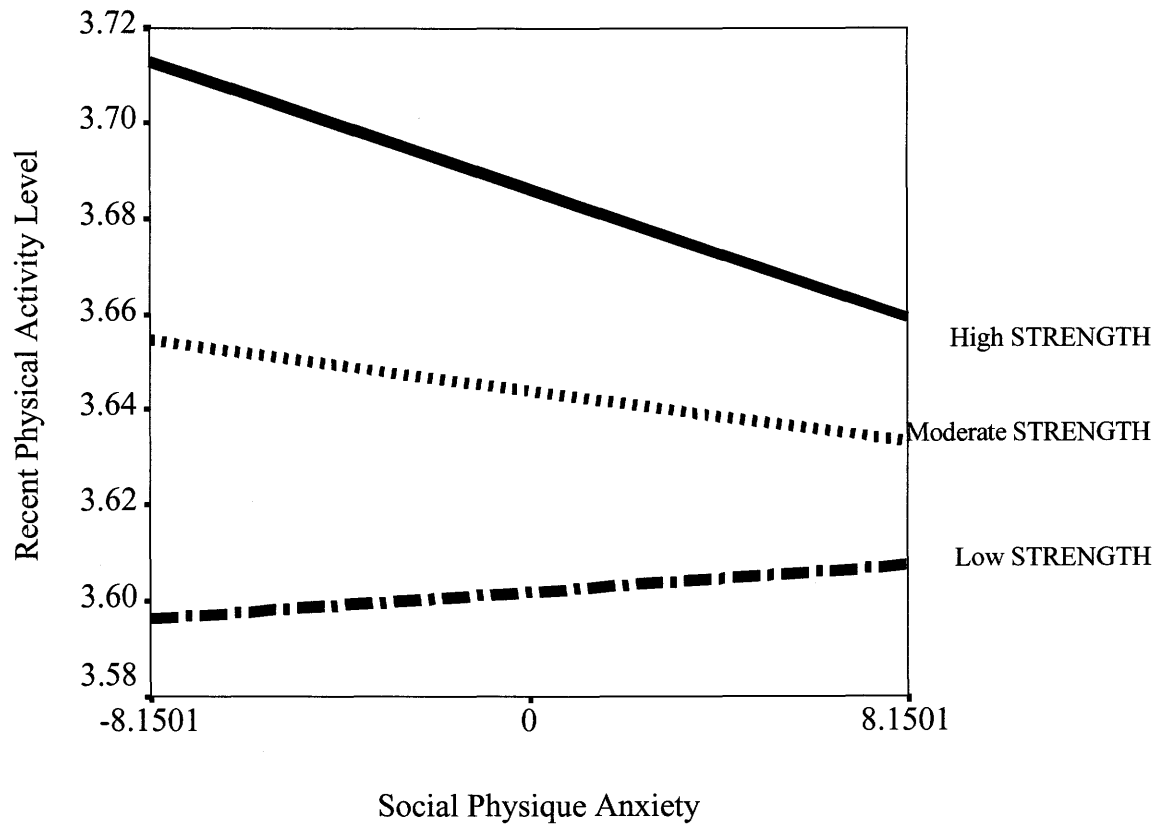
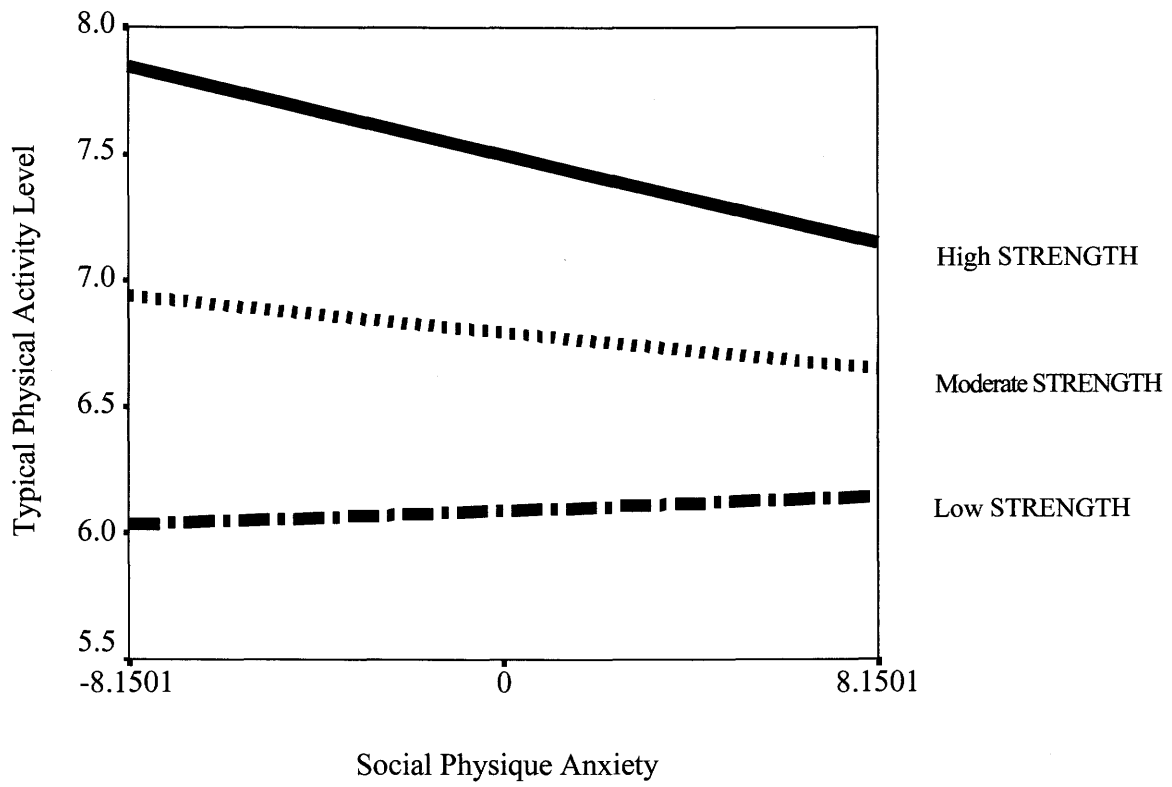
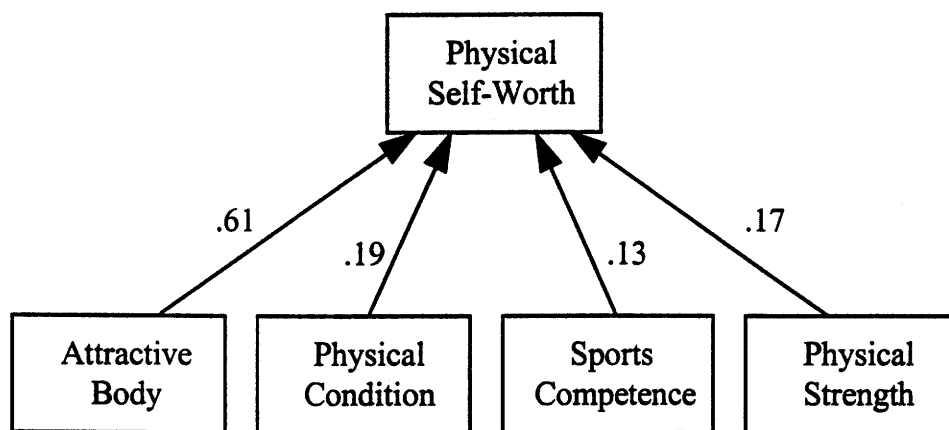


