

**DISSERTATION ASSESSMENT PROFORMA:**  
Empirical <sup>1</sup>

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<b>Dissertation title:</b>		A Comparison between Physically Active and Sedentary Overweight and Obese Females Regarding Social Physique Anxiety, Body Size Satisfaction, Weight Dissatisfaction and Commitment to Physical Activity	
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Comments	Section		
	<b>Title and Abstract</b>		
	Title to include: A concise indication of the research question/problem. Abstract to include: A concise summary of the empirical study undertaken.		
	<b>Introduction and literature review</b>		
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**CARDIFF SCHOOL OF SPORT**

**DEGREE OF BACHELOR OF SCIENCE  
(HONOURS)**

**SPORT AND EXERCISE SCIENCE**

**TITLE**

A Comparison between Physically Active and  
Sedentary Overweight and Obese Females  
Regarding Social Physique Anxiety, Body Size  
Satisfaction, Weight Dissatisfaction and  
Commitment to Physical Activity

**(Dissertation submitted under the discipline of Physiology  
and Health)**

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A Comparison between Physically Active and Sedentary Overweight and Obese  
Females Regarding Social Physique Anxiety, Body Size Satisfaction, Weight  
Dissatisfaction and Commitment to Physical Activity

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## **Table of contents**

Acknowledgements	i
Abstract	ii
<u>Chapter 1</u>	
1.1 Introduction	1
<u>Chapter 2</u>	
2.1 Review of literature	3
2.2 Stages of change model	4
2.3 Social physique anxiety	4
2.4 Body size satisfaction	6
2.5 Commitment to physical activity	8
2.6 Body mass index and weight dissatisfaction	9
2.7 Reasons for exercise inventory	10
2.8 Hypotheses	11
<u>Chapter 3</u>	
3.1 Methodology	12
3.1.1 Purpose of the study	12
3.1.2 Participants	12
3.2 Procedure	12
3.2.1 Ethical approval	12
3.2.2 Inclusion criteria	13
3.2.3 Recruitment	13
3.3 Instruments	13

3.3.1 Informed consent	13
3.3.2 Social physique anxiety questionnaire	13
3.3.3 Body size satisfaction (figure rating scale)	14
3.3.4 Commitment to physical activity questionnaire	14
3.3.5 Body mass index and weight dissatisfaction	15
3.3.6 Reasons for exercise inventory	15
3.4 Data analysis	16

#### Chapter 4

4.1 Mann Whitney U Test	17
4.2 Results	17
4.3 Descriptive analysis	17
4.4 Social physique anxiety	18
4.5 Body size satisfaction	18
4.6 Commitment to physical activity	18
4.7 Weight dissatisfaction	19
4.8 Reasons for exercise	19

#### Chapter 5

5.1 Discussion	
5.2 Participants	21
5.3 Social physique anxiety	22
5.4 Body size satisfaction	23
5.5 Commitment to physical activity	24
5.6 Weight dissatisfaction	25

5.7 Reasons for exercise	26
--------------------------	----

## Chapter 6

6.1 Conclusion	28
----------------	----

6.2 Limitations and Recommendations	29
-------------------------------------	----

6.2.1 Participants	29
--------------------	----

6.2.2 Questionnaires and Self-Report Data	30
---	----

6.3 Recommendations	31
---------------------	----

## Tables

Table 1. Means and standard deviations of participant data	18
--	----

Table 2. Summary of SPSS data	20
-------------------------------	----

## Appendix

A. Consent form and weight dissatisfaction	38
--	----

B. Figure rating scale	40
------------------------	----

C. Commitment to physical activity scale	41
--	----

D. International physical activity questionnaire	43
--	----

E. Social physique anxiety scale	45
----------------------------------	----

F. Reasons for exercise inventory	47
-----------------------------------	----

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## **Abstract**

It is prevalent in the literature that physical activity and exercise are beneficial for health and well-being. However, participation rates in obese and overweight female populations is low, therefore, this population is not gaining health benefits that a long term physical activity and exercise programme can cause. Psychological variables such as social physique anxiety, body size satisfaction, commitment to physical activity and weight dissatisfaction may be barriers that inhibit the willingness to participate in physical activity and exercise. This research aimed to analyse the differences in these variables between overweight and obese physically active and sedentary females with the intention of finding differences that affect willingness to participate in physical activity and exercise. Reasons to exercise were also assessed in order to identify different attributions to being physically active. Participants (n=63) were separated into two groups according to physical activity level, mean age was; sedentary 28 ( $\pm 12$ ) and physically active 29 ( $\pm 9$ ), mean height was 161cm ( $\pm 5$ ) and 162cm ( $\pm 6$ ) and mean body mass index was 31 ( $\pm 3$ ) and 29 ( $\pm 6$ ). Analysis found that there was no difference between populations regarding social physique anxiety, body size satisfaction and weight dissatisfaction ( $p > .05$ ). Differences were found in commitment to physical activity and two of the reasons for exercise; to increase energy and to improve cardiovascular fitness. This study disputes the evidence that social physique anxiety, body size satisfaction and weight dissatisfaction affect willingness participate in physical activity. The findings of this study suggest that improvement of commitment to physical activity and attributing reasons to exercise to improvement of fitness as opposed to weight loss will increase adherence in long term exercise programmes.

# **Chapter 1**

## **Introduction**

## Introduction 1.1

For years it has been prevalent in the literature that physical activity is beneficial for health and well-being (Molina-Garcia *et al.*, 2011). Physical activity can be defined as “*any bodily movement produced by skeletal muscles that result in energy expenditure*” (Caspersen *et al.*, 1985, p126). This includes activities such as; housework, occupation, sports and conditioning. In modern society, due to better transport and machinery, people are less active than their predecessors. In the twenty first century manual labour, such as housework and occupation, requires less energy than in previous times due to modern machinery and technology, therefore, people are using their leisure time to keep physically active via exercising. Exercising has been defined as “*a subset of physical activity that is planned, structured and repetitive and has a final or an intermediate objective to improve or maintain physical fitness*” (Caspersen *et al.*, 1985, p126.) According to Nieman (1998), regular participation in physical activity and exercise can promote female health through a number of avenues: increased life expectancy, decreased risk of disease, lower feelings of depression, lower feelings of anxiety and contributing to a better quality of life (Roberts *et al.*, 2001). In order to gain these benefits, it is recommended that five days per week of 30 minutes (600 Met minutes) moderate to vigorous intensity physical activity is needed (ACSM, 2010). People who are physically active have been found to have a greater ability to carry out daily tasks with vigour and without undue fatigue compared with people of lower levels of fitness (Caspersen *et al.*, 1985). Figures from Gabriele *et al.* (2011) state that in accordance to ACSM guidelines approximately 24% of US adults are insufficiently active and 14% are completely inactive. Trends show that the United Kingdom is following the United States of America (WHO, 2010). Literature suggests that larger numbers of females are not meeting ACSM guidelines compared with their male counterparts. Bushman & Brandenburg (2009) reported in their study that 32.6% of males did not meet guidelines compared to that of females at 67.4%.

