Investigating Physical Activity Type, Frequency of Physical Activity, Motives on Physical Activity and Social Physique Anxiety Among Undergraduate Females

by

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Supervisory Committee

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Abstract

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Physical activity has multiple health benefits, however, physical activity can also lead to the development of excessive exercise, disturbed eating patterns, negative body image and social physique anxiety. This study investigated the relationship between social physique anxiety (SPA), physical activity type, frequency of physical activity, and motives to exercise. Participants were female undergraduates (*N*=108) enrolled at the University of Victoria. Female students were recruited from Exercise, Physical and Health Education classes that were open to all students from different faculties. A cross-sectional survey assessed social physique anxiety, frequency of physical activity and motives for exercise as well as dividing students according to physical activity type (Varsity, Intramural, High Strenuous Exerciser, Low Strenuous Exerciser). An analysis of variance revealed no association between SPA and physical activity type. Additionally, correlations showed that SPA and frequency of physical activity was not significant. Interestingly, SPA was significant for all motives that include Interest ($r=-.371$, $p<.01$), Competence ($r=-.330$, $p<.01$), Appearance ($r=.430$), Fitness ($r=-.215$, $p<.05$), and Social ($r=-.406$, $p<.01$). A linear regression revealed that only Appearance and Social motives predicted SPA.

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Dedication

My thesis is dedicated to my family, who have given me tremendous support and patience throughout my academic goals. Mom and Dad, I cannot thank you enough for being patient and loving during my highs and my lows.

I would also like to dedicate my research to those affected by body image issues. I hope that this study will help alleviate your pain and struggle

Chapter 1: Introduction

1.1 Benefits of Physical Activity

Physical activity has been associated with multiple health benefits. The Canadian Physical Activity Guideline (2013) revealed that adults who accumulate at least 150 minutes of moderate to vigorous physical activity per week could help reduce their risk of premature death, developing heart disease, stroke, high blood pressure, cancer, type 2 diabetes, osteoporosis, and obesity. For example, a study by Holmes, Chen, Feskanich, Kroenke and Colditz (2005) found that breast cancer patients who engaged in physical activity had decreased severity of breast cancer outcomes and better survival. Physical activity is also associated with personal benefits such as increased self-confidence, improved self-worth, happiness, and improved memory (Patel, Schofield, Kolt & Koegh, 2013). Another health benefit of physical activity is that it leads to increased cardiovascular health. Sesso, Paffenbarger and Lee (2000) concluded that physical activity can be the primary prevention of coronary heart disease. Sports, recreational activities and vigorous physical activities had an inverse relationship with the risk of developing coronary heart disease (Sesso et al.). Physical benefits have also been reported among individuals participating in physical activity, such as increased energy, feelings of being fit, weight maintenance and weight loss (Patel, Schofield, Kolt & Koegh, 2013). Reiner, Niermann, Jekauc and Woll (2013) found a negative relationship with weight gain and physical activity participation among their participants. The authors also found that physical activity decreased the likelihood of developing coronary heart diseases. Thus, there is a consensus in the literature that physical activity is associated with multiple health benefits among various populations. However, despite the benefits

of physical activity, body image issues can also arise among physically active individuals (Zabinski, Calfas, Gehrman, Wilfley and Sallis, 2001). The next sections will discuss that despite the multiple health benefits, physical activity can also lead to detrimental health consequences.

1.2 Body Image: A Consequence of Physical Activity

As previously mentioned, physical activity has been associated with weight loss and maintenance (Patel, Schofield, Kolt & Koegh, 2013; Reiner, Niermann, Jekauc & Woll, 2013). However, Zabinski, Calfas, Gehrman, Wilfley and Sallis (2001) found that individuals participating in a program that promoted physical activity had higher body dissatisfaction. The authors have also found that individuals reported a greater drive for thinness. Drive for thinness is a subscale in the Eating Disorders Inventory-2 and is defined as "an excessive concern with dieting, preoccupation with weight, and entrenchment in an extreme pursuit of thinness" (Garner, Olmstead & Polivy, 1983, p.17). Additionally, Slater and Tiggermann (2006) concluded that when physically active children and adolescent females were exposed to media, they experienced body image issues as adults. Furthermore, Slater and Tiggermann also found that exposure to media as a child predicted body shame, appearance anxiety and body dissatisfaction while participating in physical activity. Grabe, Ward and Hyde (2008) also found that body image concerns, internalization of the thin ideal body, and frequent bulimic and anorexic attitudes arose once females were exposed to the media depicting thin females.

Magazines and television displaying images of slender and unattainable body figures that are achieved through excessive physical activity and excessive dieting have been one of the reasons for negative body image (Field, Cheung, Wolf, Herzog,

Gortmaker & Colditz, 1999; Harrison, 2006; Hurray, Touyz & Peter, 1996). First, many of women's magazine contents evolve around diet, exercise, and cosmetic surgery to change appearance and body size, which further perpetuate negative body image (Malkin, Wornian & Chrisler, 1999). Also, Stice and Shaw (1994) found that women subjected to pictures from magazines portraying ultra-thin models experienced depression, stress, guilt, shame, insecurity, body dissatisfaction and predicted bulimic symptoms. Kim and Lennon (2007) also found that female college students in their study experienced low self-esteem and negatively evaluated their appearance after viewing beauty magazines. Furthermore, Harrison and Cantor (1997) found that magazines were a media stream that best predicted disordered eating and drive for thinness than any other type of media, such as television. Also, when comparing fitness magazines depicting lean and fit bodies, and fashion magazines depicting thin bodies, females were more prone to disordered eating when viewing fitness magazines about dieting and fitness, than fashion magazines depicting thin models (Harrison and Cantor). Tiggemann and McGill (2004) saw an increase in negative mood and body dissatisfaction among participants when exposed to body images of thin-idealized females. Second, television has also contributed to the idea of obtaining a thin body. Miller and Halberstadt (2005) showed that viewing music videos on television was a predictor for heightened awareness of thinness. Heinberg and Thompson (1995) found that female undergraduates who viewed television commercials emphasizing thinness and attractiveness became more dissatisfied with their bodies following exposures.

Because society emphasizes thinness as being physically attractive, many females attempt to achieve thinness by a variety of dieting methods and extreme exercise, and

consequently developed body image issues if they did not achieve their ideal body (Atalay & Gencoz, 2008; Eklund & Crawford, 1994). Thus, body image issues were a public health concern and have been linked to several detrimental health consequences other than body image issues, such as exercise dependence and eating disorders (Smith, Wright & Winrow, 2010; Bratrud, Parmer, Whitehead & Eklund, 2010). Smith et al. (2010) found that one third of their sample, which consisted of long distance male and female runners, was at risk for developing exercise dependence. Interestingly, these individuals possessed compulsive-obsessive type behaviours, which was a motivator for the increased participation in physical activity. Segura-Garcia, Ammendolia, Procopio, Papaianni, Sinopoli, Bianco, Fazio, and Capranica (2010) also found that exercise dependence occurred when men and women felt uneasy with their bodies and participated in physical activity only to seek the benefit of losing weight.

Additionally, research revealed a relationship between negative body image and eating disorders (Kollei, Schieber, de Zwaan, Svitak & Martin, 2013; Konstantakopoulos, Varsou, Dikeos, Loannidi, Gonidakis, Papadimitriou & Oulis, 2012; Oshio & Meshkova, 2012). Kollei, Schieber, de Zwaan, Svitak and Martin (2013) found that among females being treated with an eating disorder, 12% also suffered from body dysmorphic disorder, which is the preoccupation with a perceived physical flaw which is unobservable by other people. Interestingly, Kollei et al. (2013) used the SCID-I module measure for body dysmorphic disorder and found that 78.8% of the participants were dissatisfied with their body, 71.3% were dissatisfied with their stomach, 54.5% were dissatisfied with their legs, and 42.6% were dissatisfied with body shape. Eating disorders are characterized as psychiatric illnesses found in the Diagnostic and Statistical Manual of Mental Disorders,

Fourth Edition (DSM-IV-TR), that include anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified (American Psychiatric Association, 2000). Victims suffered from disturbances in eating, emotions and thoughts. Eating disorders had disturbing consequences including psychological and physical effects, and were detrimental when one was considering children due to its increased rates of miscarriages and infertility. Also, Pearlstein (2002) found that eating disorders had comorbidity with many psychiatric disorders such as depression, anxiety disorders, obsessive compulsive disorders, substance abuse, personality disorders and body dysmorphic disorder. Furthermore, eating disorders affected body systems. Bulimia was been associated with irregular menstrual cycles or amenorrhea (Crow, Thuras, Keel & Mitchell, 2002). Additionally, anorexia nervosa was been associated with fertility problems such as infertility due to insufficient body fat, increased rates of miscarriages, and premature labour (Pearlstein, 2002). In addition to infertility problems, eating disorders caused abnormal heart and blood pressures, osteoporosis, dehydration, fatigue, electrolyte imbalances, gastric ruptures, tooth decay, irregular bowel movements, stomach ulcers, heart and gallbladder disease and type II diabetes mellitus (National Eating Disorders Association, 2013). The evidence provided raises concerns in regards to the detrimental health consequences of eating disorders and how it perpetuated negative body image.

As previously discussed, body image can lead to body dissatisfaction. Media has exacerbated poor body image among females by displaying images of thin women in magazines and on television. Furthermore, evidence showed that poor body image can lead to the development of eating disorders. The next section described a concept that has been investigated within the body image literature, social physique anxiety

1.3 Concept of Social Physique Anxiety

Body image was a concept defined as the "mental representation of one's body in both static and action aspects. It contains both cognitive and affective elements, such as how the body is perceived and known, and how the body is experienced and felt" (Blom, Farley & Guthals, 1970). A concept that has been investigated with the body image literature was social physique anxiety, and may help explain the anxiety arising with body image and body perceptions. Social physique anxiety (SPA) was a concept developed by Hart, Rejeski and Leary (1989) and was defined as the "anxiety that people experience in response to others' evaluations of their physiques" (p.94). Furthermore, Hart et al. (1989) explained that social physique anxiety was the result of knowing that other people are evaluating one's body in an unfavourable manner and that SPA was "a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one's physique. By physique, we mean one's body form and structure, specifically body fat, muscle tone, and general body proportions" (p.96). Individuals who were high in social physique anxiety exhibited repeating concerns with how others viewed their physiques as they believed their bodies were unattractive or that they had unrealistic negative views of their bodies (Hart et al., 1989). On the other hand, low social physique anxiety individuals viewed their bodies in a positive manner and were disinterested in other's views about their physiques (Hart et al., 1989). Men and women high in social physique anxiety become distressed when their bodies are portrayed in public and avoid activities that would accentuate their bodies, such as exercise (Leary et al., 1989). The importance of understanding social physique

anxiety can help health practitioners and educators help individuals overcome bodily anxieties as it can impede exercising and promote body image issues and eating disorders.

1.4 Social Physique Anxiety and Eating Disorders

Current research has indicated that SPA could be a predictor in the development of eating disorders (Thompson & Chad, 2002; Asci, Tuzun, & Koca, 2006; Thogersen-Ntoumani, 2007; Haase, 2011) and negative body image (Martin Ginis, Murru, Conlin & Strong, 2011; Atalay, & Gencoz, 2008; Thompson & Chad, 2002) For example, Diehl, Johnson, Rogers and Petrie (1998) found that SPA was the strongest predictor for bulimia among female undergraduates. SPA was also associated with body dissatisfaction, drive for thinness, bulimic tendencies, perfectionism, and disordered eating patterns among female undergraduates and female athletes (Krane, Waldron, Stiles-Shipley & Michalenok, 2001; Asci, Tuzun, Koca, 2006; Atalay & Gencoz, 2008; Cox, Lantz, Mayhew, 1997; Haase, Prapavessis & Owens, 2002; Haase & Prapavessis, 2001). Bas and Kizitlan (2007) showed that individuals on diets had lower self-esteem and higher social physique anxiety scores than non-dieters. Additionally, Monsma and Malina (2004) found that SPA was a significant predictor for bulimia and that female adolescents reported negative physical self-perceptions. Thus, there have been associations between social physique anxiety with the development of eating disorders and eating disorder risks. The next section will discuss the impact of social physique anxiety on body dissatisfaction.

1.5 Social Physique Anxiety and Body Dissatisfaction

Individuals reporting high social physique anxiety also reported experiencing body dissatisfaction and negative body images (Atalay & Gencoz, 2008; Thompson &

Chad, 2002; Lamarche & Gammage, 2010; Yin, 2001; Evans, Cotter & Roy, 2005). These authors found that vulnerable individuals with high social physique anxiety were consistently aware of the shape and size of their bodies and became dissatisfied when there was a discrepancy between their ideal bodies and current bodies. Additionally, Gillison, Standage and Skevington (2006) found that male and female adolescents experienced greater social physique anxiety and lower self-esteem when they received external pressures to lose weight. Furthermore, Haase, Mountford and Waller (2007) indicated that SPA increased body awareness and increased body checking in front of mirrors among female undergraduate students. In addition to negative body image, female undergraduates reported more body shame and experienced guilt towards their bodies than their male peers (Thompson, Dinnel & Dill, 2003). As will be discussed next, social physique anxiety and body dissatisfaction can often lead to abnormal exercise patterns and behaviours.