Figure 3.3 Interaction effect of STRENGTH and SPA on recent physical activity levels



**Figure 3.4** Interaction effect of STRENGTH and SPA on typical physical activity levels





**Figure 3.5** Standardized beta coefficients among the PSPP subdomain scales and PSW

### 3.2 DISCUSSION

The purpose of this research was to assess the relationships among social physique anxiety, physical self-perceptions, and level of physical activity involvement in young women. The primary hypothesis was that physical self-perceptions would moderate the relationship between social physique anxiety and physical activity level. Specifically, it was hypothesized that at all levels of social physique anxiety women who had higher physical self-perceptions would have higher levels of physical activity involvement than women who had lower physical self-perceptions. It was also expected that there would be either no relationship between social physique anxiety and physical activity levels for women with higher physical self-perceptions and a negative relationship between social physique anxiety and physical activity levels for women with lower physical self-perceptions. The secondary hypotheses were that the physical self-perceptions would be significantly related to levels of physical activity involvement and the four PSPP subdomain scales would account for significant variance in general perceptions of physical self-worth, thus showing support for the PSPP model.

Results showed that social physique anxiety had a weak negative relationship with both recent and typical physical activity levels in young women. The amount of variance in physical activity level explained by social physique anxiety was small (2.6% of the variance in recent physical activity, 2.8% of the variance in typical physical activity) and at a practical level, is probably insignificant. This result is comparable to that of Lantz et al. (1997) who found that social physique anxiety was weakly related to physical activity ( $r = -.12$ ), and that social physique anxiety scores could not sufficiently predict level of physical activity involvement in young women. The results of this study are also similar to that of Crawford and Eklund (1994) who reported that social physique anxiety scores were not

significantly correlated with number of days exercised ( $r = .10$ ) or minutes per week exercised ( $r = .03$ ). Therefore, consistent with previous research, social physique anxiety alone does not seem to be substantially related to physical activity levels.

When the associations among social physique anxiety and the physical self-perceptions were analysed, it was shown that social physique anxiety was related to all of the physical self-perceptions. However, hierarchical regression analyses indicated that self-perceptions of body attractiveness were the only self-perceptions that accounted for a significant amount of variance in the prediction of social physique anxiety scores ( $R^2 = .68$ ,  $p < .05$ ). The high amount of variance in social physique anxiety accounted for by self-perceptions of body attractiveness is likely due to the nature of the PSPP items that make up the BODY subdomain. The items within the BODY subdomain measure process (acquisition/maintenance), product (competence/adequacy), and confidence (self-presentation) perceptions with regards to body attractiveness (Fox & Corbin, 1989). Thus, some of the BODY subdomain items appear to be assessing similar perceptions to those items found in the SPAS. For example, one of the items from the BODY scale asks respondents to describe which out of two statements best describes them: “some people feel embarrassed by their bodies when it comes to wearing few clothes” or “others do not feel embarrassed by their bodies when it comes to wearing few clothes”. The content of this PSPP item is similar to the content of an item from the SPAS which asks respondents “when in a bathing suit, I often feel nervous about the shape of my body”. Because the BODY subdomain scale and the SPAS have similar items, it appears that they might be tapping at the same underlying construct. Therefore, it follows that scores on these two measures would be highly related to each other.

Perhaps the high degree of relationship between self-perceptions of body

attractiveness and social physique anxiety helps explain why social physique anxiety scores were so weakly related to physical activity level. Previous research has shown that self-perceptions regarding the body (ie. self-perceptions of body attractiveness, body satisfaction) are not predictive of levels of physical activity involvement in women (Fox & Corbin, 1989; Hayes et al., in press; Marsh & Sonstroem, 1992). Research has also shown that self-perceptions of body image (one's view and mental representation of his/her body), although constraining enjoyment in physical activity, do not appear to have a significant effect on levels of physical activity participation in young women (Frederick & Shaw, 1995). Therefore, if body self-perceptions are not predictive of physical activity levels in women, and body self-perceptions are highly correlated with social physique anxiety, it makes sense that social physique anxiety levels may also not be predictive of physical activity levels in women.