There are many reported reasons for being physically inactive; Skaal (2011) reported that physically inactive people report several barriers to exercising from environmental to psychological factors. Research into psychological barriers has found that social physique anxiety (SPA), commitment to physical activity (CPA) and body image can affect willingness to exercise (Strong *et al.*, 2006; Ekland & Crawford, 1994; Heart *et al.*, 1984). These psychological barriers may be created

through modern societal values and ideals. These values and ideals are portrayed through a number of avenues in the media such as magazines and music videos. Research by Gerber (2005) has shown that thin images in the media are associated with depression and lower self-esteem. This may be associated with the dissatisfaction of their physiques in comparison to those being portrayed. In recent years it has been suggested that females face greater challenges regarding perceptions about their physique from new phenomena such as social networking sites. The most recent research carried out involved social networking sites and their effect on body image. Thompson and Lougheed (2012) did a study on the effects of Facebook on university students. One aspect of the study examined the relationship between Facebook and body image, it was concluded that Facebook pictures can cause negative self-body image. This recent research highlights the added pressures of modern society and the extended issues that females face on a daily basis. This research should be viewed with caution as it is the first of its kind, however, it is useful and opens up avenues for new research into this area. Future research may confirm the findings of this study.

Previous research shows that psychological barriers to exercise can affect people's physical activity habits. Goldfield *et al.* (2010) provided research that indicated barriers such as SPA effected some populations more than others, for example overweight and obese populations had greater dissatisfaction and anxiety regarding body image than people who were considered to be a healthy weight. It was stated by Goldfield *et al.* (2010) that although obesity is a well-known problem aspects that are often overlooked are centred on the complications of psychological functioning of these individuals.

This study aims to examine the differences between physically active and sedentary females with a body mass index (BMI) over 25. Previous research has shown that weight dissatisfaction (WD), body size satisfaction (BSS), social physique anxiety (SPA) and commitment to physical activity (CPA) are related to participation levels in physical activity and exercise in healthy populations but there is limited information regarding populations with higher BMI. This research aims to investigate and build upon these previous findings. The objective is to provide data on these variables in order to investigate the psychological differences, with the intention to use this information to form strategies to influence sedentary overweight and obese females to become physically active to improve their quantity and quality of life.

## **Chapter 2**

# **Review of Literature**

## Literature review 2.1

Many studies have shown a lack of consistency regarding the psychological functioning between obese and non-obese populations as well as physically active and sedentary populations. A study by Fabricatore and Wadden (2003) found that there were no significant differences between obese and non-obese populations. Istan *et al.* (1992) researched BMI and depression using the Centre for Epidemiological Studies Depression (CES-D) scale. In a sample of 32,000 adults it was found that those in the highest quartile of BMI (BMI>28.96 kg/m<sup>2</sup>) were 38% more likely to score in the depression range of the CES-D. Carpenter *et al.* (2000) confirmed these findings stating that obese females are 37% more likely to experience major depression compared with their healthy weight counterparts.

Fabricatore and Wadden (2003) listed sex as a potential risk factor for negative psychological effects in the obese, with women being under greater societal pressure than men. It has been discussed that although overweight and obesity itself may not cause dysfunctional psychology, health impairments that are as a result of these conditions, such as diabetes, may have significant impacts on the person's mental health and quality of life. Psychotherapists have rated exercise as the most effective way to change bad mood (Thager *et al.*, 1994). Therefore, as a result of physical activity psychological state can be improved, leading to health benefits and the potential to reduce future and existing issues of negative health.

Beginning and maintaining regular physical activity appears to be difficult for the general population with most dropping out (Appleton, 2012). Appleton (2012) stated that early drop out from exercise has been attributed to lack of enjoyment and perceptions of lack of change in body shape, size and weight. The most important aspect of drop out is associated with the perceptions of the individual not the actual weight change. If the perceptions and the psychology of the individual were to improve it may increase the commitment and maintenance, potentially, protecting against drop out.

## **Stages of Change Model 2.2**

The stage of change model is also known as the Transtheoretical Model of Behaviour Change (TTM). This model was originally developed by Prochaska and Diclemente (1982) (Cited in Ogden, 2000). It was originally used for the cessation of negative behaviour such as smoking, however, has been successfully applied to exercise behaviour (Fallon *et al.*, 2005). TTM is made up of five stages; pre-contemplation, contemplation, action, maintenance and relapse. Regarding this study it is assumed that the sedentary population will be in the pre-contemplation, contemplation or relapse stage and the physically active population will be in the action or maintenance stage. It is said that the individual is in the maintenance stage once they have been exercising for six months, however, these guidelines and guidelines between all stages are difficult to distinguish and grey areas exist (Fallon *et al.*, 2005). Research by Marshall and Biddle (2001) found that there was an increase in perceived benefits of exercise for every forward stage transition, therefore, researching and implementing strategies for change and moving into the next stage can help individuals to improve perceptions and maintain exercise programmes.

This research aims to find information on the psychological functioning of overweight and obese women who are sedentary and physical active and use this research to establish similarities and differences between them. This information can then be used to, potentially, help women who are sedentary and in the pre-contemplation, contemplation or relapse stage transition successfully into the action and maintenance stage, also, to keep the physically active individuals from relapse.

## **Social Physique Anxiety 2.3**

Modern day exercise behaviour patterns do not reflect the known benefits and awareness of the physical activity and health relationship. Adherence and commitment to physical activity are low and obesity is prevalent in UK population (Crawford & Eklund, 1994). Research by Bain *et al.* (1989) (cited in Eklund & Crawford, 1994) reported that the most influential factor limiting the willingness of overweight females from exercising in public was the concern about being observed and evaluated by others. This is known as social physique anxiety (SPA) and can be defined as *“the concern that others are negatively evaluating one’s body or physical*

*appearance*" (Koyuncu *et al.*, 2010, p 562). SPA is a multidimensional construct that is derived from a two component theory of impression management and self-presentation. High levels have been shown to reduce exercise motivation and are associated with low and excessive exercise levels.

Crawford & Eklund (1994) investigated self-presentational anxieties; they researched the association with the physique and effects on participating in fitness programs. The study included female undergraduates (n=104) with ages ranging from 18-25, they showed all participants two 2 minute videos of aerobic classes; the first with participants in tight physique revealing clothing and the second with them in shorts and t-shirts. The study found that SPA is not related to the amount of physical activity the participants took part in; days per week ( $r=.10$ ), minutes per day ( $r=.01$ ) and minutes per week ( $r=.03$ ). However there were significant correlations found regarding the Reasons for Exercise Inventory (REI), with 3 of the subscales being significantly correlated with SPA; body tone ( $r=.51$ ), weight control ( $r=.44$ ) and physical attractiveness ( $r=.37$ ). This research may be called into question as the Attitudes Toward Exercise Settings Questionnaire (ATES) used in this study was created by the author potentially creating bias, it was not piloted or previously tested and may therefore lack reliability.