1.6 Social Physique Anxiety and Exercise

The literature yielded mixed results if social physique anxiety impeded or facilitated physical activity behaviours. Research indicated that exercise can be beneficial for female undergraduates experiencing high SPA (Focht, 2001; Raedeke, Focht & Scales, 2009; Lamarche & Gammage, 2010 ; Bas & Donmez, 2009). Raedake et al. (2009) found that females with high SPA benefited from classes that highlighted good health over appearance. Lamarche and Gammage (2010) revealed that females gained higher self-perceptional efficacy and lower social physique anxiety post-exercise. Contrary, studies showed that SPA can impede exercising among female adults and adolescents (Atalay & Gencoz 2008; Cumming & Thorgersen-Ntoumani, 2011; Treasure, Lox & Lawton, 1998).

Atalay and Gencoz (2008) found that females who experienced high social physique anxiety and who were also dissatisfied with their bodies did not participate in physical activity. Treasure et al. (1998) concluded that young obese females with high SPA were less likely to adhere to exercise programs. Furthermore, research also showed that SPA did not influence future exercising behaviours among female adults and adolescents (Niven, Fawkner, Knowles, Henretty & Stephenson, C., 2009; Goodwin, Haycraft, Willis & Meyer, 2011). Goodwin et al. (2011) saw no association between compulsive exercise behaviours and SPA among adolescents. Additionally, Niven et al. (2009) revealed that SPA was not associated to current exercise behaviours and even future exercise behaviours among their sample of female adults. Thus, there was a need to investigate exercise and physical activity behaviours among females with high SPA since previous research yielded mixed results.

1.7 Social Physique Anxiety and Physical Activity Types

Studies have investigated the effects of different physical activity levels, physical activity types and sports on social physique anxiety. Koyuncu, Tok, Canpolat and Catikkas (2010) investigated social physique anxiety and body image among 4 groups according to their exercise frequency. These 4 groups were members of a sociocultural institution, a group of elite athletes, and two groups that did not exercise regularly but represented different university departments. SPA was significantly different across all groups and regular exercisers reported significantly lower SPA than the other groups. Finkenberg, DiNucci, McCune, Chenette and McCoy (1998) also found that SPA was significantly different across female undergraduate athletes, kinesiology major and a control group, in which athletes reported the lowest SPA. Several studies have

investigated SPA among various types of sports. Gay, Monsma and Torres-McGehee (2011) found that among female adolescent athletes, athletes of aesthetic salient sports were 4.5 times more likely to experience SPA than athletes from nonaesthetic sports. Hausenblas and Mack (1999) found significant differences of SPA among high school female divers, female athletes (lacrosse, volleyball and soccer), and nonathletes. Female divers reported significantly lower SPA than the athletes and nonathletes. Furthermore, Martin, Engels, Wirth and Smith (1997) also found significant group differences of SPA among female youth competing in elite levels of figure skating, soccer and gymnastics. Conversely, some studies found no association between SPA and physical activity types. For example, Van Raalte, Schmelzer, Smith and Brewer (1998) found no group differences between elite status and weight class female rowers. However, they did find group differences of SPA among NCAA Division I, NCAA Division II and recreational female swimmers in which NCAA Division reported lower SPA than recreational swimmers and that lightweight female swimmers had lower SPA than their heavyweight counterparts. Haase (2009) found that college females participating in individual sports reported higher SPA and bulimic behaviors than team sport female athletes. Haase and Prapavessis (2001) examined SPA among 4 different groups of physical activity types that included physique salient athletes, weight restricted athletes, non-physique salient athletes and non-athlete undergraduate females. The authors found no relationship between the groups and SPA. Although no significant differences were found between groups and SPA, the results showed a relationship between SPA and disordered eating. Krane, Stiles-Shipley, Waldron and Michalenok (2001) also found no differences of SPA among female college athletes and female college exercisers. Thompson and Fleming

(2007) also found that there were no differences of SPA among female varsity athletes participating in soccer, volleyball, hockey, basketball, rugby and cross-country. The current literature investigates SPA among athletes, intramurals, high strenuous exercisers and low strenuous exercisers. Including intramural athletes in the current study will add to the literature because intramural sports have not yet been investigated.

1.7 Social Physique Anxiety and Motivation

An important concept to understand among the literature of social physique anxiety and exercise was motivation because individuals were influenced by different motives to exercise. According to Ryan and Deci (2000), to be motivated "means to be moved to do something…someone who is energized or activated toward an end is considered motivated". In accordance to the self-determination theory, Ryan and Deci explained that there were two types of motivation based upon different reasons in which people were motivated. These two types of motivation were intrinsic motivation and extrinsic motivation. Intrinsic motivation was defined as doing an action or behaviour because it was interesting or enjoyable for that person (Ryan and Deci). Conversely, extrinsic motivation was referred as doing an action or behaviour due to a separate goal or outcome (Ryan and Deci). Motivation had been used in the social physique anxiety literature to help understand individual's motives to exercise. Amarose and Hollembreak (2005) found that female and male undergraduate students reported higher social physique anxiety also experienced higher appearance impression motivation, an example of an extrinsic motive in accordance to Deci and Ryan's perspective on motivation. Strong, Ginis, Martin, Mack and Wilson (2006) also found that among female and male undergraduates, weight management was a strong predictor for social physique anxiety.

Furthermore, Brunet and Sabiston (2009) found that social physique anxiety indirectly influenced female and male undergraduates to be physically active. Conversely, Cox, Ullrich-French, Madonia and Witty (2011) found that social physique anxiety predicted high school students to avoid participating in physical activity. Frederick and Morrison (1996) concluded that female and male university students who reported high social physique anxiety were extrinsically motivated to participate in exercise than students with low social physique anxiety. Among female university students, Gammage, Hall and Martin Ginis (2004) found a significant relationship between impression motivation, which was to be motivated to form an impression, and social physique anxiety. Thus, the evidence suggested that high SPA was linked to extrinsic motives and low SPA was associated with intrinsic motives. The current study used Leary and Kowalski's (1990) model of impression management which involved two different processes that were guided by principles and situational and dispositional factors: impression motivation and impression construction. Further in the literature review revealed how impression management was the ideal model for the current study

Social physique anxiety was an important construct to examine for health educators that aimed to create initiatives promoting healthy body image in the domain of physical activity. Therefore, there was a need to investigate the relationship between SPA and exercise among undergraduate females and further investigating intramural athletes as no study to date has included this group. Thus, the current study aimed to investigate SPA and exercise behaviors, with regards to physical activity type, and if there is a relationship between SPA and exercise motivates.

1.2 Study Purpose

The purpose of the study was to investigate social physique anxiety in female undergraduates to determine whether there was a relationship between social physique anxiety and physical activity type that include varsity athletes, intramural athletes, high strenuous exercisers and low strenuous exercisers. A second purpose was to investigate the relationship between SPA and frequency of physical activity. Finally, a third purpose was to determine whether motives, such as appearance, fitness, interest/enjoyment, social and competence, mediated social physique anxiety.

1.3 Research Questions

The questions framing the study and hypotheses were:

R1: Is there a relationship between social physique anxiety and physical activity type (varsity, intramural, high strenuous exercisers, low strenuous exercisers)?

H1: Low strenuous exercisers will experience more social physique anxiety than high strenuous exercisers, varsity athletes and intramural athletes.

R2: Is there a relationship between social physique anxiety and frequency of physical activity participation?

H2: The more the frequency of physical activity, the higher the social physique anxiety

R3: Can motives such as interest/enjoyment, competence, appearance, fitness and social predict social physique anxiety?

H3: Appearance and fitness will predict high social physique anxiety and interest/enjoyment, social and competence will predict low social physique anxiety among all 4 groups.

1.4 Delimitations

The current study was delimited to individuals aged 18 to 25 from the University of Victoria and furthermore delimited to female undergraduate students. Evidence showed that females were susceptible to experiencing high social physique anxiety than males (Kowalski, Mack, Crocker, Niefer & Fleming, 2006; McReary & Saucier, 2009; Brunet, Sabiston, Dorsch & McCreary, 2010; Asci, Tuzun & Koca, 2006; Evans, Cotter & Roy, 2005; Horn, Newton & Evers, 2011; Gammage & Gabriel, 2009; Gillison, Standage & Skevington, 2006; Ginis, Eng, Arbour, Hartman & Phillips, 2005). This study investigated undergraduates females, however, the results can be generalized to previous evidence indicating that females experience high social physique anxiety.

1.5 Limitations

There were several limitations to the current study. First, there were threats to external validity because the sample was delimited to university students. Thus, we cannot generalize the sample to the general population as it was restricted to a university aged population. Second, self-report bias was a limitation to this study because self reported measures were used to gather data. Third, the study was a cross-sectional design therefore investigating behaviours at the moment undergraduate females took the online survey. Fourth, there were limitations in the type of sports undergraduate females participated in as the University of Victoria offers selected sports.

1.6 Assumptions

We assumed that all participants responded to the questions truthfully and honestly. Also, we assumed that the variables being investigated were measured through the selected instruments and scales.

1.7 Operational Definitions

A. Type of activity:

(1) Varsity Athlete: Person training on the University of Victoria's varsity sport team

(2) Intramural Athlete: Person playing on an intramural sport at the University of Victoria

(3) High Strenuous Exerciser: Person scoring between 119 and 59.5 units of physical activity on the Godin-Leisure Time Exercise Questionnaire

(4) Low Strenuous Exercise: Person scoring between 59.5 and 0 units of physical activity on the Godin-Leisure Time Exercise Questionnaire

B. Social Physique Anxiety:

Anxieties arising from the experience people have in response to other's critiques of their physiques and their bodies

C. Motivation:

Motivation is the drive for someone to engage in a behaviour. In this study, a person is motivated to engage in physical activity. Motivation has two types:

(1) Intrinsic Motivation: Person engages in physical activity for enjoyment, interest, competence and social motives.

(2) Extrinsic Motivation: Person engages in physical activity for appearance and fitness motives

Chapter 2: Literature Review

This literature review will discuss the concept of body image, the impression management model and social physique anxiety. The review on social physique anxiety first discussed previous research that included all types of populations. Second, the literature review narrowed to research on social physique anxiety among females and undergraduate females. Within the social physique anxiety literature, body image and impression management was discussed as these components were linked to SPA. The methodology used to produce this literature review was to search the term "social physique anxiety" in EBSCOhost, a search engine available from the University of Victoria's library website. Included articles were peer-reviewed from the SPORTDiscus, PsycINFO and Medline databases.

2.1 Body image

The concept of body image in this section will be presented by discussing the five foundations of body image, the negative consequences of body image and body image among female and male undergraduate students. It was important to understand body image as it was a concept that was re-introduced later on the literature of social physique anxiety.

Body image was been an emerging topic of interest and research within the fields of health and sport. Theoretically, body image was defined as an individual's perceptions and thoughts towards their own bodies through body size estimations, evaluations on the attractiveness of one's body and the associated emotions with these estimations and evaluations (Grogan, 2010). Current research assumed five foundations that conceptualized body image in the literature (Gleeson and Frith, 2006). First, body image

was conceptually validated through instruments. Gleeson and Frith (2006) explained that people created mental schemas that represented their beliefs, attitudes, feelings and perceptions of their own bodies and these constructs were measurable. Second, body image was a product of our own perceptions. Perceptions were constructed through a process by which we perceived our own bodies in a certain way, and made comparisons against other people's bodies. These internalized comparisons altered body image due to the discrepancy between actual body image and perceived body image (Gleeson and Hannah, 2006). The degree of negative body image influenced the distortions of people's perceptions of their bodies and body sizes. A third assumption was that body image was unique to the individual because perceptions of body image functioned as internal images constructed by the individual. However, Gleeson and Hannah highlighted the importance of social and cultural influences that altered body image. The authors indicated that people's mental schemas changed through feedback from friends, family and the media. Importantly, Gleeson and Hannah stated that body image should be treated as a unique construct and examined at the individual level. Fourth, body image can be measured with self-report. Gleeson and Hannah explained that although body image was multi-faceted, it was measured as a unidimensional concept in experiments. To examine body image, the definition of body image needed to be simple to make it operant and thus be measured by research instrumentation. Finally, many individuals neutralized their perceived ideal body within social settings and during conversations with other people (Gleeson and Hannah, 2006). This occurred because individuals were aware of the standards held by societal and cultural norms of being "healthy" and many avoided exposing their perceived ideal bodies (Gleeson and Hannah, 2006). These foundations were relevant to

the current research as social physique anxiety was a related yet distinct concept to body image. Body image was the overarching concept that involved feelings towards one's body and social physique anxiety included anxiety of one's body during a given situation. Research indicated that body image was a precursor social physique anxiety (Woodman and Steer, 2011). Thus, a person would experience negative body image and then would experience social physique anxiety if they were concerned with how others perceived their physiques (Woodman and Steer).

Particularly relevant for the current study were negative consequences associated with body image. Negative body image issues occurred throughout all lifespans. Adolescents have been extensively studied as they were targeted by the media to maintain unrealistic expectations of physiques. Thus, adolescents developed body image issues such as low self-esteem and the use of diets and dangerous practices to control weight (Morrison, Kalin, & Morrison, 2004). Furthermore, evidence indicated that adults also experienced body image issues. These body image issues were risk factors for the development of a variety of psychopathologies including depression, anxiety and eating disorders (Peat, Peyerl & Muehlenkamp, 2008). However, university students were particularly susceptible to negative body images and low self-esteem as they experienced important life events such as applying to graduate programs after undergrad, preparing for careers and being financially independent from their parents (Crocker and Wolfe, 2001). Evidence indicated that greater family social support, less sociocultural pressure, greater physical self-concept, lower thoughts on the thin ideal and use of coping methods positively impacted body image (Snapp, Hensley-Choate & Ryu, 2012). These results were important as it focused on undergraduate females, which were the target population

of the current study. Additionally, university females experienced higher body dissatisfactions than males (Grossbard, Lee, Neighbors & Larimer, 2008). Grossbard et al. (2008) examined the drive for muscularity and weight/body shape concerns on first year university female and male students. The results of the study revealed that being female and having a self-esteem based on idealized body images was associated with concerns about weight and body shape (Grossbard et al., 2008). Also, previous studies showed that college females possessed exaggerated perceptions of what they believed was the ideal female body compared to those held by their male counterparts (Cohn & Adler, 1992). Most females preferred a thinner body type in which they believed was most ideal and attractive. Interestingly, Cohn and Adler found that 50% of women believed that their peer's ideal figure was thinner than their own ideal figure. The study conducted by Cohn and Adler was important for the current research as it described how college females preferred thinner bodies and that their perceptions for an ideal body were skewed towards thinness. Thus, there was consensus in the literature that college females wished to be thinner and have gone to extreme measures to achieve the ideal image. These extreme measures included exercising excessively and developing disturbed eating patterns that included excessive dieting and limiting caloric intake.