### **3.2.1 Primary Hypothesis**

There was limited support for the hypothesis that the physical self-perceptions would moderate the relationship between social physique anxiety and physical activity level. When recent physical activity levels were analysed it was shown that the PSPP scales of PSW, STRENGTH, and BODY were weak moderators of the social physique anxiety - recent physical activity level relationship. As expected the results indicated that women who had higher self-perceptions of physical self-worth and strength had higher levels of physical activity involvement at all levels of social physique anxiety than women who had lower self-perceptions of physical self-worth and strength. However, the hypothesized directions of the moderator effects of physical self-worth and strength were not supported. Physical activity levels appeared to decrease as levels of social physique anxiety increased for women

who had higher perceptions of physical self-worth and strength while the physical activity levels of women who had lower self-perceptions of physical self-worth and strength appeared to increase as levels of social physique anxiety increased. The moderating effects of self-perceptions of body attractiveness were contrary to those hypothesized. At lower levels of social physique anxiety women who had higher perceptions of body attractiveness had higher levels of physical activity involvement than women who had lower perceptions of body attractiveness. At higher levels of social physique anxiety women who had lower perceptions of body attractiveness appeared to have higher levels of physical activity involvement than women who had higher perceptions of body attractiveness. Although the moderator results are interesting, the moderator effects only accounted for an additional 1.3% to 1.6% of the variance in physical activity level beyond the variance accounted for by the direct effects of social physique anxiety and the physical self-perceptions. Therefore, these results provided limited support for the moderator model hypothesis.

Results were similarly weak when the regressions were run with typical physical activity levels. STRENGTH was the only physical self-perception that was shown to moderate the social physique anxiety - typical physical activity level relationship. Results supported the hypothesis that women who had higher perceptions of strength would have higher levels of physical activity involvement at all levels of social physique anxiety than women who had lower perceptions of strength. Support was not shown for the hypothesized directions of the moderator effects of self-perceptions of strength. There was a negative relationship between social physique anxiety and physical activity levels for women with higher self-perceptions of strength and a positive relationship between social physique anxiety and physical activity levels for women with lower self-perceptions of strength. The moderator effects of STRENGTH accounted for an additional 1.0% of the variance in

physical activity level beyond that accounted for by the direct effects of social physique anxiety (2.8%) and STRENGTH (10.5%), thus providing limited support for the moderator model hypothesis.

Interesting to note is that all of the physical self-perception scales, except for BODY, accounted for the majority of variance in both recent and typical physical activity levels within the moderator models. The amount of variance accounted for by the physical self-perceptions ranged from 3.5% to 27.7%. However, it must be recognized that even the direct effects of the self-perceptions of body attractiveness, sport competence, and strength became insignificant when all of the subdomain self-perceptions were included in the regression analysis. In these cases (see Table 3.4 and 3.10) self-perceptions of conditioning were the only physical self-perceptions to account for significant variance in physical activity levels (21.7% for recent physical activity level, and 27.7% for typical physical activity level). In addition, it appeared that in comparison to the direct effects of self-perceptions of conditioning on physical activity level, all the social physique anxiety direct and interaction effects that accounted for significant variance in physical activity levels were inconsequential. These results suggested that social physique anxiety and the moderating effects of the physical self-perceptions on the social physique anxiety - physical activity level relationship were, on a practical level, insignificant.

The lack of strong moderating effects found in this study were similar to the results of the two previous studies that have examined potential moderator variables of the social physique anxiety - physical activity level relationship. Treasure et al. (1998) found no moderator effects for the physiological variables they measured (ie., body fat percentage, body mass index), but did suggest that age could be a potential, albeit weak, moderator of the social physique anxiety - physical activity level relationship. Lantz et al. (1997) found

no significant moderator effects of age, gender, or depression level on the relationship between social physique anxiety and physical activity level. The results of these two studies, in combination with the results of the present study, might suggest that researchers should not focus their attention on variables that may moderate the social physique anxiety - physical activity level relationship. It appears that level of physical activity involvement is not influenced to a high degree by social physique anxiety and that variables tested as moderators of this relationship do not further explain the weak relationship.

Research focussing on level of physical activity involvement does not appear to tap enough information about the various factors (ie. possible situational factors) that may be influencing the participation levels of people who are socially physique anxious. Perhaps, as previous researchers have done (Crawford & Eklund, 1994; Frederick & Morrison, 1996; Spink, 1992), the measurement of physical activity behaviour and the influence of social physique anxiety should focus on specific factors that may be related to physical activity participation (ie. social setting, degree of social evaluation associated with specific behaviours) rather than on general levels of involvement. Possibly, the weak relationship between social physique anxiety and level of physical activity involvement for socially physique anxious women may occur because, for many of the socially physique anxious women, the motivation to be physically active (whether it be for health-related or appearance-related reasons) may be more powerful than the fear of negative evaluation regarding their physiques. Therefore, the social physique anxiety they experience may not affect their actual levels of participation, but may affect things like the social situation they choose to be active in, the characteristics of the people they exercise with, or the types of activities they engage in. Inclusion of these types of specific factors that might influence physical activity behaviour may allow researchers to better understand how social physique

anxiety influences physical activity behaviour.