A second study was carried out by Eklund and Crawford (1994), it replicated their previous study with the addition of a new variable, body composition, measured as body fat percentage found via skinfold callipers. This research was based primarily on the first study (Crawford & Eklund, 1994), however, used a different population of female physical education students (n=94). 94% of participants reported enjoying exercise and were regularly active participating in at least one day per week of physical activity. Findings showed a relationship between body fat ratio and SPA, but still no relationship between physical activity and SPA. Eklund and Crawford (1994) acknowledged that the participants in this study were atypical in terms of SPA; selection bias is clear, as the participants are limited in their variety of the population and immediately excluded sedentary population and those who do not enjoy physical activity. This research paper aims to find information on a wider variety of the population.

Koyuncu *et al.* (2010) confirmed findings of Eklund and Crawford (1994), suggesting a relationship between body fat ratio (BFR) and SPA. This study took a wider variety of the population (n=290). Four groups; a sociocultural institution for elderly women,

students from faculty of sciences, student from nursing and students from a school of sport were given a number of questionnaires to fill out. This research found that body mass index (BMI) may be a significant predictor of SPA.

In 2005 Sabiston *et al.* examined the relationship between BMI, figure rating scores (FRS) and reasons for exercise (REI) in relation to their effects on SPA. The study consisted of 373 females, when analysing data only those who reported exercising at least one day per week were used (n=296). It was found that, BMI, figure rating scores and REI accounted for 44.9% of variance in SPA. Kowalski *et al.* (2006) disputes these findings stating that, BMI is not correlated with physical activity and has low to moderate correlations with SPA. The study by Kowalski *et al.* (2006) was longitudinal lasting over a 24 month period, however, participants in this study differed to those in research by Sabiston *et al.* (2005) with adolescents being studied in a greater number of subjects (n=501), potentially accounting for the variation in results.

Previous literature yields ambiguous results and the strength and implications between SPA and exercise behaviour are not entirely understood. Previous authors used participants different in nature, however, most had similar BMI and age ranges; Crawford & Eklund, (1994), Koyuncu *et al.* (2010), and Sabiston *et al.* (2005), all used participants with healthy to moderate BMI and with majority of participants being in their twenties, leaving any findings unimportant for the majority of the population. This study aims to use participants with BMI over 25, considered overweight and obese and with a wider age range.

It is discussed that SPA is higher in overweight and obese females and is significantly correlated with increased body fat percentage (Eklund & Crawford, 1994; Hart, Leary & Rejetski, 1989). McAuley *et al.* (1996) identified a positive correlation between exercise and psychological health and a negative correlation between exercise and anxiety, these findings suggest that exercise has a buffering effect on anxiety, therefore, SPA which is a perceived barrier to overweight and obese females may prevent them from exercising.

#### **Body Size Satisfaction 2.4**

Body size satisfaction (BSS) is the degree to which a person is satisfied by their physique and how they view their physique in accordance with the ideals that the individual holds (Eklund & Crawford, 1994). From 1992 to 1997 the percentage of

women dissatisfied with their figure rose from 25 to 56% (Fabracatore and Wadden, 2003). The most common cause of dissatisfaction was the individual's weight, particularly, at the waist and abdomen. In western society an extremely negative image of overweight people exists (Monteath & McCabe, 1997). Koyunco *et al.* (2010) suggested that the ideal body image for females portrayed in the media has become unrealistically thin compared to past ideals. However these ideals are unattainable for most women; when they cannot achieve these ideals it can lead to low body size satisfaction. A study by MCAuley *et al.* (1993) found that 55% of female undergraduates perceived themselves to be overweight causing dissatisfaction with their body, whereas only 6% actually fell into the overweight category. This may be due to societal body ideals that are conveyed to the public via media and stereotypes related to appearance. Further research by Koyunco *et al.* (2010) assessed body satisfaction in exercisers and non-exercisers and found that those who exercised were more satisfied with their physical appearance and had lower SPA.

Most literature focuses on women and findings show that lower BMI, increasing age and better health are positively associated with BSS in females. Research by Millstein *et al.* (2008) found that more women report greater dissatisfaction with their bodies than men in the same BMI category. They conducted a nationwide cross-sectional telephone survey researched from the University of South Carolina using the National Physical Activity and Weight Loss Survey (NPAWLS). A random digit dial sample was used with a total of 11,211 interviews being completed, however, the response rate was low at 30.9%. A total of 9840 sets of data (5436 women and 4304 men) were used for analysis due to incomplete sections of the interview. In order to assess BSS one question was asked to participants "how do you feel about your body size right now?" with responses being limited to very satisfied, somewhat satisfied, not satisfied and don't know/not sure. 56.9% of the sample were classified as overweight (36.2%) or obese (20.7%) with 18% of respondents reporting being dissatisfied with their body size. Young females (18-29) were found to be more dissatisfied with their bodies compared with older females (60-69). BMI was found to be the variable most associated with body size dissatisfaction. A main finding of the study was that women who were less satisfied with their body were more likely to diet but not use physical activity to try to lose weight. It is widely acknowledged that physical activity coupled with dietary restraint produce greater weight loss compared

to diet alone (Hemmingsson *et al.*, 2001), therefore, finding methods to aid this population to participate in physical activity will be beneficial.

Although the large sample size and population base lends credibility to the results the low response rate (30.9%) could limit the generalizability of the results. All data is self-report which may have led to misclassification of BMI results. The main factor to view with caution is the method of assessment of BSS, the question used is simple and limits the ability to assess the global view of body image.

### **Commitment to Physical Activity 2.5**

Frederick and Morrison (2001) did research relating SPA to participants' attitudes towards exercise settings and commitment to physical activity (adherence). Participants (n=326) were asked to fill out the questionnaire and put it into a locked box. Originally 500 people were asked to participate with a 65% response rate. In order to measure adherence participants were asked to self-report hours and days per week spent engaging in physical activity. SPA was measured using the social physique anxiety scale (SPAS) questionnaire. Results found that women were more likely to gain higher SPA scores compared with men. There was no relationship found between age and SPA scores. Those with high SPA reported more days per week exercising, the author suggested that this is due to societal pressures to meet ideal standards. It was shown that participants with high SPA were likely to place pressure on themselves to exercise. It is believed that adherence will not be sustained over a period of time if this is the case.

Hemmingsson *et al.* (2001) carried out a study with the aim to summarise the best available evidence on influences of physical activity behaviour change and adherence in obese adults. This research used a narrative review design where papers were identified from a comprehensive electronic manual literature search. One area assessed was SPA; both young and old obese females were found to experience higher levels than their normal-weight counterparts. It was suggested by the author that in order for obese populations to have a better chance at adhering to an exercise programme there needs to be a decreased focus on weight loss and appearance and a greater focus on health benefits.

Kovacova *et al.* (2011) did a study that analysed adherence of participant to a six month dance and step aerobics program, measuring attendance via a register. 47 females age 40-65 years exercise three times per week over a period of six months.

It was observed that there was a decrease in participants over this period of time, mean values were reported as decreased from 85.39% to 68.35% in the first four months. Relating this to the stages of change model, the participants that dropped out within this period of time would have been in the action phase until drop out which would have then seen them move into the relapse and contemplation phases, those that stayed on the program at the end of the six month period would have been considered in the maintenance phase. Reasons given by the participants for dropping out of the program were mostly objective; health (55.17%), family (13.70%) and work (22.41%), there were other psychological factors given (motivational and personal characteristics) that accounted for 8.62%.