Athletes have also been a population investigated in previous research focusing on body image. A study conducted by Petrie, Greenleaf, Reel and Carter (2009) examined the psychosocial correlates of eating disorders in a sample of undergraduate female athletes. Compared to females without eating disorder symptoms, those with eating disorders reported more psychological distress such as sadness, depression, anxiety, and stress. Additionally, the authors found that the female athletes with eating disorders

were more dissatisfied with their bodies than female athletes without eating disorders (Petrie et al.). Petri et al. found that female athletes were more influenced by media pressures, rather than sport-specific pressures such as teammates and judges, to be thin.

In summary, body image encompassed the perceptions and thoughts towards our bodies through body size estimations, evaluations on the attractiveness of one's body and the associated emotions with these estimations and evaluations (Grogan, 2010). Negative body image influenced detrimental health consequences such as extreme dieting and exercise, and eating disorders.

2.2 Impression Management Model

The theoretical framework used in the study was the Impression Management Model. The Impression Management Model was an extension of Schlenker's (1980) Self-Presentation theory. Thus, introducing concepts and key ideas of the Self-Presentation theory will give an overview of the background of the Impression Management Model.

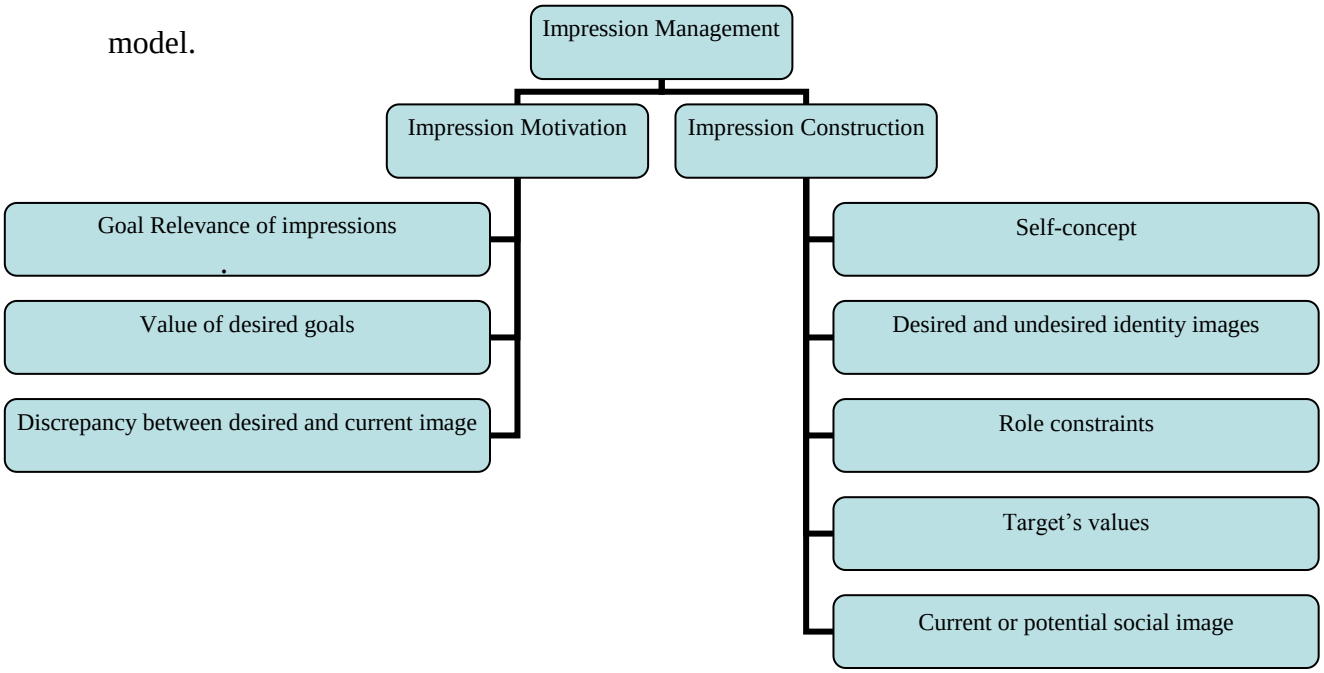
The Self-Presentation theory was a theory first coined by Schlenker in 1980. According to Schlenker (1980), individuals portrayed certain self-images, intentionally or unintentionally, that reflected their identities. Particularly in social situations, individuals chose a self-image that made a positive impression on others. This goal-oriented behaviour ensured that self-images influenced other's judgements in a positive manner. Thus, people's self-presentations intended to create certain traits such as being competent, desirable, attractive, and honest (Schlenker, 1980). However, self-presentations can be manipulated by situational and personal factors, depending on the self-images that people wanted to create. An important component of the Self-Presentation theory was the reactions from other's in regards to the self-images and presentations. Success in

presenting a positive self-image was accomplished when others react positively to the intended self-image. The Self-Presentation theory postulated that individuals controlled their images in the presence of others, particularly images generated so others perceived them as socially acceptable (Schlenker, 1980). Thus, others reactions to these formed images provided the individual feedback as to whether the desired impression was made.

Since the development of Schlenker's Self-Presentation theory, Leary and Kowalski (1990) evolved the theory to create their model of Impression Management. Impression management was conceptualized as "the process by which individuals attempt to control the impressions others form of them. Because the impressions people make on others have impressions for how others perceive, evaluate, and treat them, as well as for their own views of themselves, people sometimes behave in ways that will create certain impressions in other's eyes" (Leary and Kowalski, 1990, p.34). Impression management and self-presentation have been used interchangeably in past research due to its similarities. The distinction between impression management used in this study and Schlenker's self-presentation (1980) was that Schlenker defined impression management as the process by which people controlled images during social interactions. Furthermore, Schlenker (1980) defined self-presentation as the occurrence when people project images that were self-relevant. The Impression Management model had the best fit to the current study because it is an extension to the self-presentation theory and involved motivation as a factor in which influenced people to portray certain self-images and presentations. Leary and Kowalski's (1990) model of impression management suggested that people were motivated to control how others regarded them and consequently managed their public impressions. Motivation in this circumstance was important as it influenced social

physique anxiety. The definition of social physique anxiety has been defined as the anxiety one experiences in response to the presence of other people and the critique they receive on their bodies.

Leary and Kowalski's (1990) model of impression management was a two component model. The two discrete processes making up impression management were impression motivation and impression construction. Impression motivation was the process in which people were motivated to control how other individuals saw them (Leary and Kowalski). It compromised 3 factors: goal-relevance of impressions, value of desired goals and discrepancy between desired and current image (Leary and Kowalski). Impression motivation and the factors that conceptualized this process will be further discussed. The second process was impression construction. Impression construction described the process which people decided the kind of impression to form and how they created these impressions (Leary and Kowalski). Impression construction was conceptualized by five different factors that included self-concept, desired and undesired identity images, role constraints, target values and current or potential social image (Leary and Kowalski). Below was a diagram illustrating the Impression Management model.



A review of the two processes of impression management will be discussed in the following sections. We will first examine impression motivation followed by impression construction.

2.2.1 Impression Motivation

According to Leary and Kowalski's (1990) model of impression management, impression motivation explained the extent in which individuals were motivated to control other people's impressions. Impression motivation was conceptualized by three central factors: goal relevance of the impressions, the value of the desired outcomes and the discrepancy between one's desired and current social image. A discussion will outline each factor

Goal Relevance of Impressions. Leary and Kowalski (1990) described that individuals were motivated to manage impressions when the impressions they portrayed fulfilled one or more of the following goals: Social and material outcomes, self-esteem maintenance and identity maintenance. Examples of social and material outcomes included impressions that resulted in approval and friendships, or a raise in salary income. Self-esteem maintenance suggested that maintenance and enhancing self-esteem can be achieved through compliments and praise from others. Finally, identity maintenance occurred when individuals created and maintained socially acceptable identities (Leary and Kowalski). Thus, individuals were motivated to achieve these three goals and that the more these goals were made public, the higher the motivation to accomplish one or all three goals (Leary and Kowalski).

Value of Desired Goals. Impression motivation suggested that motivation increased as the value of desired goals increased and in which public impressions were important.

Leary and Kowalski (1990) exemplified that a job applicant would most likely be more motivated to manage their impressions in front of a hiring manager if the job was highly desirable. Leary and Kowalski also indicated that motivated individuals influenced their impressions for others with high status, attractive or likeable.

Discrepancy Between Desired and Current Image. Leary and Kowalski (1990) discussed that individuals possessed a wide range of images that they regarded as acceptable. When individuals believed that other's impressions have of them were not consistent with the ideal image, they were motivated to change their impressions. Additionally, embarrassment and failure to attain a desired image motivated individuals to manage their images in order to gain positive impressions by others (Leary and Kowalski).

2.2.2 Impression Construction

The process of impression construction helped to understand which type of impression people chose and how they portrayed that impression to others. Leary and Kowalski (1990) noted that their model included five factors that influenced how individuals managed their impressions: self-concept, desired identity, role constraints, target values and social image. First, self-concept had been argued as the primary determinant of the impressions individuals tried to portray to others. Certain aspects and qualities were displayed publicly because people were proud to have. Thus, impression management suggested that individuals displayed their best qualities so that others accurately perceived them. Second, desired identities referred to how people would like to be and not be. A desired identity was achieved when one behaved and held attributes consistent with the desired identity. Furthermore, people managed their impressions so that they do not hold undesired images, ones that a person felt they do not identify with.

Third, role constraints suggested that there were certain roles that required individuals to possess certain characteristics or act in particular ways (Leary and Kowalski, 1990). Displaying an appropriate public image was important to many individuals, thus, many conveyed an image that were consistent with their roles. Fourth, many individuals pursued an image that was consistent with the values and preferences of others. Leary and Kowalksi (1990) noted that individuals "select from a myriad of possible self-images that are most likely to meet with approval or desired reactions". Fifth, current or potential social image was a factor that described the impressions in which people try to create. These impressions were influenced by how they believed they were regarded by other people and how they will be perceived by others in the future. Social image was an important factor to consider when individuals experienced a public failure. Many individuals tried to repair the negative experience with impressionable strategies to enhance their public image after failure.

In conclusion, the situational and dispositional factors previously discussed influenced individuals to manage their impressions and to choose the tactic used to display their public image. Thus far, we have discussed 3 factors predetermining impression motivation and 5 factors predetermining impression construction. As we have seen throughout the discussion of impression management, Leary and Kowalski's (1990) model highlighted the connection between our private selves and impression management. A person's private self-concept as well as desirable and undesirable images had an influential impact on self-presentation choices that publicly display images. Leary and Kowalki's model of impression management was suitable for the current study as it was constructed to help us explain the underlying motivation and behaviors in social physique

anxiety. As it will be thoroughly described shortly, social physique anxiety was a concept based on self-image and self-perceptions. Thus, the discussion of the results was guided by the impression management model as it accounted for processes in impression-pertinent behaviours.

2.3 Social Physique Anxiety

Social physique anxiety (SPA) was a term first coined by Hart, Leary and Rejeski (1989) and was defined as the "anxiety that people experience in response to others' evaluations of their physiques" (p.94). SPA was distinct from but related to body image, which referred to the image of the body one formed in their minds. According to the literature, body image preceded social physique anxiety (Woodman and Steer, 2011). A positive relationship between body image discrepancies and social physique anxiety among women indicated that women felt more anxious as they feared their bodies being fat. Thus, body image was a predictor for social physique anxiety. A review of the literature on SPA across different populations will be discussed, followed by a discussion on a narrower population, female university undergraduates.

2.3.1 Social Physique Anxiety across different populations and gender

Researchers have investigated social physique anxiety across gender and different populations. Common themes have emerged when reviewing the research and these themes have been of interest in investigating social physique anxiety for the current study: SPA across gender, eating attitudes, exercise, activity type, body image and body dissatisfaction, Self-Presentation and athletes.