### **3.2.2 Secondary Hypotheses**

Results of this study supported the hypothesis that the PSPP self-perception scales would be related to physical activity levels. All of the PSPP scales were significantly correlated with social physique anxiety. Stepwise multiple regression was run to further examine the relations among the physical self-perceptions and physical activity levels. Results of the regression indicated that the subdomain of CONDITION was the only subdomain scale that accounted for significant variance in physical activity levels (23.7% of variance in recent activity scores, 29.8% of variance in typical activity scores). It is likely that the BODY, SPORT, and STRENGTH subdomains did not account for significant variance in physical activity levels because they were all correlated with CONDITION. This data is similar to previous research examining physical self-perceptions and physical activity involvement in young women, which has shown that self-perceptions of CONDITION is the only significant predictor of physical activity levels (Hayes et al., in press). Taken together, these results suggest that self-perceptions of conditioning are the physical self-perceptions most reflective of physical activity levels in young women. This may be due to the apparent preference of young women for participating in fitness-type activities, which are generally activities that focus on improving the body's general level of physical condition and would likely have a positive influence on their self-perceptions of conditioning.

The present research also showed support for the multidimensional and hierarchical nature of self-perceptions in the physical domain. Through hierarchical multiple regression analyses it was shown that the four PSPP subdomain scales (BODY, CONDITION, SPORT, STRENGTH) accounted for 74% of the variance in PSW. This result is similar to previous



research and provides further support for the hypothesized superordinate function of PSW in the PSPP model and for the multidimensionality of the physical self-perceptions (Fox & Corbin, 1989; Hayes et al., in press; Page et al., 1993). In addition, the high amount of variance accounted for by the subdomain self-perceptions indicated that the subdomain self-perceptions were adequately assessing the salient self-perception content in the physical domain.

Results also showed support for the hypothesis that all four PSPP subdomain scales would be significant predictors of PSW. These results are consistent with Fox and Corbin (1989) but are contrary to the results found by Hayes et al. (in press). Hayes et al. found that the self-perceptions of BODY, CONDITION, and SPORT were significant independent predictors of PSW, but self-perceptions of STRENGTH were not. They attributed this finding to the substantial intercorrelations among the subdomain scales, which may have resulted in the STRENGTH subdomain appearing statistically redundant. The difference between the results of the Hayes et al. (in press) study and this study may have occurred because the present sample scored higher on self-perceptions of strength than the Hayes et al. sample.

Similar to the results of other studies that have used the PSPP with women, self-perceptions of body attractiveness accounted for the largest portion of variance in PSW (Fox & Corbin, 1989; Hayes et al., in press; Sonstroem et al., 1992). This is not surprising as perceptions of physical appearance are known to be important contributors to people's physical and global self-concept (Fox, 1997). However, the consistency with which the BODY subdomain dominates the variance accounted for in physical self-worth has led researchers to suggest that perhaps the structure of the PSPP (ie., whether self-perceptions of body attractiveness should be considered a higher order construct) should be further

investigated (Fox, 1997; Sonstroem et al., 1992).

## CHAPTER 4

### 4.1 SUMMARY AND CONCLUSIONS

Research has shown that social physique anxiety is related to people's perceptions (i.e., reasons for participating in physical activity, preferred physical activities and physical activity settings) in the physical activity domain. However, the relationship between social physique anxiety and actual levels of physical activity involvement in women has been inconclusive. Researchers have proposed that important theoretical constructs within the physical activity domain should be examined along with social physique anxiety to further explain the relationship between social physique anxiety and physical activity behaviour. Therefore, this research project assessed the interrelationships among social physique anxiety, physical self-perceptions, and level of physical activity involvement in young women. The primary hypothesis was that physical self-perceptions would moderate the relationship between social physique anxiety and physical activity levels. Secondary hypotheses were that the physical self-perceptions would be related to physical activity levels, and the structure of the PSPP model would be supported.

The study involved 354 female undergraduate students who completed the SPAS, PSPP, PAR, and LTEQ. The results showed that social physique anxiety was weakly related to level of physical activity involvement and that three of the physical self-perceptions (PSW, BODY, STRENGTH) moderated this relationship. However, these results provided limited support for the moderator hypothesis as the amount of variance accounted for by the

moderator variables was small. It was concluded that social physique anxiety does not account for appreciable variance in physical activity levels and can not be used alone to predict level of involvement in physical activity for young women. In addition, the moderating effects of the physical self-perceptions on the social physique anxiety - physical activity level relationship did not account for enough additional variance in physical activity level to conclude, on a practical level, that the physical self-perceptions moderated the influence of social physique anxiety on level of physical activity involvement in young women. Therefore, results of this study suggested that the effect of social physique anxiety, whether through direct or interaction effects with physical self-perceptions, on the physical activity levels of young women is negligible.

In addition, this study found that all of the PSPP self-perception scales were related to physical activity levels in young women, with self-perceptions of conditioning accounting for significant variance in the prediction of physical activity levels. Results also showed that all of the PSPP subdomain scales accounted for significant variance in the prediction of PSW, showing support for the structure of the PSPP model.

#### **4.2 RECOMMENDATIONS FOR FUTURE RESEARCH**

Based on the results from this study and previous studies that have examined the relation between social physique anxiety and physical activity levels, it appears that social physique anxiety has limited value for intervention programs designed to increase physical activity participation of young women. However, it is recommended that future research continue to examine the social physique anxiety construct within the physical activity domain. Previous research has shown that social physique anxiety can influence people's perceptions in the physical activity domain (ie., reasons for exercising, preferred social

setting for participation, and preferred type of activities). Perhaps, as Crawford and Eklund (1994) have proposed, research examining social physique anxiety in the physical activity domain should examine social physique anxiety in combination with other variables (ie. situational variables) that may influence behaviour in the physical activity domain. This might provide researchers with information on the influence of social physique anxiety on behaviour in the physical activity domain and not just the influence of social physique anxiety on people's perceptions regarding the physical activity domain.