Gabriele *et al.* (2011) carried out a study that assessed the utility of the Investment Model, which identifies satisfaction, investments and involvement alternatives as predictors of commitment in physical activity. It was found that wanting to commit not having to commit was related to time spent in physical activity. This research suggests that the higher a person's commitment to physical activity in wanting to be committed the more likely they are to meet the physical activity levels required for optimal health and well-being.

### **Body Mass Index (BMI) & Weight Dissatisfaction (WD) 2.6**

Body mass index (BMI) is recognised as the universal indicator of obesity, with average levels ranging from 18.5 to 25 as a healthy individual (Wojtowicz, 2011). The terms overweight and obese are used interchangeably by some, however, have different meanings and the correct term must be used for accurate explanation of a person's weight status. Overweight and obese are defined by body mass index scores (the weight in kilograms divided by the square of the height in meters). Overweight is defined by Hoofnagle (2006) as "a BMI of 25.0 to 29.9" whereas obesity is defined as "a BMI of 30.0 to 34.9" with a BMI of 35 and above being referred to as morbidly obese and, in some cases, super morbidly obese. The World Health Organisation (WHO) (2010) made a statement on their position on BMI, they stated that they recognise BMI as a valid measurement in defining obesity. Conclusions have been made that poor fitness is widely spread in the international society and being overweight and obese are inversely related to fitness (Young *et al.*, 2007).

Weight dissatisfaction (WD) is determined by asking participants to identify their current weight and then their ideal weight, the difference between these values is their weight dissatisfaction, for example if a subject weighed 10 stone and wanted to weight 9 stone their weight dissatisfaction would be 1 stone. Measuring weight dissatisfaction is used as a way to assess a person's perception of themselves regarding their physique. A study by Sabbah *et al.* (2008) found that greater WD was associated with more hours watching television and being sedentary. A study by LePage and Crowther (2009) also suggested that women who exercise frequently experience positive effects on weight satisfaction and body image.

### **Reasons for Exercise Inventory (REI) 2.7**

The reasons for exercise inventory was originally developed by Silberstein *et al.* (1988). It is a 24-item questionnaire consists of seven sub-scales; Weight, control, fitness, mood, attractiveness, health, enjoyment and tone. Cash *et al.* (1994) found that women who were distressed about their physical appearance were more likely to give weight management as their motive for exercise, whereas women who were more satisfied with their appearance were more likely to exercise to regulate their emotions. A study by Smith *et al.* (1998) was an expansion of the research produced by Cash *et al.* (1988), however, the population sample used differed from that of the previous research. Whereas Cash *et al.* (1988) used 101 nursing students Smith *et al.* (1998) used 78 male and 100 female undergraduates from varying degree subjects. Findings confirmed those of Smith *et al.* (1988) indicating that putting health and fitness reasons for exercise was predictive of frequency of exercise, however, dissatisfaction of appearance lead to appearance and weight control being the main reasons for exercise participation.

It is clear in the literature that there are relationships between SPA, CPA, BSS and WD in normal-weight, overweight and obese populations. It is also suggested that these variables differ between sedentary and physically active individuals, however, there is limited information available on the differences between sedentary and physically active females in overweight and obese populations; studies where this is the case lack variety in the sample populations or issues with measurements of the variables are present. This research aims to build upon previous literature and provide data that will further inform on the given variables.

## **Hypotheses 2.8**

The hypotheses formulated for this study are based upon literature, with findings being used to create knowledge and expectations of future research.

Null Hypothesis 1: There will be no significant difference between physically active and sedentary females regarding weight dissatisfaction.

Alternative Hypothesis 1: There will be a significant difference between physically active and sedentary females regarding weight dissatisfaction.

Null Hypothesis 2: There will be no significant difference between physically active and sedentary females regarding body size satisfaction.

Alternative Hypothesis 2: There will be a significant difference between physically active and sedentary females regarding body size satisfaction.

Null Hypothesis 3: There will be no significant difference between physically active and sedentary females regarding commitment to physical activity.

Alternative Hypothesis 3: There will be a significant difference between physically active and sedentary females regarding commitment to physical activity.

Null Hypothesis 4: There will be no significant difference between physically active and sedentary females regarding social physique anxiety.

Alternative Hypothesis 4: There will be a significant difference between physically active and sedentary females regarding social physique anxiety.

# **Chapter 3**

## **Methodology**

## **Methodology 3.1**

This chapter describes and explains the procedures used for this study. It includes details on the pilot study, participants and instrumentation.

### Purpose of the study 3.1.1

This study examined overweight and obese females' perceptions of their body image and their levels of social physique anxiety, body size satisfaction and weight dissatisfaction and the effects this has on their willingness and commitment to participate in physical activity. It compared social physique anxiety, commitment to physical activity, body size satisfaction, weight dissatisfaction and reasons to exercise between overweight and sedentary females of which one group were physically active and one sedentary.

### Participants 3.1.2

There were 63 participants that volunteered to take part in the study. Participants were females between the ages of 18 and 66. The participants were recruited from the South Wales region in locations such as gyms, coffee shops, university campuses and shopping centres. Of the 100 questionnaires handed out there was a 74% response rate; 13 did not meet the inclusion criteria leaving the final number of fully completed questionnaires in the study at 63.

## **Procedure 3.2**

### Ethical approval 3.2.1

Ethical approval from the university ethics committee was obtained in order to ensure that the study was ethically sound and posed no risk to the participants. An application was put into the university and granted prior to the study.

### Pilot study 3.2.2

A pilot study was carried out to ensure the questionnaires ease of use and validity. Three participants filled out the questionnaires followed by questions regarding layout and language, participants reported understanding all aspects of the questions, however, layout was adjusted to decrease confusion in the CPAS questionnaire regarding positioning of numbers.

### Inclusion criteria 3.2.3

Inclusion criteria required subjects to be a minimum of 18 years of age. Subjects were one of two groups; the first group was labelled sedentary and in order to be included in this category they were required to have a body mass index (BMI) of 25 and above, this was assessed via asking participants for their self-reported height and weight, these were then used to calculate BMI. The second inclusion criteria was a physical activity score of low, this was assessed using the International Physical Activity Questionnaire (IPAQ) with results of less than 600 MET minutes placing the participants in this group. The second group was labelled physically active and inclusion criteria required the subjects to have a BMI of 25 and above and to have a physical activity score of moderate or high (601 MET minutes and above).

### Recruitment 3.2.4

Participants were recruited from a number of areas in South Wales: Abergavenny, Newport, Caerleon, Cwmbran and Cardiff. Participants were approached and asked if they would be willing to take part in a study by filling out the questionnaire. A variety of locations were used at each town/city in an attempt to gain a broad spectrum of society including age, race and class, however this was not recorded in the study.

## **Instruments 3.3**

### Informed Consent 3.3.1

Once participants had agreed to take part in the study a cover page explaining the study and their rights as a participant to withdraw at any point was given, followed by a page requiring the participant to sign and date giving their informed consent (see appendix A). Participants then proceeded to fill out the questionnaire and hand it back to the researcher.