SPA Across Gender

An extensive amount of research focused on social physique anxiety and gender (Kowalski, Mack, Crocker, Niefer & Fleming, 2006; McReary & Saucier, 2009; Brunet, Sabiston, Dorsch & McCreary, 2010; Asci, Tuzun & Koca, 2006; Evans, Cotter & Roy, 2005; Horn, Newton & Evers, 2011; Gammage & Gabriel, 2009; Gillison, Standage & Skevington, 2006; Ginis, Eng, Arbour, Hartman & Phillips, 2005). The populations investigated among these studies were adolescent and adult males and females. Nine studies found that females reported higher SPA than males in both adolescent and adult populations (Kowalski, Mack, Crocker, Niefer & Fleming, 2006; McReary & Saucier, 2009; Brunet, Sabiston, Dorsch & McCreary, 2010; Asci, Tuzun & Koca, 2006; Evans, Cotter & Roy, 2005; Horn, Newton & Evers, 2011; Gammage & Gabriel, 2009; Gillison, Standage & Skevington, 2006; Ginis, Eng, Arbour, Hartman & Phillips, 2005). Brunet et al. (2010) suggested that sociocultural differences accounted for the differences in social physique anxiety among females and males. Such differences included increased pressures for females to be thin and males to be muscular, heightened importance on looks and appearance and increased gain in body fat among adolescent girls as a result from puberty. Although the drive to be muscular affected SPA among males, females reported higher SPA and the SPA scores for males were found to be in the low range (Brunet et al., 2010). Additionally, Gammage and Gabriel (2009) not only found that females experienced high social physique anxiety, but that they also reported fear of negative evaluation. Fearing negative evaluation meant that females were afraid of being evaluated negatively and not obtain approval by others (Gabriel & Gammage, 2009).

SPA and Eating Attitudes

Social physique anxiety has been linked to a number of negative eating attitudes (Asci, Tuzun & Koca 2006; Bas & Kizitlan, 2007; Evans, Cotter & Roy, 2005) and eating disorders and disordered eating patterns among women (Thorgensen, 2007; Haase, 2011; Gomes, Martins & Silva, 2011; Monsma & Malina, 2004). Research indicated that individuals reporting higher social physique anxiety also reported negative eating attitudes and abnormal eating behaviors leading to eating disorders. Furthermore, research showed that individuals on diets had lower self-esteem and higher social physique anxiety scores than non-dieters (Bas & Kizitlan, 2007). Additionally, Monsma and Malina (2004) found that SPA was a significant predictor for bulimia and that participants reported negative physical self-perceptions. Thus, there was a connection between SPA and eating disorders and negative eating habits (Bas & Kizitlan, 2007; Monsma & Malina, 2004) and should be taken seriously due to the severity and consequences of eating disorders. A more in depth review of eating disorders and SPA will be investigated later in the literature investigating SPA specifically among female undergraduates. Nevertheless, studies have indicated a relationship between SPA and the development of eating disorders regardless of age and sex.

SPA and Exercise

Past research studied the frequency and intensity of exercise and its relationship with SPA. However, there were mixed findings of the association between SPA and exercise. Exercise was found to increase SPA (Martin Ginis, Prapavessis & Haase, 2008; Asci, Tuzun & Kizitlan, 2006) and some research found that individuals with high SPA avoided exercise (Atalay & Gencoz, 2008; Cumming &Thorgensen-Ntoumani, 2011; Treasure, Lox & Lawton, 1998). Conversely, some evidence showed that exercise can

alleviate negative SPA (Raedeke, Focht & Scales, 2009, Lamarch & Gammage, 2010; Bas & Donmez, 2009). Other studies reported that SPA had no association with exercise behaviors (Niven, Fawkner, Knowles, Henretty, & Stephensen, 2009; Goodwin, Haycraft, Willis & Meyer, 2011). The differences in findings can be accounted for the different populations investigated. For example, inactive females were targeted in a study by Ginis, Prapavessis and Haase (2008) and found that SPA was increased after exercise. However, Raedeke, Focht and Scales (2009) found that among female undergraduates with high social physique anxiety, exercise alleviated social physique anxiety after completing a course on health wellness. Thus, much of the literature of SPA focused on one type of physical activity, there was evidently a need to understand social physique anxiety among different groups participating in different types of physical activity. Many studies investigated one type of group, such as inactive females (Ginis et al.) and high social physique anxiety females (Raedeke et al.). However, SPA needs to be investigated among different groups and not just focused on type of group to understand the mixed findings in previous literature. The current study aimed to investigate the impact of SPA on different types of physical activity to reflect a broader range of groups.

SPA , Exercise Type, and Sport Type

Previous studies have investigated different physical activity levels, physical activity types and different sport types on social physique anxiety. Twelve studies found significant differences between SPA among different groups. We will first discuss the literature on athletes and non-exercisers and then followed by aesthetic and non-aesthetic sport types.

Athletes and non-exercisers:

Seven studies have focused on athletes and non-exercisers. Previous research showed that athletes experience lower SPA than their non-exerciser counterparts (Smith, Wright & Winrow, 2010; Cox, Lantz & Mayhew, 1997; Crocker, Snyder, Kowalski & Hoar, 2000; Krane, Waldron, Stiles-Shipley & Michalenok, 2001). For example, Koyuncu, Tok, Canpolat and Catikkas (2010) investigated social physique anxiety and body image among 4 different groups according to their exercise frequency. The 4 groups represented members of a sociocultural institution, group of elite athletes, and two groups that did not exercise regularly but represented different university departments. SPA was significantly different across all groups in which athletes reported significantly lower SPA. The authors also found that the athletes had higher body satisfaction scores on the Body Image Satisfaction Questionnaire than the other 3 groups. Another study by Finkenberg, DiNucci, McCune, Chenette and McCoy (1998) also found that SPA was different across female undergraduate athletes, kinesiology major and a control group, in which athletes reported the lowest SPA. Furthermore, Hausenblas and Mack (1999) found significant differences of SPA among high school female divers, female athletes (lacrosse, volleyball and soccer), and nonathletes. Female divers reported significantly lower SPA than the athletes and nonathletes. Thus, there is consistently among past research that athletes experience lower SPA than non-exercisers.

Aesthetic and non-aesthetic sport type athletes:

Past research on social physique anxiety investigated athletes in physique salient and non-physique salient sports. Physique salient sports included sports highlighting the body with tight-fitting costumes, such as gymnastics. On the other hand, non-physique salient sports provided athletes with a more relaxed costume, such as basketball. Martin,

Engels, Wirth and Smith (1997) found significant group differences of SPA among female youth competing in elite levels of figure skating, soccer and gymnastics. Also, Gay, Monsma and Torres-McGehee (2011) found that among female adolescent athletes, athletes of aesthetic salient sports were 4.5 times more likely to experience SPA than athletes from nonaesthetic sports. Aesthetic sports in the study included swimming, figure skating, ballet, track and field, and cross-country running. Non-aesthetic sports were basketball, soccer and softball. Haase (2009) found that college females participating in individual sports reported higher SPA and bulimic behaviors than team sport female athletes. Van Raalte, Schmelzer, Smith and Brewer (1998) found no group differences between elite status and weight class female rowers. However, they found group differences of SPA among NCAA Division I, NCAA Division II and recreational female swimmers in which NCAA Division reported lower SPA than recreational swimmers and that lightweight female swimmers had lower SPA than their heavyweight counterparts. Haase and Prapavessis (2001) examined SPA among 4 different groups of physical activity types that included physique salient athletes, weight restricted athletes, non-physique salient athletes and non-athlete undergraduate females. The authors found no relationship between the groups and SPA and results also reviewed a relationship between SPA and disordered eating among the groups. Thompson and Fleming (2007) also found that there were no differences of SPA among female varsity athletes participating in soccer, volleyball, hockey, basketball, rugby and cross-country. The current research followed a different approach in understanding social physique anxiety among athletes. The sports offered at the University of interest were not categorized as

"aesthetic" and thus not focused on the physique. Thus, it investigated a sample similar to that of the general population.

SPA, Body Image and Body Dissatisfaction

Individuals reporting high social physique anxiety also reported experiencing body dissatisfaction and negative body images (Atalay & Gencoz, 2008; Thompson & Chad, 2002; Lamarch & Gammage, 2010; Yin, 2001; Evans, Cotter & Roy, 2005). Furthermore, individuals experienced greater social physique anxiety and lower self-esteem when they received external pressures to lose weight (Gillison, Standage & Skevington, 2006). Research indicated that SPA increased body awareness and increased body checking in front of mirrors (Haase, Mountford & Waller, 2007). In addition to negative body image, many undergraduate females reported body shame and experienced guilt towards their bodies (Thompson, Dinnel & Dill, 2003). However, some research found that when individuals perceived a decrease in body fat, they improved on body satisfaction and reported lower social physique anxiety (Martin Ginis, Eng, Arbour, Hartman & Phillips, 2005). Social physique anxiety was also decreased when female and male adults experienced higher self-esteem and increased satisfaction with their bodies (Davison & McCabe, 2005). Thus, the literature indicated a link between SPA and body image dissatisfaction, and that these variables could lead to detrimental consequences such as greater pathology in attitudes and behaviors towards food (Evans, Cotter & Roy, 2005).

SPA and Impression Management

As previously mentioned, the Impression Management model and the Self-Presentation theory were used interchangeably in previous research. In this literature

review, both impression management and self-presentation were examined in regards to social physique anxiety. However, Leary and Kowalski's (1990) two component model of impression management was the model used for the current study.

Impression Management was the model used for the foundation of the current study as it helped us understand why people acted and behaved the way they did in regards to their self-image. Previous research had also used impression management as their model to explain the impact of social physique anxiety (Lorimer & Westbury, 2006; Gammage, Ginis & Hall, 2004; Cumming & Thorgensen-Ntoumani, 2011; Lamarche, Kerr, Faulkmer, Gammage & Klentrou, 2012; Gammage & Gabriel, 2009). As mentioned in the impression management literature, impression management was a concept in which a person strived to control other's impressions of them (Leary and Kowalski, 1990). People strive to meet the ideal impressions and that their behaviors and attitudes acted accordingly to other people's impressions. Research indicated that when people perceived they were not meeting the ideal impressions of others they reported to have low self-presentational efficacy (Gammage, Ginis & Hall, 2004; Cumming & Thorgensen-Ntoumani, 2011). Also, past studied indicated that low self-presentational efficacy and experiencing self-presentational concerns led to poor self-esteem and high social physique anxiety (Lamarche et al., 2012; Gammage et al., 2004; Cumming & Thorgensen-Ntoumani, 2011). These resulted indicated a relationship between self-presentation and social physique anxiety. Thus, the Impression Management model presented a reputation in past research regarding social physique anxiety and was chosen as the appropriate framework for the current study.

The following sections will discuss past literature of social physique anxiety experienced by the targeted population of the current research, female undergraduates.

2.3.2 Social Physique Anxiety Among Female Undergraduates

The literature focusing on social physique anxiety among college and university undergraduate females can be diverted into common themes. These themes were based upon the findings and results which included attire and costumes, body image discrepancies, exercise motives, and eating behaviors.

Social Physique Anxiety and Costumes

Five studies focused on costumes and sport attire, and whether it was a significant predictor for the development of social physique anxiety (SPA) and body consciousness. Studies have yielded mixed results. There was some evidence that attire had significantly increased SPA (Greenleaf, 2004; Eklund and Crawford, 1994). One study in particular found that almost two thirds of the sample mentioned that their skating costumes made them more aware and body conscious (Greenleaf, 2004). The authors found that costumes were influential factors promoting negative body image and performance in skaters. Performance was affected due to the athlete's discomfort in the costume and thus created a negative enjoyment in the sport (Greenleaf, 2004). With regards to studies specifically focusing on exercising females, there was also some support that tight fitting costumes led to higher social physique anxiety levels. Eklund and Crawford (1994) found that females participating in aerobic classes who preferred wearing tight fitting clothing had higher levels of SPA than those preferring loose fitting clothing. The authors argued that these results were consistent with self-presentation motives where individuals may feel the need to impress others by wearing more tight fitting and revealing clothing. However,

social physique anxiety can arise if these individuals perceive they cannot impress others (Eklund and Crawford, 1994). On the other hand, some research argued that costumes did not play a significant role in increasing body consciousness and in the development of social physique anxiety (Krane, Stiles-Shipley, Waldron and Michalenok, 2001; Hausenblas and Mack, 1999). Krane et al. (2001) suggested that the environment in which the sport takes place may be a more critical factor for social physique anxiety than costume and sport attire. Also, Krane et al. (2001) argued that college-level athletes developed various coping skills in the presence of body image and criticisms. The authors suggested that female athletes have diverted their attention away from obtaining an ideal body by focusing on achieving best performances. The cumulative years of competition for female athletes developed into a protective factor against social physique anxiety in comparison to the general female college population (Krane et al., 2001). Other studies also indicated that female athletes, such as those involved in diving, had become desensitized to the pressures of achieving ideal bodies (Hausenblas and Mack, 1999). Also, the authors suggested that female athletes have been accustomed to wearing revealing attire. Through years of involvement and repeated exposures, female athletes who wear revealing costumes may not necessarily be the population at risk for the development of social physique anxiety (Hausenblas and Mack). However, research cautioned that social physique anxiety may arise when female athletes retire from physique salient-sports after high school, such as diving and gymnastics, before they enter the elite level in college and university (Hausenblas and Mack). Evidence showed mixed results in regards to the influence of attire and costume to social physique anxiety among the college and university female population. Attire can be a protective factor for

young adult females from the pressures associated with the sport in question, or it can enhance self-presentation motives and negative body image, leading to increased social physique anxiety. A second re-occurring theme in the literature focused on the perceived discrepancies between ideal body physique and actual body physique. The subsequent paragraph highlighted studies that have focused on body discrepancies and how it affected social physique anxiety and body dissatisfaction among females.