In addition, it would be interesting to examine how different combinations of health-related behaviours are related to social physique anxiety. Although social physique anxiety did not appear to influence levels of physical activity participation, it may influence other health-related behaviours that are perceived to influence the appearance of the physique (ie. dieting or smoking). Research has shown that disordered eating behaviours may be related to social physique anxiety (Cox, Lantz, & Mayhew, 1997; Frederick & Morrison, 1998).

It may also be worthwhile for researchers to assess the relationship between social physique anxiety and more global self-perceptions like physical self-worth or global self-esteem. Although this study showed a high degree of relationship between social physique anxiety and physical self-worth, no research was found that has examined the possible influence of social physique anxiety on these global self-perceptions.

Finally, due to the support found for the structure of the PSPP model, the PSPP appears to be a valuable instrument for measuring self-perceptions in the physical domain. In particular, given the results of this study regarding the relations among the physical self-perceptions and level of physical activity involvement, it may be useful to more fully examine the relationships among the physical self-perceptions and physical activity behaviour.

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## **APPENDICES**

## **APPENDIX A**

Regression Equations for Plotting the Significant SPAxPSW Interaction Effect on PAR

(Aiken & West, 1991)

Regression of recent physical activity levels (PAR) on social physique anxiety (SPA) at particular values of self-perceptions of physical self-worth (PSW):

$$Y = (b_1)X + (b_2)Z + (b_3)XZ + b_0$$

$$Y = (.0003543)X + (.0475)Z + (-.00291)XZ + 3.635$$

The regression equation is then re-written as:

$$\hat{Y} = (b_1 + b_3 Z)X + (b_2 Z + b_0)$$

$$\hat{Y} = [.0003543 + (-.00291)Z]X + [(.0475)Z + 3.635]$$

Simple regression lines are generated by substituting low, moderate, and high values of PSW into the re-written regression equation:

$$\text{At Low PSW} = -.7344: \quad \hat{Y} = .002491404X + 3.600116$$

$$\text{At Moderate PSW} = 0: \quad \hat{Y} = .0003543X + 3.635$$

$$\text{At High PSW} = .7344: \quad \hat{Y} = -.001782804X + 3.669884$$

Note.

$\hat{Y}$  = predicted value of PAR score

X = SPA score

Z = PSW score

XZ = value of the SPAxPSW interaction

$b_1$  = regression coefficient for centred SPA scores

$b_2$  = regression coefficient for centred PSW scores

$b_3$  = regression coefficient for the SPAxPSW interaction

$b_0$  = regression constant

## **APPENDIX B**

Regression Equations for Plotting the Significant SPAxBODY Interaction Effect on PAR

(Aiken & West, 1991)

Regression of recent physical activity levels (PAR) on social physique anxiety (SPA) at particular values of self-perceptions of body attractiveness (BODY):

$$Y = (b_1)X + (b_2)Z + (b_3)XZ + b_0$$

$$Y = (-.00197)X + (.009991)Z + (-.00270)XZ + 3.634$$

The regression equation is then re-written as:

$$\hat{Y} = (b_1 + b_3 Z)X + (b_2 Z + b_0)$$

$$\hat{Y} = [-.00197 + (-.00270)Z]X + [(.009991)Z + 3.634]$$

Simple regression lines are generated by substituting low, moderate, and high values of BODY into the re-written regression equation:

$$\text{At Low BODY} = -.7591: \quad \hat{Y} = .00007957X + 3.6264158319$$

$$\text{At Moderate BODY} = 0: \quad \hat{Y} = -.00197X + 3.634$$

$$\text{At High BODY} = .7591: \quad \hat{Y} = -.00401957X + 3.6415841681$$

Note.

$\hat{Y}$  = predicted value of PAR score

X = SPA score

Z = BODY score

XZ = value of the SPAxBODY interaction

$b_1$  = regression coefficient for centred SPA scores

$b_2$  = regression coefficient for centred BODY scores

$b_3$  = regression coefficient for the SPAxBODY interaction

$b_0$  = regression constant

## **APPENDIX C**

**Regression Equations for Plotting the Significant**

**SPA<sub>x</sub>STRENGTH Interaction Effect on PAR**

**(Aiken & West, 1991)**

Regression of recent physical activity levels (PAR) on social physique anxiety (SPA) at particular values of self-perceptions of strength (STRENGTH):

$$Y = (b_1)X + (b_2)Z + (b_3)XZ + b_0$$

$$Y = (-.00130)X + (.06138)Z + (-.00288)XZ + 3.644$$

The regression equation is then re-written as:

$$\hat{Y} = (b_1 + b_3 Z)X + (b_2 Z + b_0)$$

$$\hat{Y} = [-.00130 + (-.00288)Z]X + [(.06138)Z + 3.644]$$

Simple regression lines are generated by substituting low, moderate, and high values of STRENGTH into the re-written regression equation:

$$\text{At Low STRENGTH} = -.6867: \quad \hat{Y} = .000677696X + 3.601850354$$

$$\text{At Moderate STRENGTH} = 0: \quad \hat{Y} = -.00130X + 3.644$$

$$\text{At High STRENGTH} = .6867: \quad \hat{Y} = -.003277696X + 3.686149646$$

Note.