### Social Physique Anxiety Questionnaire (SPAS) 3.3.2

Social physique anxiety was measured using the social physique anxiety scale (SPAS) (see Appendix E). The SPAS is a 12 item self-report inventory designed to assess the level of anxiety a participant feels in an exercise setting. The participant was given a question such as 'I am comfortable with the appearance of my physique', they then answered on a 5 point Likert scale; 0 being 'not at all

characteristic true of me' up to 4 being 'extremely characteristic true of me'. Evidence has shown that the SPAS has test retest reliability ( $r=0.82$ ) internal consistency (Cronbach's alpha = 0.90) and construct validity (Hart et al., 1989). It was previously thought that the SPAS was unidimensional (Hart et al., 1989; McAuley & Burham, 1993), however, it is now believed that it is a multidimensional construct (Eklund et al., 1996).

### Body Size Satisfaction (BSS) (Figure rating scale) 3.3.3

Body size satisfaction (BSS) was measured using the figure rating scale (FRS) (see Appendix B). The figure rating scale shows the participants a number of silhouettes from a small frame progressing to a larger frame body labelled 1 being smallest figure up to 9 meaning largest figure. The participant indicated via numbered silhouette what body size they believe they are at present and what number they would like to be, the difference between these numbers is their BSS. An example may include the participant believing they are a number 5 a medium figure and they indicate that they would like to be a 2, a slimmer figure, their BSS would be 4 meaning that they are moderately dissatisfied with their body size. Swami *et al.* (2008) tested the figure rating scale for reliability and validity in an adult female population ( $n=208$ ). Construct validity was found to be strong with a correlation between BMI and self-rating of the scale being reported ( $r=.80$ ,  $p<.001$ ). Test-retest reliability found correlations between self-rating, ideal body size and body dissatisfaction; self-rating  $r=.90$ , ideal body size  $r=.88$  and body dissatisfaction  $r=.85$ .

### Commitment to Physical Activity Scale (CPAS) 3.3.4

Commitment to physical activity will was measured using the commitment to physical activity scale (CPAS) (see Appendix C). The CPAS is a 12 item self-report scale based on a 5 point likert scale, for example a statement such as 'I look forward to physical activity' was given and the participant rated themselves according to the scale; 1 meaning 'strongly disagree' and 5 meaning 'strongly agree'. Corbin *et al.* (1987) reported good test retest reliability ( $r=0.85$ ) and internal consistency for the commitment to physical activity scale (Cronbach's alpha= 0.91).

### Body Mass Index and Weight Dissatisfaction 3.3.5

Body mass index (weight [kg]/height[m]<sup>2</sup>) is highly correlated with amount of body fat (Strobe, 2000), this is used as opposed to collecting body fat data of each participant as it is time consuming and as the participants are overweight the measuring body fat via skinfold callipers may cause undue stress. Previous research has demonstrated high correlations between self-reported and actual measures for height ( $r=0.94$ ) and weight ( $r=0.95$ ) (Davis, 1990).

Weight dissatisfaction (WD) is calculated similarly to BSS in the way that actual and ideal values are used. For WD the participant states their current weight and then what their ideal weight would be, the ideal weight is the way that their own bodily ideals created in their own psychology would be met however attainable or unattainable this value may be. An example of this is if a participant states that their current weight is 13 stone and their ideal weight is 9 stone there is 4 stone weight dissatisfaction. This variable however must be viewed with caution as 'the magnitude of the discrepancy does not necessarily indicate the degree of satisfaction (or dissatisfaction) with their current weight' (Eklund & Crawford, 1994, p. 435)

### Reasons for Exercise Inventory (REI) 3.3.6

In order to gain information on the participants' perceptions on reason to exercise the Reasons for Exercise Inventory (REI) (see Appendix F) (Silberstein *et al.*, 1988) was used. However, in order to avoid issues with the sedentary population who may not participate in any physical activity the name was modified to the Reasons to exercise Inventory allowing them to provide reasons as to why they believe they or others should exercise. The REI is a 24-item self-report inventory designed to explain the reasons individuals give for exercising. There are a number of subscales used within the questionnaire; weight control, fitness, health, improving body tone, improving physical attractiveness and improving mood and enjoyment. The scale ranged from 1 to 7; 1 meaning 'not important' and 7 meaning that it was an 'extremely important' reason to exercise. It was stated by Silebertstein *et al.* (1998) that all seven subscales demonstrated adequate internal consistency and that reliability co-efficients ranged from .67(enjoyment) to .81 (weight control).

## **Data Analysis**

The data was analysed using the computer software SPSS. As the data was comparing two the two groups; sedentary and physically active, and the data collected was ordinal with unequal group numbers a non-parametric test was used. The test that was conducted on the data was a Mann Whitney U test also known as a Wilcoxon rank sum test. This test indicates ranks the data regardless of groups and provides mean ranks for each group, there is also a value given indicating if the findings are significantly different ( $p < .05$ ).

# **Chapter 4**

## **Results**

### Mann Whitney U Test 4.1

In order to analyse the data the Mann Whitney U test was considered most appropriate as the data was ordinal and non-parametric. The Mann Whitney U test ranks the data regardless of what group the data is placed in (sedentary or physically active), therefore, means of data reported for the variables will be a mean rank value.

### Results 4.2

The analysis of data is presented in this chapter with tables and descriptions being used. The results will be presented by, firstly, comparing the results to previous research by assessing the differences between the groups; secondly reporting the findings of this research which includes means and standard deviations. For the results the sedentary population have been labelled group Sed and the physically activity population have been labelled group PA. At the end of the results section is a table showing a comparison of results between the groups and the results from the Mann Whitney U test.

### Descriptive Analysis 4.3

The means and standard deviations for both groups individually and as a whole are presented in table 1 below. The mean age for group Sed and group PA were 28 ( $\pm 12$ ) and 29 ( $\pm 9$ ) respectively, mean heights of both groups were Sed 161cm ( $\pm 5$ ) and PA 162cm ( $\pm 6$ ). Group Sed have a higher mean weight but BMI is similar in both groups (group Sed 31 ( $\pm 3$ ) and group PA 29 ( $\pm 6$ )). The values for BMI show a difference in BMI group classification as group Sed are above 30 they are in the obese category, whereas group PA are under 30 putting them in the overweight category.

**Table 1.** Means and standard deviations of the sedentary, physically active and total group for inclusion criteria variables.

	Age	Height	Weight	BMI	IPAQ
Sedentary	28(±12)	151(±5)	81(±9)	31(±3)	397(±122)
Physically Active	29(±9)	162(±6)	77(±8)	29(±6)	2053(±1727)
Total	28.9(±11.6)	162.2(±6.0)	79.1(±9.3)	30.1(±3.8)	1249(±1178)

#### Activity level and SPA 4.4

The results of the SPAS did not support finding of previous research which suggested that medians would be significantly different between the two groups (group Sed mdn=34.71 and group PA mdn=30.09). The Mann Whitney U Test revealed no significant difference between the groups regarding SPA level and physical activity level (U=410.50, p=.324.)