Social Physique Anxiety and Discrepancies between ideal and current physique

As previously mentioned, discrepancies between ideal and current ideals occurred when individuals held perceptions of what their physiques looked like and how they would like their physiques to look like. Much research focused on the discrepancy between perceived ideal body physique, actual body physique and perceived ideal body physique held by other individuals. Not surprisingly, the literature showed mixed results with regards to the influence of body discrepancies and its adverse effects on social physique anxiety. Some studies argued that the discrepancy between a female's current physique and the ideal physique held by males increased social physique anxiety (Sabiston, Crocker, and Munroe-Chandler, 2005; Russell and Cox, 2003; Atelay and Gencoz, 2008). The discrepancy between current and ideal body physique was smaller between that of current and perceived ideal female body physique held by males, which was in turn had a smaller discrepancy between current and perceived ideal female body physique held by other females (Sabiston et al., 2005). Another study conducted by Russell and Cox provided evidence that the influence of body discrepancies between perceived and ideal body physique increased social physique anxiety significantly. The findings suggested that perceived weight discrepancy provided information in regards to

perceptual displeasure over owns' physique, regardless of accounting for actual weight and exercise motives. Additionally, SPA can be attributed to how individuals categorized themselves against the image held in their mind rather than being attributed to objective measures such as BMI (Atelay and Gencoz, 2008). Furthermore, it was argued that female perceived their bodies larger than the current size, even when they were underweight based upon BMI scores. The greater emphasis to be thin and lean by society created an overestimation of body size, leading to greater dissatisfaction and higher SPA (Atelay and Gencoz, 2008). Physical attractiveness was also an influential factor among female college students (Amorose and Hollembeak, 2005). Rating oneself as less physically attractive based on body shape and weight caused increased levels of social physique anxiety reported by college females. On the other hand, those possessing positive views about their physical appearance tended to have lower social physique anxiety. Consistent with the Impression Management model, those who believed they lacked the ability to create an impression of being attractive experienced SPA. Thus, the greater the desire to impress others while lacking the ability to change their own perceptions of their bodies, the greater the likelihood of developing SPA (Amorose and Hollembeak). Another study suggested the importance of college females preferring a lower than actual weight (Eklund and Crawford, 1994). The ideal weight was found to be about eight percent less than current weight. Even when body composition was factored out, social physique anxiety was still reported (Eklund and Crawford). The authors also reported that SPA concerns were more influenced by weight discrepancies than by body compositions, such as body fat percentages and BMI. SPA and self-presentational motives emerged even when body compositions were at healthy levels (Eklund and

Crawford, 1994). Another perspective on body dissatisfaction was the internalization of the significance of thinness and attractiveness (Petrie, Greenleaf, Reel and Carter, 2009). Internalization in this context referred to the ways in which females have unique views of the thin ideal, and may not publicly share these views with other people (Petrie et al., 2009). These views were culturally sensitive and can be influenced by different values concerning attractiveness and beauty. Two types of internalization were important in regards to the development of social physique anxiety, which were the internalization of the importance of being attractive and thin, and of being physically fit and in shape. Athletes reported higher internalization of being physically fit and in shape due to performance pressures (Petrie et al., 2009). This finding suggested that the competitive sport environment endorsed females to be fit and strong rather than to be thin. Additionally, this type of internalization could be a protective factor for athletes against the development of eating disorders and could explain why athletes were more satisfied with their bodies in comparison to female exercisers (Petrie et al., 2009). Studies have found that the degree of internalization was an antecedent to developing eating disorders (Petrie et al., 2009). Although both types of internalization of the thin ideal were dysfunctional ways of thinking, internalization of being attractive and thin negatively influenced social physique anxiety more than internalization of being physically fit and strong.

The influence of Social Physique Anxiety on Exercise Motives

A third theme emerging from the literature was the relationship between motives for exercising and social physique anxiety. Research had found that female college students engaged in physical activity for different motives, particularly for weight loss

and maintenance (Sabiston, Crocker & Munroe-Chandler, 2005). Physical activity was identified by females to be the primary strategy to alter body shape and size. Furthermore, altering one's body shape and size stemmed from discrepancies between current and ideal body shape and influenced by self-presentational strategies (Sabiston et al., 2005). It was worthy to investigate weight and appearance motives as they were significant predictors of social physique anxiety. However, weight and appearance motives held various meaning for females in regards to their motivations for exercise. For example, some females strived for muscularity and toned physiques. The failure to reach these goals triggered higher body consciousness and body anxieties, as females perceived they lacked sufficient muscle mass, a condition called muscle dysmorphia (Sabiston et al., 2005). On the other hand, females striving to be thin also developed social physique anxiety and body dissatisfaction. Although these two groups of females had different motives to exercise, the overall goal was similar in that they wished to reduce overall body fat. Sabiston et al. (2005) also found that many females reported fitness and health motives for engaging in physical activity. Consequently, fitness and health motives were significant predictors for SPA only when in the presence of other predictors, such as weight and appearance motives. Thus, females regarded weight and appearance as primary motives for exercising, and that being fit and healthy were secondary benefits (Sabiston et al., 2005). Some studies found that increasing performance was a motive for these female athletes to spend more time at the gym and exercise related behaviors (Krane et al., 2001; Koyuncu, Tok, Canpolat and Catikkas, 2010). Female athletes, unlike female exercisers, may engage in additional exercise behaviors and conditioning to increase performance. Thus, the motives were performance driven, and not aesthetically

or weight management driven like female exercisers. Increased performance motives could be a protective factor against SPA and eating disorders, as research indicated that female exercisers were more concerned to be thin than fit (Krane et al., 2001). In addition to performance motivation, athletes engaging in further exercise reported positive psychological characteristics such as enhanced self-efficacy and decreased mood disturbances (Koyuncu et al., 2010). Another study also found similar results in regards to the underlying motives of physical activity among college females. Haase and Prapavessis (2001) argued that different types of physical activity had different types of underlying motives, for example exercising at a recreational centre or participating in sports. The underlying motive for athletes to engage in physical activity was to improve performance. In contrast, female exercisers were more motivated to meet ideal physiques set forth by society and their own perceptions of the ideal physique (Haase and Prapavessis, 2001). Thus, it was important to understand the underlying motivation to engage in exercise or additional training as it may increase social physique anxiety among certain groups of females. Discussed so far were the implications of exercise on the development of social physique anxiety, and how various types of motives influence SPA and exercise in different ways. Another factor that can contribute to the development of SPA was the lack of motivation to exercise, also called amotivation (Atelay and Gencoz, 2008; Chu, Bushman, and Woodard, 2008). One study compared the differences in motivation to exercise between exercisers and non-exercisers, and the reported SPA for each group of females. Interestingly, female non-exercisers developed higher SPA than female exercisers. Furthermore, having negative body image increased SPA significantly among non-exercising females. The authors discovered that non-

exercising females avoided exercise locations because they believed their bodies would be scrutinized by others (Atelay and Gencoz, 2008). Non-exercising females experienced a vicious cycle of avoiding exercise locations which lead to declining levels of physical activity and at the same time these females were dissatisfied with bodies and SPA increased (Atelay and Gencoz). What these females with high social physique anxiety failed to realize was that physical activity had the capacity to change the level of body dissatisfaction and thus reduced SPA (Atelay and Gencoz). Other studies focused on the obligation to exercise as a motive to engage in physical activity between exercisers and non-exercisers. Consistent with previous research, non-exercisers experienced higher social physique anxiety when they felt obliged to exercise (Chu et al., 2008). Social physique anxiety was present among females not participating in any form of exercise or sport activities (Chu et al.). Females exhibited social physique anxiety not only because they felt obliged to exercise, but because they had to be in places where the physique would be evaluated by other people. Another focus in the literature examined the relationship between social physique anxiety and the development of eating disorders. This relationship will be discussed in the following section.

Development of eating disorders in the presence of social physique anxiety

The relationship between social physique anxiety and eating disorders have been extensively examined by researchers, especially among young female adults. Yet surprisingly, much of the research found no significant differences in the development of eating disorders between athletes and non-athletes (Krane, Stiles-Shipley, Waldron, and Michalenok, 2001; Hausenblas and Mack, 1999). Additionally, eating disorder correlates such as body dissatisfaction, drive for thinness, bulimia and perfectionism failed to

predict the number of hours spent exercising per week for both athletes and exercisers (Krane et al., 2001). Although these eating disorder correlates did not increase the amount of physical activity, they significantly increased social physique anxiety among female exercisers. For athletes, factors such as body dissatisfaction, concern for thinness and perfectionism were the only driving forces in the development of SPA (Krane et al., 2001). Studies failed to show that physique-salient sports, such as diving, would predict higher rates of eating disorders. A study by Hausenblas and Mack (1999) compared eating disorder correlates between divers, athletes and non-athletes. Despite the assumption that females participating in sports emphasising leanness and thinness would experience more body images issues and SPA, divers were not at a higher risk than the other females to develop an eating disorder. Additionally, the authors found that athletes in general were not a population at risk for developing eating disorders. Thus, female athletes and the type of sport did not predispose female athletes to develop eating disorders (Hausenblas and Mack, 1999). Another study conducted by Haase and Prapavessis (2001) also demonstrated that the type of activity did not moderate eating disorders. That is, the type of sport a female participated in had no influence on SPA and disordered eating patterns. In conclusion, no differences were found among groups in the development of eating disorders, even though SPA was more significant among exercising females.

A final reoccurring theme in the literature was examining differences of social physique anxiety and eating disorders among activity type, specifically between athletes and exercisers. Examining SPA differences between exercisers and athletes have several important implications for the sport and health fields. First, despite the suggestion that

athletes would express higher social physique anxiety than the general female population, the literature showed otherwise (Krane, Stiles-Shipley, Waldron and Michalenok, 2001; Haase and Prapavessis, 2011). Also contrary to popular belief, the prevalence and development of eating disorders was not seen more prevalent among female athletes than exercisers, even in physique-salient sports (Krane, Stiles-Shipley, Waldron, and Michalenok, 2001; Hausenblas and Mack, 1999). However, the motive for engaging in exercise behaviors was an important predictor for the onset of SPA. This was a significant predictor because it helped distinguished why exercisers experienced greater SPA than athletes.

2.4 Limitations in the literature

In conclusion, the literature indicated that there was a high prevalence of social physique anxiety among exercisers and not in athletes. Research also reported that young college females were more likely than males and any other groups of females to develop social physique anxiety and eating disorders. Furthermore, university female exercisers and athletes were a vulnerable population due to the high prevalence of eating disorders. However, there were several limitations in the literature addressing the problem of the social physique anxiety and psychological well-being among university students. First, longitudinal studies are needed to examine pre and post measures of social physique anxiety after a given amount of time. Due to the timing and budget of the current study, this limitation was not addressed. Second, studies are needed to investigate different types of physical activity. Most research thus far has examined different types of sports, or different types of exercise contexts and environment. The current research study will examine different physical activity types that include varsity athletes, intramural athletes

and exercisers participating in exercise on 2 levels, high and low. This will overcome literature as prior research have yet to include intramural sport participants and the varying degree of physical activity participation between frequent and non-frequent exercisers. Third, the relationship between SPA and physical activity behaviors needs to be further investigated as previous results are inconclusive. Thus, the current study addressed the gaps in the literature by examining different types of physical activity that include varsity sports, intramural sports, and exercise, as well as addressing whether the relationship between SPA and physical activity.

Chapter 3: Methodology

This chapter will present a detailed methodology of the study and will discuss the study design, participant characteristics, recruitment procedures, instrumentation and analysis.

3.1 Research Design

The study used a cross-sectional survey design to investigate physical activity type, frequency of exercise, social physique anxiety and motives to exercise among undergraduate females. The data was obtained through an online questionnaire.

3.2 Participant Characteristics

The sample for the study was 108 female undergraduates from the University of Victoria, aged 17-25 enrolled in classes in the School of Exercise, Physical and Health Education.

3.3 Sampling Procedure

To recruit participants, the investigator went to all classes offered from January 2013 to September 2013 in the Faculty of Exercise Science, Physical and Health Education (EPHE) at the University of Victoria. Ten classes participated in the study. In addition, 2 Western universities participated in the study. However, only 8 students completed the survey from these western universities. The classes from the University of Victoria were open classes, thus available to any undergraduate. The classes ranged from 15 to 100 students. Approximately 1200 female and male undergraduates were approached, however only females were asked to participate in the study. A hundred and twenty-five participants from the recruitment e-mail lists completed the survey. Consequently, among the 125 completed surveys, 17 of them had missing data and were

not included in the analysis. Thus, the total sample of the study was 108 undergraduate females. Recruiting individuals from the Faculty of Exercise, Physical and Health Education was chosen because there would be greater chances of selecting physically active females who either participated in sports or exercise. All instructors were contacted via e-mail prior to recruitment in order to obtain permission to go into their classes. In the e-mail, the instructors were notified of the purposes of the study and they were also given a copy of the consent form, which can be found in the appendix. During each recruitment process, the investigator provided a brief introduction of the study in which participants were told that the study investigated social physique anxiety, a concept that was part of body image, and exercise. The investigator also told the students that participation in the study included a 10 minute single-time online survey. An e-mail sign-up sheet was circulated around the classroom in which students provided their emails. The investigator stressed that by providing their emails, students were giving informed consent to participate in the study. To conclude, the investigator notified each class that all participants will receive a reminder e-mail on week later, even though they have completed the online survey. The e-mail included a direct link to the online survey as well as a copy of the consent form. One week later, participants who provided their emails received a reminder e-mail with a direct link to the online survey.