$\hat{Y}$  = predicted value of PAR score

X = SPA score

Z = STRENGTH score

XZ = value of the SPAxSTRENGTH interaction

$b_1$  = regression coefficient for centred SPA scores

$b_2$  = regression coefficient for centred STRENGTH scores

$b_3$  = regression coefficient for the SPAxSTRENGTH interaction

$b_0$  = regression constant



## **APPENDIX D**

Regression Equations for Plotting the Significant

SPA<sub>x</sub>STRENGTH Interaction Effect on LTEQ

(Aiken & West, 1991)

Regression of typical physical activity levels (LTEQ) on social physique anxiety (SPA) at particular values of self-perceptions of strength (STRENGTH):

$$Y = (b_1)X + (b_2)Z + (b_3)XZ + b_0$$

$$Y = (-.0178)X + (1.028)Z + (-.0360)XZ + 6.795$$

The regression equation is then re-written as:

$$\hat{Y} = (b_1 + b_3 Z)X + (b_2 Z + b_0)$$

$$\hat{Y} = [-.0178 + (-.0360)Z]X + [(1.028)Z + 6.795]$$

Simple regression lines are generated by substituting low, moderate, and high values of STRENGTH into the re-written regression equation:

$$\text{At Low STRENGTH} = -.6867: \quad \hat{Y} = .0069212X + 6.0890724$$

$$\text{At Moderate STRENGTH} = 0: \quad \hat{Y} = -.0178X + 6.795$$

$$\text{At High STRENGTH} = .6867: \quad \hat{Y} = -.0425212X + 7.5009276$$

Note.

$\hat{Y}$  = predicted value of LTEQ score

X = SPA score

Z = STRENGTH score

XZ = value of the SPAxSTRENGTH interaction

$b_1$  = regression coefficient for centred SPA scores

$b_2$  = regression coefficient for centred STRENGTH scores

$b_3$  = regression coefficient for the SPAxSTRENGTH interaction

$b_0$  = regression constant

**APPENDIX E**

Consent Form

Cover Letter  
Self-Perceptions and Physical Activity in Young Women

Dear students,

I am interested in understanding more about the psychological factors that influence physical activity behaviour. I am conducting a study that examines how self-perceptions of feeling concerning one's body/physique and one's physical abilities may be related to the physical activity behaviour of young women. I am also interested in looking at eating and smoking behaviour. This information may help health professionals in developing more effective programs for keeping young women physically active.

I would appreciate your participation in this study. Participation involves completing the questionnaires on physical self-perceptions, physical activity, eating and smoking behaviour. The questionnaires will take approximately 15-30 minutes to complete. The questionnaires will be completed on your own time and picked up the next time your class meets. There are no aspects of physical or psychological risk and the completion of the questionnaires should not cause any foreseeable discomfort. You will answer the questionnaires anonymously and all information that you provide to me will remain confidential (only seen by members of the research team). The data that is collected will be used for my Master's thesis. A summary of the results will be available upon request.

You will be advised of any new information that may influence your decision to participate in the study. You are free to withdraw from the study at any time with absolutely no penalty.

If you have any questions regarding the study please feel free to contact me.

Nanette Kowalski  
University of Saskatchewan  
College of Kinesiology  
(W) 966-6498

Advisor: Dr. Peter Crocker  
College of Kinesiology  
(W) 966-6510

## Consent Form

My signature on this sheet indicates that I, \_\_\_\_\_, will participate in the study **Self-Perceptions and Physical Activity in Young Women** by Nanette Kowalski. It indicates that I understand the following,

1. I have received information regarding the nature of the study, it's purpose, and procedures.
2. I am a volunteer and can withdraw from the study at any time without any fear of penalty.
3. There is no risk of physical or psychological harm.
4. All data that I provide will remain confidential from sources outside of the study.
5. I will receive a summary of the project, upon request, following completion of the project.
6. I have received a copy of the consent for my own records.

Signature \_\_\_\_\_

Witness \_\_\_\_\_

Date \_\_\_\_\_

Researcher \_\_\_\_\_

## **APPENDIX F**

### **Social Physique Anxiety Scale**

## Social Physique Anxiety Scale

Age \_\_\_\_\_

This is a chance to look at yourself. IT IS NOT A TEST. There are no right answers and everyone will have different answers. Be sure that your answers show how you feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE. We will keep your answers private.

Answer each sentence quickly as you feel now. Please do not leave any sentence blank.

When you are ready to begin, please read each sentence and decide your answer. There are five possible answers for each question. There are five numbers next to each sentence, one for each of the answers. The answers are written at the top of the numbers. Choose your answer to a sentence and put a circle around the number under the answer you choose. DO NOT say your answer aloud or talk about it with anyone else.

If you want to change an answer you have marked you should cross out the circle and put a new circle around another circle of the same line. For all sentences be sure that your circle is on the same line as the sentence you are answering. You should have only one answer circled for each sentence. Do not leave out any sentences, even if you are not sure which number to circle.

If you have any questions hold up your hand. Otherwise please begin.

	Not at all	Slightly	Moderately	Very	Extremely
1. I am comfortable with the appearance of my physique/figure.	1	2	3	4	5
2. I would never worry about wearing clothes that might make me look too thin or overweight.	1	2	3	4	5
3. I wish I wasn't so uptight about my physique/figure.	1	2	3	4	5
4. There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.	1	2	3	4	5
5. When I look in the mirror I feel good about my physique/figure.	1	2	3	4	5
6. Unattractive features of my physique/figure make me nervous in certain social situations.	1	2	3	4	5
7. In the presence of others, I feel apprehensive about my physique/figure.	1	2	3	4	5
8. I am comfortable with how fit my body appears to others.	1	2	3	4	5

	Not at all	Slightly	Moderately	Very	Extremely
9. It would make me uncomfortable to know others were evaluating my physique/figure.	1	2	3	4	5
10. When it comes to displaying my physique/figure to others, I am a shy person.	1	2	3	4	5
11. I usually feel relaxed when it is obvious that others are looking at my physique/figure.	1	2	3	4	5
12. When in a bathing suit, I often feel nervous about the shape of my body.	1	2	3	4	5



## **APPENDIX G**

### **Physical Self-Perception Profile**

## The Physical Self-Perception Profile

### WHAT AM I LIKE?

These are statements which allow people to describe themselves.  
There are no right or wrong answers since people differ a lot.