#### Activity level and BSS 4.5

The median for group Sed was found to be higher (mdn=37.04) than group PA (mdn=28.46) revealing that levels of body satisfaction were higher for participants that were physically active, however, when the data was analysed there was no significant difference found (U=350, p=.60).

#### Activity level and CPA 4.6

The medians for the groups regarding CPA were significantly different with the physically active group having higher, almost double, commitment levels (mdn=40.15) than the sedentary group (mdn=20.40). The results of the Mann Whitney U Test confirmed this showing a significant difference  $p < .05$ , (U=179.5,  $p < .001$ .)

#### Activity level and WD 4.7

The mean ranks of the groups as found by the Mann Whitney U test were 33.77 and 30.76 for group Sed and group PA respectively for weight dissatisfaction and physical activity level. There was no significant difference found between groups (U= 435,  $p=.520$ .)

#### Activity level and REI 4.8

The results of the reasons for exercise inventory found no significant difference between the physically active and sedentary participants in the following: to be slim, lose weight, maintain weight, improve muscle tone, improve strength, improve endurance, improve flexibility, cope with sadness, cope with stress, improve mood, improve overall health, increase resistance to illness, maintain well-being, improve appearance and attract the opposite sex. All of these variables were found to have no significant difference  $p>.05$ . However, two of the variables were found to be significantly different between groups ( $p<.05$ ); to increase energy and to improve cardiovascular fitness. Regarding increased energy as a reason to exercise, the sedentary group had a median of 26.19 compared to that of the physically active group which was 36.08. Regarding improving cardiovascular fitness as a reason to exercise, the sedentary group had a median of 25.52 compared with the physically active group of 36.55.

**Table 2.** Summary of results from the Mann Whitney U test highlighting significant differences between the physically active and sedentary participants (mean  $\pm$ SD).

Variable	Physical Activity	Sedentary	U	Z	P
WD	30.76( $\pm$ 5.31)	33.77( $\pm$ 5.45)	435	-0.643	.520
BSS	28.46( $\pm$ 1.19)	37.04( $\pm$ 1.23)	350	-1.879	.60
CPA	40.15( $\pm$ 9.84)	20.40( $\pm$ 6.50)	179.5	-4.214	<.001
SPA	30.09( $\pm$ 6.51)	34.71( $\pm$ 7.97)	410.5	-0.986	.324
REI: IE	35.32( $\pm$ 1.18)	27.27( $\pm$ 1.28)	330	-2.159	.031
REI: CV	36.55( $\pm$ 1.11)	25.52( $\pm$ 1.32)	312	-2.433	.015

\*REI: IE = increase energy \*REI: CV = increase cardiovascular fitness

# **Chapter 5**

## **Discussion**

## **Discussion 5.1**

This chapter will discuss the results found from the research study. Previous research and findings that were used to underpin the justification of the hypotheses will be used to critique and explain the findings of this research. There will be conclusions made regarding each variable and limitations of the research will be highlighted. Following this, implications of the limitations will be made and recommendations for future research and improvement will be suggested.

This study was designed to investigate the differences between sedentary and physically active overweight and obese females, assessing the aspects of weight dissatisfaction, body size satisfaction, commitment to physical activity, social physique anxiety and reasons for exercise.

The null hypotheses were:

1. There is no significant difference between sedentary and physically active females regarding weight dissatisfaction.
2. There is no significant difference between sedentary and physically active females regarding body size satisfaction.
3. There is no significant difference between sedentary and physically active females regarding commitment to physical activity.
4. There is no significant difference between sedentary and physically active females regarding social physique anxiety.

This chapter will be divided into a five subsections. The first subsection will discuss the participants in the study and the following four subsections will discuss the results of the individual variables and concluding rejection or acceptance of the null hypothesis. Explanations of the findings using relevant literature and limitations of the research will follow and improvements of the research will be suggested.

### Participants 5.1.1

It was expected that the physically active participants would weigh less than that of the sedentary population due to the effects of energy expenditure that results from being physically active (Jakicic, 2002). Consequently, mean values showed group Sed to have a lower physical activity score (IPAQ; mean=397 Met minutes ( $\pm 122$ )) compared with group PA (mean=2053 Met minutes ( $\pm 1727$ )).

BMI was found to place the groups in different categories (group Sed mean=31( $\pm 3$ ) and group PA mean=29 ( $\pm 6$ )). The sedentary group were in the obese category (BMI >30) and the physically active group in the overweight category (BMI <30, >25). As the results found no differences between the groups it could be suggested that BMI category does not have an effect on variables such as SPA, CPA, BSS and WD in females that are overweight or obese.

### Physical activity and SPA 5.2

The result from the research accepts the null hypothesis revealing that there was no significant difference between sedentary and physically active females regarding social physique anxiety. This means that social physique anxiety was not affected by physical activity and exercise, also, that exercise and physical activity do not protect against social physique anxiety.

The results of this study confirmed research of Crawford and Eklund (1994), who stated that they found no relationship between SPA levels and amount of physical activity, it also confirms the findings of the second study by Eklund and Crawford (1994) which found no relationship between physical activity participation and SPA level. These studies and their results must be viewed with caution as both were by the same author potentially leading to bias. The studies used different populations yet concluded the same findings with the participants of Crawford and Eklund (1994) reporting a mean weight of 59kg ( $\pm 7.6$ ), whereas this study reports mean weight of 79.1kg ( $\pm 9.3$ ). Levels of SPA reported as a mean value in Crawford and Eklund (1994) is 40.12 ( $\pm 9.75$ ) whereas this study reports mean values as 30.09 ( $\pm 6.51$ ) for the sedentary population and 34.71 ( $\pm 7.97$ ) for the physically active population. The participants of the study by Eklund and Crawford have a lower BMI than those in this study yet report a higher SPA value. The difference between populations in the

studies leads to confusion and difficulties in making any comparisons. These results suggest that physical activity and SPA are not related.

This study measured SPA at one moment of the participant's day, with no recording or consideration of other factors that may have contributed to their level of SPA at that moment and as previously stated SPA is a multidimensional construct, therefore meaning it has the ability to change over time and in different situations. Future studies may assess SPA over time and find out the main causes of SPA level in females. The research is also limited due to the small number of participants, and no recording or consideration of ethnicity, socio-economic class and other lifestyle influences. Future research may identify the mentioned aspects and assess if these have an impact of SPA level over time and at one point in time.

### Physical activity and BSS 5.3

The result from this research accepts the null hypothesis stating that there was no significant difference found between sedentary and physically active females. This means that physical activity did not help to increase or decrease satisfaction with one's body size, this also implies that exercise does not have a protective effect on body size satisfaction.

This research disputes the findings of previous older research by McAuley *et al.* (1993) and more recent literature by Koyuncu *et al.* (2010). Koyuncu *et al.* (2010), who stated that exercise improved BSS, reported that participants in their study ranged in ages from 18-60, however, mean values were reported as 24( $\pm$ 10) which suggests that there is limited variety in the age groups and fewer participants were in the older categories. This may account for the difference in findings. Future research may seek to find differences between older and younger females and define differences between specific age groups.