3.11 Instrumentation

Social Physique Anxiety Scale

Social physique anxiety was assessed using the Social Physique Anxiety Scale (Hart, Leary & Rejeski, 1989). This is the most comprehensive and only scale in the literature examining and measuring social physique anxiety. The Social Physique

Anxiety Scale (SPAS) has been tested for construct validity, factorial validity and reliability. First, research showed that SPAS provided evidence of construct validity and further showed that it could be measured conceptually as a situational variable. (Ginis, Murru, Conlin and Strong, 2011; Maiano, Morin, Eklund, Monthuy-Blanc, Garbarino and Stephan, 2010; Petrie and Diehl, 1996; Motl and Conroy, 2001). Situational SPA was the SPA experienced in response to a given situation, for example, individuals may experience SPA in response to perceiving that a fitness instructor was more fit than they were (Ginis et al., 2011). One study found convergent and discriminant evidence of construct validity of the SPAS when a correlations were conducted with measures of other theoretical constructs including the Physical Self-Efficacy Scale, Surveillance subscale of the Objectified Body Consciousness Scale and the Marlowe-Crowne Social Desirability Scale (Motl and Conroy, 2001). Thus, there was evidence that the SPAS measured the intended construct, social physique anxiety. Second, evidence suggested that SPAS possessed good factorial validity (Motl and Conroy, 2001; Eklund, Mack and Hart, 1996). Using calibration confirmatory factor analyses, Eklund, Mack and Hart (1996) found that the SPAS was a model with two first-order factors subordinate to one second-order factor. Additionally, the researchers found that SPAS had a good fit in calibration and cross-validation exceeding the 0.90 criterion. Third, research was able to find good reliability of the Social Physique Anxiety Scale (Maiano, Morin, Eklund, Monthuy-Blanc, Garbarino, and Yannick, 2010; Petrie, and Diehl, 1996). Petrie and Diehl (1996) found that the SPAS had internal consistency reliability in which the test items of the SPAS produced similar results among men and women. Thus, the Social

Physique Anxiety Scale was a valid and useful measure and was the appropriate instrument for the current study to evaluate social physique anxiety.

Motives for Physical Activities Measure-Revised

The Motives for Physical Activities Measure-Revised (MPAM-R) was selected for the current research to evaluate the motives that drive participants to engage in exercise. The MPAM-R was chosen because the measure has been tested for construct validity (Wilson, Rodgers and Fraser, 2002). Wilson et al. (2002) used Pearson product-moment correlations to test construct validity of the MPAM-R with the Self-Determination Theory's psychological need satisfaction constructs that included competence, autonomy and relatedness. The authors found that the motives measured by the MPAM-R were in line with theoretical expectations. In addition, the MPAM-R investigated five types of reasons for activity engagement: fitness, appearance, competence, enjoyment and social (Ryan, Frederick, Lepes, Rubio & Sheldon, 1997). Thus, these motives investigated variables important for the current study, specifically fitness and appearance. Additionally, factor analysis revealed that the MPAM-R was a measure that enabled to differentiate fitness and appearance goals, which were two types of body motives for engaging in physical activity (Ryan et al., 1997).

Godin-Leisure Time Exercise Questionnaire

The current study also used the Godin-Leisure Time Exercise Questionnaire (GLTEQ) to assess exercise frequency. The GTLEQ was assessed for reliability and validity and concluded to be an appropriate method to measure exercise behaviour (Godin and Shephard, 1997). There had been concern in the literature over the validity of self-reports and questionnaires to capture physical activity behaviours because of over

and under estimations of physical activity reported by participants, problems with recall and response bias (Prince, Adamo, Hamel, Hardt, Gorber & Tremblay, 2008). Prince et al. (2008) suggested that object measures such as accelerometers revealed more accurate physical activity behaviours than self-reports. However, due to cost limitations of the current study, self-report measures were used to measure the variables in question such as SPA, motivation and exercise frequency.

The GTLEQ measured frequency of physical activity through strenuous, moderate and light activities. Strenuous activities were defined as activities in which the heart beats rapidly such as running, jogging, soccer, basketball, swimming and bicycling. Moderate activities were defined as activities that were not exhausting and consisted of fast walking, baseball, tennis and badminton. Finally, mild exercise included activities with minimal effort such as yoga, golf and easy walking. Total weekly physical activity was calculated in units and summing the products of units for each level of activity (strenuous, moderate, light). Strenuous, moderate and light activities had a unit of 9, 5 and 3 respectively. An example of calculating weekly physical activity is given:

Strenuous = 5 times/week

Moderate = 3 times/week

Light= 2 times/week

The total physical activity score would be (9x5)+(5x3)+(3x2)= 45+15+6= 66 units. This method was used to measure the frequency of the physical activity and to categorize the participants according to groups, as discussed below.

Participant Classification and Demographic Questions

In order to classify participants in the groups of Intramurals, Athletes, Low Strenuous and High Strenuous Exercisers, a series of questions determined the classification. For Intramurals, participants were asked "Yes" or "No" in the online survey if they participated in an intramural sport organized by the university and were further asked which sport. To classify athletes, participants answered "Yes" or "No" if they were part of the university varsity team and to indicate what sport team they represented. To classify participants as High Strenuous Exercisers (HSE) and Low Strenuous Exercisers (LSE), the Godin Leisure Time Exercise Questionnaire was used. If a person scored 119 and 59.5 units, they were grouped as HSE. Conversely, a person scoring between 59.5 and 0 units were classified as LSE.

Demographic measures were also used to gain further information on the participants. Such demographic information included year of study, age, faculty of current study and living situation.

Refer to Appendix to view these scales.

3.12 Analysis

The statistical software program SPSS version 20 was used to analyze the data. The analyses of the current study will be discussed by research question.

Research Question 1: Is there a relationship between social physique anxiety and physical activity type (varsity, intramural, high strenuous exercisers, low strenuous exercisers)?

To examine the first research question, the relationship between SPA and physical activity type, an analysis of variance was computed using an alpha of 0.05.

Research Question 2: Is there a relationship between social physique anxiety and frequency of physical activity?

A correlation was used to assess the relationship between social physique anxiety and the frequency of physical activity. Cohen's (1992) range of effect sizes was also used to determine whether the effect sizes was small (.10), medium (.30), or large (0.50). The alpha level of the bivariate correlation was 0.05. A power analysis indicated that the observed power of the general linear model of the current results was 0.977. Due to this high power, an alpha level of 0.05 was used. Effect sizes were assessed against Cohen's (1992) effect size ranges of small, medium and large which corresponded to .10, .30 and .50 respectively. A negative correlation was indicated by a negative value of the effect size, and a positive correlation was indicated by a positive effect size. Also, a power analysis indicated with an alpha of 0.05 and a power of 0.8, the expected total sample should have been 70. The current sample of 108 participants thus exceeded the expected sample.

Research Question 3: Can motives such as interest/enjoyment, competence, appearance, fitness and social predict social physique anxiety?

Finally, for the third research question, a linear regression was computed to determine which motive constructs of the MMPAM-R predicted SPA. The regression also determined how much variability of SPA could be explained by the motives.

Chapter 4: Results

Participant Characteristics

A total of 125 undergraduate females took the online survey from an estimate of 1200 undergraduates that included both females and males. Of these, incomplete responses were reported for 17 of the participants. Incomplete responses were those that included questions that were not responded. Therefore, a total of 108 participants completed the survey, thus the completion rate was 86.4%. Descriptives for the sample are presented in Table 1. The average age of the sample was 20.05 years, and most students were in their 2nd or 3rd year of university (M=2073). A cross-tabulation was completed and found that 50% of students were living with roommates and 21.2%, 17.3%, 6.7%, 3.8% with parents/family, campus residence, spouse/partner and alone respectively.

Table 1

Participant Characteristics (N=108)

Variable	
Demographics	*M (SD)*
Age	20.05 (1.615)
Year of Study	2.73 (1.189)
Faculty of study	*N*
Faculty of Business	1
Division of Continuing Studies	0
Faculty of Education	37
Faculty of Engineering	1
Faculty of Fine Arts	3
Faculty of Human and Social Development	4
Faculty of Humanities	4
Faculty of Law	0
Faculty of Science	39
Faculty of Social Sciences	13
Undecided/Unsure	2
Living Characteristics	
Campus Residence	15
With my parents/family	20
With my spouse/partner	11
With roommates	50
Alone	4

The Relationship between Social Physique Anxiety, Physical Activity Type and, Frequency of Physical Activity

The correlations, means and standard deviations for physical activity type, social physique anxiety , Motives for Physical Activity Measure-Revised (MPAM-R), the motives within the MPAM-R (Interest/Enjoyment, Competence, Appearance, Fitness and Social) and frequency of physical activity (Godin's Leisure Questionnaire) were presented in Table 2. The analysis of variance was presented in Table 3. General findings such as ceiling and floor effects were examined, followed by the results that addressed research questions 1 and 2.

General Descriptives

First, SPA was found to have normal distribution with a skewness of .038 and good variability. Ceiling and floor effects were 4.58 and .58 respectively. Second, the MPAM had good variability with a skewness of -.538, indicating good distribution. MPAM had ceiling effects of 6.77 and floor effects of 3.33. Third, Godin's Time Leisure Questionnaire (GTLQ) also showed normal distribution and good variability with a skewness of .360. The GTLQ had 134.0 and 11.0 as its ceiling and floor effects.

Research Question 1: Is There a Relationship Between SPA and Physical Activity Type?

An analysis of variance showed no significant differences between physical activity type and groups ($F_{3,99}$=0.55, p>.05), Table 3 showed the results associated with the first research question.

Research Question 2: Is There a Relationship Between SPA and Frequency of Physical Activity?

Using bivariate correlations, the results showed no significant correlation between social physique anxiety and the frequency of physical activity ($r=.026$, $p>.05$). Frequency of physical activity was measured using Godin's Time Leisure Questionnaire. This result can be seen in Table 2.

Interesting results from Table 2 were those associated with the MPAM-R and the motives in the MPAM-R. Social physique anxiety was significantly and negatively correlated with the MPAM-R ($r=-.240$, $p<.05$), Interest/Enjoyment ($r=-.371$, $p<.01$), Competence ($r=-.330$, $p<.01$), Fitness ($r=-.215$, $p<.05$) and Social ($r=-.406$, $p<.01$). These results are within the medium effect size range (Cohen, 1992). SPA was significantly and positively correlated with Appearance ($r=.430$, $p<.05$). Physical activity group was significantly and negatively correlated the MPAM-R ($r=-.276$, $p<.01$), however it was not significantly correlated with the Appearance and Fitness motives. Godin's Leisure Time Exercise Questionnaire (frequency of physical activity) was significantly correlated with Physical Activity Type ($r=-.462$, $p<.01$).

Table 2

Summary of Correlations, Means and Standard Deviations for Scores on the SPAS, Godin's Leisure, MPAM and the Motives on the MPAM (Interest/Enjoyment, Competence, Appearance, Fitness and Social, Groups and Frequency of Physical Activity (N=108)

Variable	1	2	3	4	5	6	7	8	9	M	SD
1. PA Type	1	.113	-.276**	-.248*	-.299**	.038	-.167	-.282**	-.462**	3.01	.976
2. SPA		1	-.240*	-.371**	-.330**	.430*	-.215*	-.406**	.026	2.53	.876
3. MPAM-R			1	.840**	.880**	.392**	.757**	617**	.422**	5.44	.756
4. Interest				1	.781**	-.006	.543**	.592**	.401**	5.61	.992
5. Competence					1	.119	.691**	.444**	.497**	5.48	1.18
6. Appearance						1	.314**	-.101	.123	5.45	1.21
7. Fitness							1	.237*	.348**	6.25	.794
8. Social								1	.065	4.34	1.19
9. Frequency									1	64.86	29.2

Notes:
PA Type= Physical Activity Type and include Athletes, Intramurals, Strenuous Exercisers and Low Strenuous Exercisers

SPA: Social Physique Anxiety

MPAM-R: Measure for Physical Activity Motives Revised

Frequency: Godin's Leisure Time Questionnaire

*** indicates significance at p level 0.01*
** indicates significance at p level 0.05*

Multivariate and Univariate Analysis of Variance of Motives and Social Physique Anxiety

A multivariate analysis of variance of predictors found a significant difference between social physique anxiety and the Interest/Enjoyment, Competence, Appearance, Fitness and Social motives [Wilk's λ=.404 $F_{8,24}$=4.1, p<.05]. Univariate analysis of variance found a significant effect for leisure ($F_{3,99}$=30.3, p<.05), competence ($F_{3,99}$=5.92, p<.05), social ($F_{3,99}$=4.14, p<.05), interest/enjoyment ($F_{3,99}$=4.64, p<.05) and total MPAM score ($F_{3,99}$=4.43, p<.05) on SPA. Table 3 showed the results of the ANOVA. When an LSD post-hoc was computed, groups (Athlete, Intramural, High Strenuous Exercisers (HSE), and Low Strenuous Exercisers (LSE)) were compared against one another in regards to SPA, Godin's Time Leisure Questionnaire (GTLQ), MPAM-R, Interest, Competence, Social, Fitness and Appearance. No group differences were found for SPA. For the GTQL, varsity, intramural and HSE had higher scores than LSE. For the MPAM-R, intramurals and HSE had higher scores than LSE. Competence was higher for the athletes, intramurals and HSE in comparison to LSE. Intramurals had higher social scores than LSE and HSE. For fitness, HSE had higher scores than LSE. Finally, the appearance saw no group differences.