First, decide which one of the two statements best describes you.

Then, go to that side of the statement and check if it is just  
"sort of true" or "really true" FOR YOU.

Really True for Me	Sort of True for Me		BUT		Sort of True for Me	Really True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some people are very competitive	BUT	Others are not quite so competitive	<input checked="" type="checkbox"/>	<input type="checkbox"/>

REMEMBER to check only ONE of the four boxes.

Really True for Me	Sort of True for Me		BUT		Sort of True for Me	Really True for Me
1. <input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they are not very good when it comes to playing sports	BUT	Others feel that they are really good at just about every sport	<input type="checkbox"/>	<input type="checkbox"/>
2. <input type="checkbox"/>	<input type="checkbox"/>	Some people are not very confident about their level of physical conditioning and fitness	BUT	Others always feel confident that they maintain excellent conditioning and fitness	<input type="checkbox"/>	<input type="checkbox"/>
3. <input type="checkbox"/>	<input type="checkbox"/>	Some people feel that compared to most, they have an attractive body	BUT	Others feel that compared to most, their body is not quite so attractive	<input type="checkbox"/>	<input type="checkbox"/>
4. <input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they are physically stronger than most people of their sex	BUT	Others feel that they lack physical strength compared to most others of their sex	<input type="checkbox"/>	<input type="checkbox"/>

	Really True for Me	Sort of True for Me			Sort of True for Me	Really True for Me
5.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel extremely proud of who they are and what they can do physically	BUT	Others are sometimes not quite so proud of who they are physically	<input type="checkbox"/> <input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they are among the best when it comes athletic ability	BUT	Others feel that they are not among the most able when it comes to athletics	<input type="checkbox"/> <input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	Some people make certain they take part in some form of regular vigorous physical exercise	BUT	Others don't often manage to keep up regular vigorous physical exercise	<input type="checkbox"/> <input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they have difficulty maintaining an attractive body	BUT	Others feel that they are easily able to keep their bodies looking attractive	<input type="checkbox"/> <input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that their muscles are much stronger than most others of their sex	BUT	Others feel that on the whole their muscles are not quite so strong as most others of their sex	<input type="checkbox"/> <input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	Some people are sometimes not so happy with the way they are or what they can do physically	BUT	Others always feel happy about the kind of person they are physically	<input type="checkbox"/> <input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	Some people are not quite so confident when it comes to taking part in sports activities	BUT	Others are among the most confident when it comes to taking part in sports activities	<input type="checkbox"/> <input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	Some people do not usually have a high level of stamina and fitness	BUT	Others always maintain a high level of stamina and fitness	<input type="checkbox"/> <input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel embarrassed by their bodies when it comes to wearing few clothes	BUT	Others do not feel embarrassed by their bodies when it comes to wearing few clothes	<input type="checkbox"/> <input type="checkbox"/>

	Really True for Me	Sort of True for Me			Sort of True for Me	Really True for Me
14.	<input type="checkbox"/>	<input type="checkbox"/>	When it comes to situations requiring strength some people are one of the first to step forward	BUT	When it comes to situations requiring strength some people are one of the last to step forward	<input type="checkbox"/> <input type="checkbox"/>
15.	<input type="checkbox"/>	<input type="checkbox"/>	When it comes to the physical side of themselves some people do not feel very confident	BUT	Others seem to have a real sense of confidence in the physical side of themselves	<input type="checkbox"/> <input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they are always one of the best when it comes to joining in sports activities	BUT	Others feel that they are not one of the best when it comes to joining in sports activities	<input type="checkbox"/> <input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	Some people tend to feel a little uneasy in fitness and exercise settings	BUT	Others feel confident and at ease at all times in fitness and exercise settings	<input type="checkbox"/> <input type="checkbox"/>
18.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they are often admired because their physique or figure is considered attractive	BUT	Others rarely feel that they receive admiration for the way their body looks	<input type="checkbox"/> <input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	Some people tend to lack confidence when it comes to their physical strength	BUT	Others are extremely confident when it comes to their physical strength	<input type="checkbox"/> <input type="checkbox"/>
20.	<input type="checkbox"/>	<input type="checkbox"/>	Some people always have a really positive feeling about the physical side of themselves	BUT	Others sometimes do not feel positive about the physical side of themselves	<input type="checkbox"/> <input type="checkbox"/>
21.	<input type="checkbox"/>	<input type="checkbox"/>	Some people are sometimes a little slower than most when it comes to learning new skills in a sports situation	BUT	Others have always seemed to be among the quickest when it comes to learning new sports skills	<input type="checkbox"/> <input type="checkbox"/>
22.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel extremely confident about their ability to maintain regular exercise and physical condition	BUT	Others don't feel quite so confident about their ability to maintain regular exercise and physical condition	<input type="checkbox"/> <input type="checkbox"/>