Research by McLaren *et al.* (2003) suggests that BSS is lower if participants experienced child-onset obesity compared to adult-onset obesity. Those who were dissatisfied at midlife were heavier in their younger years. However, it was also reported that a late menarche, being post-menopausal and having started hormone replacement therapy before menopause were associated with less dissatisfaction. The present study did not account for variables such as lifestyle, menopause and

years of overweight/obesity, this limits the research as findings may or may not be attributed to these aspects. As these were not controlled for conclusions cannot be made to support or dispute the argument that age and menstrual aspects affect BSS and may have affected the outcome of this study. The difference in findings may be due to sample size, as this study consisted of 63 participants, compared to the larger number of 993 in the study by McLaren *et al.* (2003) and 290 in the study of Koyuncu *et al.* (2010). The small sample size of this study may have led to less power in the findings and the diversity of participants smaller than initially stated.

Another limitation of the study regarding BSS lies in the measurement of another variable of ethnicity/racial group. Kruger *et al.* (2008) reported differences between ethnicities stating that the association between BSS and physical activity was present in whites, however, became weaker and non-significant in blacks, Hispanics and other racial/ethnic groups. This research did not record the ethnicity of the participants, therefore, this may or may not be a reason for the findings. Future research may include recording of ethnicity and comparisons of BSS between different ethnic groups.

#### Physical activity and CPA 5.4

The result from this research rejects the null hypothesis stating that there was no significant difference between sedentary and physically active females. This means that physical activity had an effect on the level of commitment the participant had, however, it must also be considered that the amount of commitment the participant has affected the level of physical activity and exercise they participated in.

This study confirms the findings of Gabriele *et al.* (2011) stating that physically active females have higher levels of commitment to physical activity and exercise than those who, as stated in research by Kovacova *et al.* (2011), are more likely to drop out for objective reasons.

It can be suggested that as this study found no other links between sedentary and physically active overweight and obese females', commitment to physical activity may be the variable that has the greatest effect on participation levels. Although this research is consistent with the outcomes of previous literature there are still limitations within this study. The self-report method of physical activity may be

inaccurate as actual level was not observed, also, the level of truth from the participants could not be measured, therefore, some participants may have exaggerated the level of commitment to suit their perceptions of social acceptance regarding physical activity level and commitment. Future research may assess the differences between age and ethnicities regarding commitment to physical activity, other variables such as body dimension may be recorded using more accurate measurements such as skinfold calipers as opposed to self-report data

### Physical activity and WD 5.5

The result from this research accepts the null hypothesis stating that there was no significant difference between the sedentary and physically active females. This means that regardless of physical activity level the participants experienced the same level of weight dissatisfaction, from this it can be concluded that physical activity and exercise does not protect against the dissatisfaction with one's weight.

The findings of this study dispute that of LePage and Crowther (2009) who found that women who exercised frequently experience positive effects on body image, with the effects of reduced weight dissatisfaction. This study found no difference between females that were physically active and females that were sedentary. However, there are key differences in the studies that may account for the findings; LePage and Crowther (2009) used female undergraduates (age 19.1 ( $\pm 2.88$ )) whereas the current study used females across age ranges (age 28.9 ( $\pm 11.66$ )). The difference in age may account for the findings as younger people are more likely to experience weight dissatisfaction than older women due to media and other societal pressures (Stile and Whitenton, 2002). Another significant difference between the studies exists regarding assessment of physical activity level, LePage and Crowther (2009) studied weight dissatisfaction on a day-to-day basis post exercise and multiple times on a single day compared with this study that measured it once and exercise history was not measured.

This study found that weight dissatisfaction was not different between the sedentary and physically active females leading to conclusions that exercise does not affect weight dissatisfaction. A study by Wade *et al.* (2009) researched methods to improve weight dissatisfaction. One hundred female undergraduate students (age 24.38

(±9.39)) randomized into five groups of twenty underwent ruminative attention control acceptance, distraction and cognitive dissonance. It was found that acceptance was superior in improving appearance satisfaction. Acceptance was described as 'experiencing without judgement' (Wade *et al.*, 2009, p848). This suggests that acceptance as a focus for improving weight dissatisfaction is more effective than exercise. Future research could measure the effects of exercise and acceptance combined and the effects of exercise with other treatments.

### Physical activity and REI 5.6

As this was assessed in order to gain extra information about participants there was no hypothesis made regarding REI. There was a significant difference found for two of the subscales; to increase energy and improve cardiovascular fitness. This means that for all other variables; to be slim, lose weight, maintain weight, improve muscle tone, improve strength, improve endurance, improve flexibility, cope with sadness, cope with stress, improve mood, improve overall health, increase resistance to illness, maintain well-being, improve appearance and attract the opposite sex, there was no difference between sedentary and physically active females and both perceived the same reasons to exercise whether they participated in physical activity or not. Regarding exercising to increase energy and improve cardiovascular fitness there was a significant difference found, meaning that physical activity affects these variables, or, these variables have an influence on level of physical activity.

This study confirms the findings of Smith *et al.* (1988) who found that health and fitness reasons for exercise was predictive of frequency of exercise. This study showed that there was a significant difference between the physically active and sedentary populations regarding increased energy and improvement of cardiovascular fitness, where the physically active population were more focussed on these aspects compared with the sedentary population. There was no difference found between the other variables, and this study cannot confirm the findings of Cash *et al.* (1988) who stated that women who were dissatisfied with their bodies were more likely to give weight loss as their main reason for exercise. This study found that women who were sedentary were no different to physically active women regarding levels of satisfaction with their physique, no analysis was carried out regarding the comparison of level of body dissatisfaction and reasons for exercise.

The findings of the reasons for exercise inventory can be linked to the commitment to physical activity levels, where by if people want to commit to exercise they are more likely to be physically active and those that remain physically active do so for reasons such as fitness gains. If these two components can be combined then reaching the maintenance stage of the stages of change model (Ogden, 2000) is more likely and long term physical activity participation and its health benefits will be attained.

A limitation of the REI is that there is not an 'other' option on the questionnaire, therefore, only the reasons stated on the questionnaire can be considered and any other individual reasons the participants may have are disregarded. This restriction may mean that there are new or changed aspects regarding reasons to exercise that are not being analysed and taken into account. There is also no way to measure the participant actual perceptions of reasons to exercise, it is possible that the answers given are not actual feelings but what they believe they should put down, this may be due to societal pressures or the environment they are in when filling out the questionnaires. The environment may influence answers to the questions so future research may look to control the environment in which the participants fill out the questionnaire or assess the changes in responses when environments are changed, for example from an exercise setting to a non-exercise setting.

# **Chapter 6**

## **Conclusion**

## Conclusion 6.1

The aim of the research study was to examine the differences between physically active and sedentary females with a BMI of 25 and above. The variables that were assessed were social physique anxiety, commitment to physical activity, body size satisfaction, weight dissatisfaction and reasons for exercise. In order to meet the inclusion criteria self-report height and weight was given in order to formulate a BMI score and the international physical activity questionnaire was used to assign the participants into the physically active or sedentary group.