Table 3

Analysis of Variance of Motives and Social Physique Anxiety (N=108)

Variable	Athletes	Intramural	HSE	LSE	F	Post Hoc
SPA	2.324 (0.8529)	2.385 (0.9273)	2.535 (0.7176)	2.579 (0.9555)	0.55	
MPAM-R	5.556 (0.4504)	5.735 (0.6842)	5.626 (0.6887)	5.133 (0.8024)	4.43	2,3>4
Interest	5.547 (0.7476)	6.080 (0.7500)	5.834 (0.8595)	5.224 (0.1105)	4.64	2,3>4
Competence	5.857 (0.9006)	5.748 (1.0564)	5.918 (0.9110)	4.919 (1.2952)	5.92	1,2,3>4
Appearance	5.204 (0.7718)	5.397 (1.3470)	5.609 (1.1782)	5.428 (1.2806)	0.32	
Fitness	6.400 (0.6083)	6.343 (0.7433)	6.419 (0.5910)	6.039 (0.9552)	1.68	3>4
Social	4.733 (1.1190)	5.038 (0.9457)	4.150 (1.1550)	4.045 (1.1986)	4.14	2>3,4
Frequency	78.88 (34.089)	73.42 (32.027)	87.59 (16.823)	41.65 (13.182)	30.3	1,2,3>4 2<3 3<1

Note: HSE=High Strenuous Exercisers, LSE=Low Strenuous Exercisers
SPA= Social Physique Anxiety
Godin= Godin's Time Leisure Questionnaire
MPAM-R= Motives for Physical Activity Measure-Revised
1=Varsity Athletes
2=Intramurals
3=High Strenuous Exercisers
4=Low Strenuous Exercisers

Interest/Enjoyment, Competence, Appearance, Fitness and Socials as Predictors of Social Physique Anxiety

A regression was computed to determine whether the motives from the Motives for Physical Activity Measure-Revised (Interest/Enjoyment, Competence, Appearance, Fitness and Social) predicted social physique anxiety. Results were presented in Table 4. It was found that Interest/Enjoyment, Competence, Appearance, Fitness and Social motives explained 40.1% of the variance in SPA (R_2=0.41). As seen in Table 4, the results indicated that only the appearance (β=0.489, p<.05) and social motives predicted social physique anxiety (β =-.246, p<.05). Interest/Enjoyment (β=-.010, p>.05), Competence (β=-.118, p>.05), and Fitness (β=-.223, p>.05) were non-significant in predicting social physique anxiety.

Table 4

Regression Analysis Examining the Relationship Between Interest/Enjoyment, Competence, Appearance, Fitness, Social and Social Physique Anxiety (N=108)

Variable	R_2	F	df	β
Social Physique Anxiety	0.401	12.962	5	
Interest/Enjoyment				-0.010
Competence				-0.118
Appearance				0.489*
Fitness				-0.223
Social				-0.246*

*Note: * indicates significance at p level of .05*

Chapter 5: Discussion

Physical activity played a key role in maintaining good health (Canadian Physical Activity Guideline, 2013). Although physical activity was associated with multiple health benefits, there was evidence that it developed negative body image issues (Slater and Tiggermann, 2006). A concept extending from the body image literature was social physique anxiety. There was consensus in research that there was an association between social physique anxiety and body image dissatisfaction. Additionally, evidence showed that social physique anxiety predicted the development of eating disorders and unhealthy weight management attitudes and behaviours (Monsma and Malina, 2004; Bas and Kizitlan, 2007).

Prior research indicated mixed reviews of the association between social physique anxiety and frequency of physical activity. Some studies suggested that individuals with high SPA benefited from exercise (Raedeke, Focht & Scales, 2009; Lamarche & Gammage, 2010) and that exercise enhanced self-presentation efficacy, which was the subjective chance of being successful in portraying a desired impression on other individuals (Lamarche & Gammage, 2010). However, as previously mentioned, SPA leads to disordered eating patterns and even eating disorders (Thorgensen, 2007; Haase, 2011; Gomes, Martins & Silva, 2011; Monsma & Malina, 2004) From a public health standpoint, research investigating the association of social physique anxiety and exercise seemed important in determining whether exercise exacerbated or decreased SPA and negative body image. Thus, the purposes of the current study was to determine the relationship between SPA, physical activity type, frequency of physical activity and the motivation to exercise among female undergraduates. This study was the first of its type

to investigate a relationship between physical activity types such as varsity sports, intramural sports and exercisers, frequency of physical activity and the correlation of different types of motives on social physique anxiety. The following discussion sections highlighted the research findings, implications of results and study limitations.

1.0 Research Findings

Demographics

Analysis of the descriptive statistics revealed that the majority of participants were between the ages of 18 and 21 (N=62) and that most were in either their 2nd year (28.7%) or 3rd year (29.6%) of university. Most of the students were from the Faculty of Science (36.1%), however many reported being in the Faculty of Education (34.2%). The higher percentage of students from the Faculty of Education was due to recruiting participants in the School of Exercise, Physical and Health Education classes, which fell under the Faculty of Education. The over-representation of the Faculty of Education was a limitation as it may not represent the undergraduate population at the University of Victoria. However, recruiting students in classes offered in other departments was difficult. Thus, recruitment was done in EPHE classes and many of the classes were considered “open classes”, defined as classes open to everyone at the University and not solely for students in EPHE. Almost half of the participants were living with roommates (46.3%).

Social Physique Anxiety and Physical Activity Type

The first hypothesis of the current study was that low strenuous exercisers would experience more social physique anxiety than high strenuous exercisers, varsity athletes and intramural athletes. Unfortunately, this hypothesis was not supported. Based on the

findings, there was no association between social physique anxiety and the different groups of physical activity types. Thus, the implications of these results indicate that social physique anxiety and physical activity type do not impact one another. These findings are supported by prior research that found no differences in SPA among female athletic and non-athletic groups (Haase & Prapavessis, 2001), female aerobic exercisers and university female athletes (Krane, Stiles-Shipley, Waldron & Michalenok, 2001) and female varsity athletes competing in soccer, volleyball, hockey, basketball, rugby and cross-country (Thompson & Fleming, 2007). However, there is evidence of SPA differences among varsity and recreational swimmers (Van Raalte, Schmelzer, Smith & Brewer, 1998). The same study also found no significant differences of SPA among elite and non-elite rowers. These may have implications for future research to include physique salient and non-physique salient sports, as the current study was limited to a small sample of varsity athletes in which none competed in physique salient sports such as figure skating, gymnastics and diving. However, the current study extends to the literature that there are no differences of SPA among varsity athletes, strenuous and non-strenuous exercisers, even accounting for the uniqueness of the groups. Currents results found that the sample reported low SPA (M=2.538) and that all groups reported low SPA (Hart, Leary and Rejeski, 1989). This positive finding indicates that female undergraduates do not experience high social physique anxiety. However, we should not conclude that our entire sample does not experience high SPA because of the variability of the SPA scores, in which some SPA scores fall under high SPA (Hart, Leary and Rejeski, 1989). Furthermore, the results from this study provide future researchers that undergraduate females participating in varsity and intramural sports, as well as high and

low strenuous exercisers, experience low SPA. Thus, the implication is that no intervention for SPA is necessary for this particular sample.

Social Physique Anxiety and Frequency of Physical Activity

The second hypothesis of the current research was that higher frequency of physical activity was associated with higher social physique anxiety. The results indicated no significant differences among SPA and frequency of physical activity. This indicated that regardless of groupings, social physique anxiety and the amount spent participating in physical activity do not appear to influence one another. Thus, these findings suggest that high frequent and low frequent exercisers are not differentiated by social physique anxiety. These findings mimic evidence suggesting that SPA does not predict current or future physical activity behaviors (Niven, Fawkner, Knowles, Henretty & Stephenson, 2009). However, the findings suggest that the frequency of physical activity among the current sample is within the high range of frequency of physical activity (Godin & Shephard, 1985). Strenuous exercisers reported the highest frequency of physical activity, followed by athletes, intramural athletes then low strenuous exercisers. Future research should investigate not only frequency, but also the duration of physical activity and whether a relationship exists between frequency and duration of physical activity and SPA. The current study did not investigate the time spent in physical activity, thus it may be an important factor to investigate as the current results showed no differences in SPA and frequency of physical activity.

Social Physique Anxiety and Physical Activity Motives

The final hypothesis of this study was that appearance and fitness motives would predict high social physique anxiety in all 4 groups, and interest/enjoyment, competence

and social would predict low SPA in all 4 groups. A regression analysis from Table 4 revealed several significant predictions of the different motives to SPA. Examination of the findings for each motive of the MPAM-R will be discussed.

Appearance

The appearance motive of the MPAM-R is the motive that is most closely linked to previous research investigating social physique anxiety. The impression management model by Leary and Kowalski (1990) indicated that individuals are motivated to hold a certain desired identity. Furthermore, many people manage other people's impressions so that they are not associated with a negative or undesired image. Leary and Kowalski also noted that people will select to portray an array of self-images that will most likely be approved by others. Thus, we can see the association of appearance in impression management as appearance is a trait that can be managed. The current findings revealed that the appearance motive positively predicted social physique anxiety. The effect size of appearance predicting SPA is large (Cohen, 1992). This prediction suggested that appearance, a motive to engage in physical activity, influenced social physique anxiety among individuals in the current study. Interestingly, appearance had the largest effect size for prediction among all other motives such as interest/enjoyment, competence, fitness and social. This finding suggested that female undergraduates in the current study are primarily motivated by appearance reasons to exercise, which in turn positively predicts social physique anxiety. Thus, the higher the motivation for appearance reasons to exercise, the higher the social physique anxiety will be experienced. This finding is aligned with previous research of female undergraduates high in social physique anxiety who exercised for extrinsic motives (Frederick & Morrison, 1996). Extrinsic motivation

engages individuals to do an action or behaviour for a separate outcome (Ryan and Deci, 2000). In the context of physical activity, individuals are extrinsically motivated to participate in physical activity to manage weight, improve appearance and also for social recognitions (Ingledew, Markland & Medley, 1998). The current finding that the appearance motive for physical activity predicted social physique anxiety had several implications for interventions aiming to reduce social physique anxiety by examining extrinsic motives, such as appearance, that perpetuate SPA. Although appearance was the strongest predictor among the interest/enjoyment, fitness, social and competence motives, we cannot determine which population are at the highest risk of experiencing social physique anxiety as the groups of the current study did not differentiate among each other in SPA. Thus, future investigations should first explore which population are at risk of experiencing high social physique anxiety and understand the reasons to exercise for extrinsic motives, such as appearance, through qualitative work.

Fitness

The current research hypothesized that fitness would predict high social physique anxiety. The regression indicated that fitness as a motive did not significantly predict social physique anxiety and did not support our hypothesis. This finding is not aligned with previous evidence indicated that females with social physique anxiety participated in physical activity for fitness reasons (Sabiston, Crocker & Munroe-Chandler, 2005). One reason for the discrepancy between the current finding and previous research may be that different scales were used to examine motives for physical activity. Previous research used the Reasons for Exercise Inventory to assess motives for engaging in physical activity. Interestingly, the current finding suggests that individuals with SPA are not

participating in physical activity for cardiovascular fitness, to gain more energy nor to maintain their health and well-being, in which all of these aspects are fitness-related motives. Additionally, these health related benefits to exercise, such as fitness-related motives, were not significant predictors of social physique anxiety. Future investigations should measure motives for physical activity with both the instruments.

Interest/Enjoyment

It was hypothesized that interest/enjoyment would not predict social physique anxiety. This was supported by the current research in which it found no significance that interest/enjoyment predicted social physique anxiety. Social physique anxiety is defined by extrinsic motives (Hart, Leary and Rejeski, 1989). Thus, this finding is parallel to the SPA definition provided by Hart, Leary and Rejeski (1989), and only extrinsic motives, such as appearance, drive social physique anxiety. Additionally, the finding is also aligned with the model of impression management indicating that people are driven by impression motivation (Leary and Kowalski, 1990). Individuals with social physique anxiety are not participating in physical activity for fun, enjoyment, happiness and excitement but that social physique anxiety individuals are driven to exercise by appearance motives.

Competence

Competence was hypothesized to not predict social physique anxiety. This hypothesis was supported in that the results did not reveal a significant prediction of SPA from competence motives. Competence within the Motives for Activities Measure-Revised was defined as activities that were challenging and physically challenging, enabled new skills, improved existing skills and enabled to keep current skill levels

(Frederick and Ryan, 1993). Given how competence is defined in the MPAM-R, it does not align with the concept of social physique anxiety and how it is influenced by extrinsic motives. This finding also mimics previous research that found no significant prediction of SPA except for appearance (Frederick and Morrison, 1996). This finding illustrates that participating in physical activity driven by competence motives will not influence social physique anxiety. Future research should utilize a specific measure of competence and then assess the prediction of social physique anxiety from competence.

Social

Finally, it was hypothesized that social related motives of physical activity would not predict social physique anxiety. The findings found that social motives did significantly predict social physique anxiety in a positive manner, thus the hypothesis was not supported. Hence, the higher the social motive to physical activity predicted lower social physique anxiety. The social motive includes being around friends, other people and meeting new people (Frederick and Ryan, 1993). From a public health standpoint, developing social motives to physical activity in high social physique individuals could be beneficial as their motives to be physically active would be intrinsic rather than extrinsic.

In conclusion, the current findings revealed that the sample in general experienced low social physique anxiety. Furthermore, SPA and physical activity type were not associated with one another. Additionally, there was no relationship between frequency of physical activity and social physique anxiety. Interestingly, the appearance and social motives were the only motives in the MPAM-R to predict social physique anxiety. Thus, these findings only supported the hypothesis that appearance would predict SPA.

Future Research and Recommendations

Based upon previous limitations discussed, future research examining social physique anxiety should consider a longitudinal study as it has not been previously done. A longitudinal study would allow further insight in how SPA changes throughout the years, especially at critical life stages such as entering adolescents and adulthood. Future research should also consider using different methods of assessing physical activity so that it truly reflects the amount of physical activity.

Recommendations to universities in helping address social physique anxiety among their students are to introduce students to this concept and to provide assistance for those affected. Education and services may prove beneficial for those experiencing social physique anxiety.