	Really True for Me	Sort of True for Me			Sort of True for Me	Really True for Me	
23.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that compared to most, their bodies do not look in the best of shape	BUT	Others feel that compared to most their bodies always look in excellent physical shape	<input type="checkbox"/>	<input type="checkbox"/>
24.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they are very strong and have well developed muscles compared to most people	BUT	Others feel that they are not so strong and their muscles are not very well developed	<input type="checkbox"/>	<input type="checkbox"/>
25.	<input type="checkbox"/>	<input type="checkbox"/>	Some people wish that they could have more respect for their physical selves	BUT	Others always have great respect for their physical selves	<input type="checkbox"/>	<input type="checkbox"/>
26.	<input type="checkbox"/>	<input type="checkbox"/>	Given the chance, some people are always one of the first to join in sports activities	BUT	Other people sometimes hold back and are not usually among the first to join in sports	<input type="checkbox"/>	<input type="checkbox"/>
27.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that compared to most they always maintain a high level of physical conditioning	BUT	Others feel that compared to most their level of physical conditioning is not usually so high	<input type="checkbox"/>	<input type="checkbox"/>
28.	<input type="checkbox"/>	<input type="checkbox"/>	Some people are extremely confident about the appearance of their body	BUT	Others are a little self-conscious about the appearance of their bodies	<input type="checkbox"/>	<input type="checkbox"/>
29.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel that they are not as good as most at dealing with situations requiring physical strength	BUT	Others feel that they are among the best at dealing with situations which require physical strength	<input type="checkbox"/>	<input type="checkbox"/>
30.	<input type="checkbox"/>	<input type="checkbox"/>	Some people feel extremely satisfied with the kind of person they are physically	BUT	Others sometimes feel a little dissatisfied with their physical selves	<input type="checkbox"/>	<input type="checkbox"/>

## **APPENDIX H**

### **Self-Administered 7-Day Physical Activity Recall**

## 7-Day Physical Activity Recall

Now we would like to know about your physical activity during the past 7 days. But first, let me ask you about your sleep habits.

1. On the average, how many hours did you sleep each night during the last five weekday nights (Sunday - Thursday)? \_\_\_\_\_ hours
2. On the average, how many hours did you sleep each night last Friday and Saturday nights? \_\_\_\_\_ hours

Now I am going to ask you about your physical activity during the past 7 days, that is, the last 5 weekdays, and last weekend, Saturday and Sunday. We are not going to talk about light activities such as slow walking, light housework, or un strenuous sports such as bowling, archery, or softball. Please look at this list which shows some examples of what we consider moderate, hard, and very hard activities.

### Moderate Activity

*Occupational tasks:* 1) delivering mail or patrolling on foot; 2) house painting; and 3) truck driving (making deliveries, lifting and carrying light objects).

*Household tasks:* 1) raking the lawn; 2) sweeping and mopping; 3) mowing the lawn with a power mower; and 4) cleaning windows.

*Sports activities (actual playing time):* 1) recreational volleyball; 2) Ping-Pong; 3) brisk walking for pleasure or to work (4.83 km/hour (3 miles/hour) or 20 minutes/km); 4) golf, walking and pulling or carrying clubs; and 5) calisthenic exercises.

### Hard Activity

*Occupational tasks:* 1) heavy carpentry; and 2) construction work, doing physical labour.

*Household tasks:* 1) scrubbing floors.

*Sports activities (actual playing time):* 1) tennis doubles; 2) ping-pong; 3) dancing (disco, square, or folk dancing); 4) martial arts; 5) aquacize; 6) touch football; and 7) recreational cross country skiing.

### Very Hard Activity

*Occupational tasks:* 1) very hard physical labour, digging or chopping with heavy tools; and 2) carrying heavy loads such as bricks or lumber.

*Sports activities (actual playing time):* 1) jogging, aerobics, or swimming; 2) singles tennis 3) racquetball; 4) soccer; 5) elite volleyball; 6) basketball; and 7) weight lifting.

People engage in many other types of activities, and if you are not sure where one of your activities fits, please ask me about it.

3. First, let's consider moderate activities. What activities did you do and how many total hours did you spend during the last 5 weekdays doing these moderate activities or others like them? Please tell me to the nearest half hour.

Activity (brief description)	Hours
_____	_____
_____	_____
_____	_____
_____	_____

4. Last Saturday and Sunday, how many hours did you spend on moderate activities and what did you do? (Can you think of any other sports, job, or household activities that would fit into this category?).

Activity (brief description)	Hours
_____	_____
_____	_____
_____	_____
_____	_____

5. Now let's look at hard activities. What activities did you do and how many total hours did you spend during the last 5 weekdays doing these hard activities or others like them? Please tell me to the nearest half hour.

Activity (brief description)	Hours
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

6. Last Saturday and Sunday, how many hours did you spend on hard activities and what did you do? (Can you think of any other sports, job, or household activities that would fit into this category?).

Activity (brief description)	Hours
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Now let's look at very hard activities. What activities did you do and how many total hours did you spend during the last 5 weekdays doing these very hard activities or others like them? Please tell me to the nearest half hour.

Activity (brief description)	Hours
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

8. Last Saturday and Sunday, how many hours did you spend on very hard activities and what did you do? (Can you think of any other sports, job, or household activities that would fit into this category?).

Activity (brief description)	Hours
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

9. Compared with your physical activity over the past 3 months, was last week's physical activity more, less, or about the same?

- 1. More
- 2. Less
- 3. About the same



## **APPENDIX I**

### **Leisure Time Exercise Questionnaire**

Name \_\_\_\_\_

### Leisure Time Exercise Questionnaire

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

**TIMES PER  
WEEK**

a) **STRENUOUS EXERCISE**  
(HEART BEATS RAPIDLY)

(i.e., running, jogging, hockey, football, soccer, squash, basketball, cross-country skiing, judo, inline skating, vigorous swimming, vigorous long-distance bicycling)

b) **MODERATE EXERCISE**  
(NOT EXHAUSTING)

(i.e., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, popular and folk dancing, alpine skiing)

c) **MILD EXERCISE**  
(MINIMAL EFFORT)

(i.e., yoga, archery, fishing from river bank, golf, horseshoes, bowling, snowmobiling, easy walking)

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

OFTEN

SOMETIMES

NEVER/RARELY

1.

2.

3.