Conclusion

In conclusion, social physique anxiety has developed into its own concept and is defined as the "anxiety that people experience in response to others' evaluations of their physiques" (Hart, Rejeski and Leary, p.94). Results indicated that the type of physical activity an individual participates, such as Varsity Sports, Intramurals, Strenuous Exercise, Low Strenuous Exercise, does not affect social physique anxiety. Additionally, further results showed no relationship between frequency of exercise and SPA. Consequently, all motives (Interest, Competence, Appearance, Fitness and Social) appearing on the Motivation for Physical Activity Measure-Revised showed significance. Additionally, the current study found that Appearance and Social were motives predicting social physique anxiety. Thus, if an individual was motivated to exercise for appearance reasons, it predicted high social physique anxiety. On the other hand, participating in

exercise for social reasons predicted low social physique anxiety. The current study adds to the literature that Intramurals, a type of physical activity type that was not investigated in prior research, does not have any relationship with social physique anxiety along with Varsity, High Strenuous Exercisers and Low Strenuous Exercisers. This study should guide future research to help support and develop interventions to those suffering from social physique anxiety.

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Appendices

Appendix A. Ethics Approval

University of Victoria

Human Research Ethics Board
Office of Research Services
Administrative Services Building
PO Box 1700 STN CSC
Victoria British Columbia V8W 2Y2 Canada
Tel 250-472-4545, Fax 250-721-8960
ethics@uvic.ca www.research.uvic.ca

Modification of an Approved Protocol

PRINCIPAL INVESTIGATOR:	**Fawnia Robitaille**	**ETHICS PROTOCOL NUMBER** Minimal Risk - Delegated	**12-442**
UVic STATUS:	**Master's Student**	ORIGINAL APPROVAL DATE:	16-Nov-12
UVic DEPARTMENT:	**EPHE**	MODIFIED ON:	29-May-13
SUPERVISOR:	**Dr. John Meldrum**	APPROVAL EXPIRY DATE:	15-Nov-13

PROJECT TITLE: **The Impact of Physical Activity Type on Social Physique Anxiety in Female University Students**

RESEARCH TEAM MEMBER Graduate supervisors: Dr. John Meldrum, Dr. Ryan Rhodes

DECLARED PROJECT FUNDING: **None**

CONDITIONS OF APPROVAL

This Certificate of Approval is valid for the above term provided there is no change in the protocol.

Modifications
To make any changes to the approved research procedures in your study, please submit a "Request for Modification" form. You must receive ethics approval before proceeding with your modified protocol.

Renewals
Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.

Project Closures
When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.

Certification

This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria Research Regulations Involving Human Participants.

[redacted]

Dr. Rachael Scarth
Associate Vice-President, Research

Certificate Issued On: 29-May-13

Appendix B. Invitation to Participation

1. For professors

Dear professor,

My name is Fawnia Robitaille and I am currently a 2nd year graduate student in the School of Exercise Science, Physical and Health Education under the supervision of Dr. John Meldrum and Dr. Ryan Rhodes. I am conducting a thesis research project entitled The Impact of Physical Activity Type on Social Physique Anxiety in University Female Students. I am seeking undergraduate female participants between the ages of 18 to 24 to complete an online survey that will be the data of my thesis. I am asking for your assistance in helping me recruit participants and to pass on the link to the online survey to your students. The link to the survey is: http://fluidsurveys.com/surveys/ephe2012/online-survey-spa/

Thank for you for your time. I have also attached a Letter of Information for Implied Consent which explains that students consent to the study by providing their emails. If you require additional information with regards to my thesis, please feel free to contact me at fawniar@uvic.ca or any of my supervisors at jmeldrum@uvic.ca and rhodes@uvic.ca

Sincerely,

Fawnia Robitaille

2. To students

Hello everyone,

My name is Fawnia Robitaille and I am a 2nd year graduate student in the School of Exercise Science, Physical and Health Education under the supervision of Dr. John Meldrum and Dr. Ryan Rhodes. I am currently seeking participants between the ages of 18 to 25 to participate in my thesis project entitled The Impact of Physical Activity Type on Social Physique Anxiety in Female University Students. If you choose to participate, you will complete an online survey that will take approximately 10 minutes to complete. The online survey will consist of demographic, physical activity and physique related questions. If you are interested, please write down your e-mail on the sheet that will be circulated throughout the class. The current research will provide evidence to the contribution of recreation and leisure sport engagement and physique anxiety among females. This will benefit society since university undergraduates participate in recreation sport such as intramurals. Please keep in mind that participation is completely voluntary and you may withdraw from participation by not completing the survey once you have received it in your inbox.

Thank you for your time, and if you have any questions please feel free to e-mail me at fawniar@uvic.ca

Appendix C. Consent Form

School of Exercise Science, Physical and Health Education

Letter of Information for Implied Consent

The Impact of Physical Activity Type on Social Physique Anxiety in Female University Students

You are invited to participate in a study entitled The Impact of Physical Activity Type on Social Physique Anxiety in Female University Students that is being conducted by Fawnia Robitaille.

Fawnia Robitaille is a master's student in the School of Exercise Science, Physical and Health Education at the University of Victoria and you may contact her if you have further questions by e-mail at fawniar@uvic.ca

As a graduate student, I am required to conduct research as part of the requirements for a degree in Master of Science. It is being conducted under the supervision of Dr. John Meldrum and Dr. Ryan Rhodes. You may contact my supervisors at 250-721-8392 and 250-721-8384

Purpose and Objectives
The purpose of this research project is to examine the impact of different physical activity types on social physique anxiety. Additionally, the current research project aims to identify a relationship between social physique anxiety and the intensity and frequency of exercise. Social physique anxiety has been defined as the anxiety that arises from the experience people have in response to other's critiques of their physique and body.

Importance of this Research
Research of this type is important because few studies have examined different activity, specifically intramural and recreational sports, that females engage in and social physique anxiety.

Participants Selection
You are being asked to participate in this study because the current research project seeks female undergraduate students between the ages of 18 to 24 who are involved in recreational, intramural or varsity sports, as well as engaging in exercise.

What is involved
If you consent to voluntarily participate in this research, your participation will include completing an online survey that will take approximately 10 minutes to complete.

Inconvenience
Participation in this study may cause some inconvenience to you, including having access to a computer to complete the survey.

Risks
A potential risk involved in the participation of this study is the issue of body image and consciousness. Some questions in the questionnaire involve one to reflect on past events involving body image and anxiety. If you have any concerns during or after completing the questionnaire, please feel free to contact the University of Victoria's counseling services at 250-721-8341 or visit them in the University Centre, room B270.

Benefits
The potential benefits of your participation in this research include enhance knowledge in the literature of social physique anxiety by examining the role of intramural and recreational sports as a physical activity type.

Voluntary Participation
Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. Additionally, you may leave certain questions on the questionnaire blank if you chose not to answer. If you do withdraw from the study your data will erased from the computer system.

Researcher's Relationship with Participants
You may have a possible relationship with the researcher as an acquaintance, colleague, friend, family member or have a student-instructor relationship. Please be aware that you are under no obligation to participate in the study, and any person who chooses to participate may withdraw from participation at any given time. If you choose to participate, your relationship with the researcher will not be affected.

Anonymity
To ensure anonymity, your data will be coded during analysis. Upon dissemination of the results, the data will be reported as whole and no data will be singled out. This will ensure that you will not be associated with your data.

Confidentiality
Your confidentiality will be protected in that your e-mail and information will only be viewed by the researcher. However, be advised that during recruitment, your e-mail on the recruitment e-mail sheet may be seen by other classmates.

Dissemination of Results
It is anticipated that the results of this study will be shared with others in the following ways by presenting them at scholarly meetings, publishing them as an article, and presenting them as a thesis.

Disposal of Data
After data collection, the data will be inputted onto the investigator's personal laptop. A folder will be created under the name "Data". The personal laptop will have a security password that only the investigator will know. The recruitment e-mail sheet will be stored in a folder and secured in the investigator's locked cabinet file. With regards to data disposal, any printed or written materials will be confidentially shredded including recruitment e-mail sheet. The electronic data will be erased from the computer files and memory. All data will be destroyed after thesis defense in April 2013.

Contacts

Individuals that may be contacted regarding this study include Fawnia Robitaille (fawniar@uvic.ca), Dr. John Meldum (250-721-8392) and Dr. Ryan Rhodes (250-721-8384)

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

By completing and submitting the questionnaire, **YOUR FREE AND INFORMED CONSENT IS IMPLIED** and indicates that you understand the above conditions of participation in this study and that you have had the opportunity to have your questions answered by the researchers. Also, you can withdraw from the study at any point in time.

Please retain a copy of this letter for your reference.

Appendix D. Online Survey

We are inviting female undergraduate students to participate in a study focusing on body image and exercise. The study is conducted by Fawnia Robitaille, a MSc candidate from the School of Exercise Science, Physical and Health Education.

For this research, participants will complete an online survey that will take approximately 15 minutes. Should you choose to provide your email and participate in this study, you should know that you can withdraw at anytime without consequence. Additionally, you may leave questions blank if you choose not to answer them.

Thank you for your time, and please feel free to contact Fawnia for any further questions or concerns at fawniar@uvic.ca

1. Year of study
   1__ 2__ 3__ 4__ 5__ 6 or more__

2. Current Age

18 __	21 __	24 __
19 __	22 __	25__
20 __	23 __	

3. Faculty of current study
   ____ Faculty of Business
   ____ Division of Continuing Studies
   ____ Faculty of Education
   ____ Faculty of Engineering
   ____ Faculty of Fine Arts
   ____ Faculty of Human and Social Development
   ____ Faculty of Humanities
   ____ Faculty of Law
   ____ Faculty of Science
   ____ Faculty of Social Sciences
   ____ Undecided/Unsure

4. Which of the following best describes your living situation during this academic year?
   ____ Campus Residence
   ____ With my parents/family
   ____ With my spouse/partner
   ____ With roommates
   ____ Alone

5. Are you currently a member of the university varsity team?
   ____ Yes
   ____ No

6. If so, which team do you represent?
   ____ Basketball
   ____ Track and Field
   ____ Field Hockey
   ____ Golf
   ____ Rowing
   ____ Rugby
   ____ Soccer
   ____ Swimming

7. Do you currently play any intramural sports? If not, please go to Question 9
   ____ Yes
   ____ No

8. If so, what sport(s) do you play?
   _____

9. During a typical 7 day period (a week), how many times on average do you do the following kinds of exercise for more than 15 minutes during your free time (Please select number of times per week)

Strenuous Exercise: Heart beats rapidly (ex jogging, running, football, soccer, basketball, vigorous swimming, vigorous long distance bicycling)

1-10/week

Moderate Exercise (ex fast walking, tennis, baseball, easy bicycling, volleyball, badminton, easy swimming, popular dancing)

1-10/week

Mild Exercise (ex yoga, archery, fighing, bowling, golf, horseshoes, easy walking)

1-10/week

Questions 10-21 contain statements concerning your body physique or figure. By physique or figure we mean your body's form and structure; specifically, body fat, muscular tone, and general body proportions.

Instructions: Read each item carefully and indicate how characteristic it is of you according to the following scale

1 = Not at all characteristic of me

2 = Slightly characteristic of me
3 = Moderately characteristic of me
4 = Very characteristic of me
5 = Extremely characteristic of me

____ 10 I am comfortable with the appearance of my physique or figure.

____ 11 I would never worry about wearing clothes that might make me look too thin or overweight.

____ 12 I wish I wasn't so up-tight about my physique or figure.

____ 13 There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively.

____ 14 When I look in the mirror I feel good about my physique or figure.

____ 15 Unattractive features of my physique or figure make me nervous in certain social settings.

____ 16 In the presence of others, I feel apprehensive about my physique or figure.

____ 17 I am comfortable with how fit my body appears to others.

____ 18 It would make me uncomfortable to know others were evaluating my physique or figure.

____ 19 When it comes to displaying my physique or figure to others, I am a shy person.

____ 20. I usually feel relaxed when it's obvious that others are looking at my physique or figure.

____ 21. When in a bathing suit, I often feel nervous about how well proportioned my body is.

The following is a list of reasons why people engage in physical activity/sport, respond to each question
(using the scale given), on the basis of how true that response is for you.

1 2 3 4 5 6 7
(not at all very true) (very true)

22. Because I want to be physically fit.

23. Because it*s fun
24. Because I like engaging in activities which physically challenge me.
25. Because I want to obtain new skills.
26. Because I want to look or maintain weight so I look better.
27. Because I want to be with my friends
28. Because I like to do this activity.
29. Because I want to improve existing skills.
30. Because I like the challenge.
31. Because I want to define my muscles so I look better.
32. Because it makes me happy.
33. Because I want to keep up my current skill level.
34. Because I want to have more energy.
35. Because I like activities which are physically challenging.
36. Because I like to be with others who are interested in this activity.
37. Because I want to improve my cardiovascular fitness.
38. Because I want to improve my appearance.
39. Because I think it's interesting.
41. Because I want to maintain my physical strength to live a healthy life.
42. Because I want to be attractive to others.
43. Because I want to meet new people.
44. Because I enjoy this activity.
45. Because I want to maintain my physical health and well-being.
46. Because I want to improve my body shape.
47. Because I want to get better at my activity.
48. Because I find this activity stimulating.
49. Because I will feel physically unattractive if I don*t.
50. Because my friends want me to.
51. Because I like the excitement of participation.
52. Because I enjoy spending time with others doing this activity.

Thank you for your participation and taking the time to complete the online survey.

If any of these questions have raised questions, please contact your campus counselling services or the Canadian Counselling and Psychotherapy Services toll-free at 1-877-765-5565