Findings showed that there was no significant difference between physically active and sedentary females regarding the variable of social physique anxiety ( $p=.324$ ), leading to conclusions that physical activity does not have a relationship with the level of social physique anxiety experienced by overweight and obese females.

There was a significant difference found between groups for commitment to physical activity ( $p<.001$ ) meaning that the null hypothesis was rejected for this variable. It was found that commitment to physical activity was higher in the physically active group and lower in the sedentary group showing a causal relationship between physical activity level and commitment to physical activity.

There was no significant difference found regarding body size satisfaction, therefore the null hypotheses was accepted ( $p=.60$ ). This means that physical activity does not affect the level of body size satisfaction experienced by the individual and physical activity does not cause greater satisfaction with one's body size.

It was found that there was no significant difference between physically active and sedentary females regarding weight dissatisfaction ( $p=.520$ ), leading to conclusions that the dissatisfaction with weight in overweight and obese females is not related to physical activity level.

There was no significant difference found for the majority of the reasons to exercise inventory; to be slim, lose weight, maintain weight, improve muscle tone, improve strength, improve endurance, improve flexibility, cope with sadness, cope with stress, improve mood, improve overall health, increase resistance to illness, maintain well-being, improve appearance and attract the opposite sex ( $p>.05$ ). However there was a significant difference found between two variables of the reasons for exercise inventory; increased energy ( $p=.031$ ) and to improve cardiovascular fitness ( $p=.015$ ). There was no hypothesis written for the reasons for exercise inventory as this was used as a tool to gain extra information on the differences between populations. The information found provides an insight into the difference in psychology between physically active and sedentary females, leading to conclusions that if reasons such as health benefits (i.e. improving cardiovascular fitness) are considered by exercise professionals and participants, participation in physical activity may increase as opposed to drop out which is associated with reasons such as weight loss and appearance.

From this research study it can be concluded that there are differences in perceptions of physique and body satisfaction between physically active and sedentary overweight and obese females regarding the aspects of commitment to physical activity and two reasons for exercise; increase energy and improve cardiovascular fitness. However, there are no differences between physically active and sedentary overweight and obese females regarding the aspects of social physique anxiety, weight dissatisfaction, body size satisfaction and reasons to exercise that include: to be slim, lose weight, maintain weight, improve muscle tone, improve strength, improve endurance, improve flexibility, cope with sadness, cope with stress, improve mood, improve overall health, increase resistance to illness, maintain well-being, improve appearance and attract the opposite sex.

## **Limitations and Recommendations 6.2**

### Participants 6.2.1

The number of participants in this research study was low ( $n=63$ ), which means that the results lack power which may lead to errors and assumptions that are not true and cannot be applied to the general population. The age of the participants was varied, however, the mean and standard deviation of the ages of the groups (Sed 28

( $\pm 12$ ) and PA 29 ( $\pm 9$ )) was in the younger age categories leading to conclusions that there was not an equal spread of age groups in the study. BMI of the participants varied between the groups with group Sed obese and group PA being overweight, this difference means that the groups were not equal regarding BMI and any differences found may be due to the difference in BMI groups. Ethnicity of the participants was not recorded to findings of this study cannot be applied to any specific ethnic group, also the study was conducted in the South Wales area so any conclusions can only be applied to this area.

### Questionnaires and Self-Report Data 6.2.2

The questionnaires used; SPAS, CPAS, IPAQ, BSS, WD and demographical data was self-report. With self-report data there is no way of finding out if the participants answers are honest and true, therefore, findings must be taken with caution. It is possible that some participants may have been dishonest when answering the questions or not known their weight or height so put an incorrect estimate. Regarding aspects such as BMI it is known that this is not an entirely accurate measurement of a person's physiological profile, however, in general populations (non-athletic) it is found to have a high degree of accuracy and is non-invasive and time effective.

This research study collected the responses of the participants and one point in time, there was no control for the environment that the participants filled out the questionnaires in. Therefore, responses may have been affected and differed had the questionnaire been completed at a different time or in a different environment.

Schwarz (1999) carried out a review of the issues with self-report data and suggested a number of areas to view with caution that include; closed questionnaires, rating scales and reporting behaviour. Regarding closed questionnaires such as the REI used in this study it was suggested that respondents are likely to endorse the options given and at the same time eliminate other options and opinions. Regarding the SPAS and FRS (used to assess BSS) these scales use numerical values 0-4 and 0-5 respectively. The scales used in this research are more likely to gain a response than that of a negative scale e.g. -5 to 5 as participants view the negative values as a 'bad' response. For the IPAQ, reporting on physical activity behaviour asks the participants to recall and account the amount of

physical activity they have participated in during the last 7 days. Schwarz (1999) suggests that answers are likely to be based on fragment recall and therefore are estimates and not definitive values.

### Recommendations 6.3

As only a small sample of participants was used future research may look to use a much larger sample size, also, the inclusion and monitoring of ethnic groups and a wider age range may lead to a more accurate reflection on society as a whole and create a better understanding of the differences between sedentary and physically active overweight and obese females.

Future research could examine the variables (SPA, CPA, BSS, WD) over time using a longitudinal design to see if there are aspects of the participants' lives that lead to changes, and research the affects that these changes have on their physical activity participation level, this will give a greater insight into the variables long term affects.

If the findings of this research study are to be believed the case that has been made by previous research for the impact SPA has upon physical activity levels presents a problem. It is possible that the findings of previous research have other explanations. Research by Koyuncu *et al.* (2010) and Sabiston *et al.* (2005) who found links between SPA and physical activity may not have considered other variables that may have led to the findings of their studies. Crawford and Eklund (1994) did not find a relationship between SPA and physical activity, however, there were links found between SPA and reasons for exercise. This suggests that a relationship between SPA and physical activity level may be present if other psychological variables exist alongside it. Future research may take a more in-depth case study approach to the variables of SPA, BSS, WD and CPA in a large population sample in order to assess the interaction of these variables and the effects of these interactions on the willingness to participate and commit to physical activity and exercise.

# **Chapter 7**

## **References**

## References

- ACSM (2009). *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities*. 3rd ed. United States: Human Kinetics.
- ACSM (2010). *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins.
- Appleton, K. (2012). 6 x 40 minutes exercise improves body image, even though body weight and shape do not change. *Journal of Health Psychology*, **18** (1), 110-120.
- Bain, L.L., Wilson, T., & Chaikind, E. (1989). Participant perceptions of exercise programs for overweight women. *Research Quarterly for Exercise and Sport*, **60**, 134-143.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, **52**, 1 – 26.
- Bartlewski, P. P., Van Raalte, J.L., & Brewer, B. W. (1996). Effects of aerobic exercise on social physique anxiety and body esteem of female college athletes. *Women's sport and Physical Activity Journal*, **5**, 49-52.
- Baumeister, R.F. (1999). *The nature and structure of the self: An overview. The self in social psychology*. Psychology Press.
- Brandon, L., & Proctor, L. (2008). Comparison of BMI obesity classification in men and women. *International Journal of Fitness*, **4** (2), 1-8.
- Burham, G., (1993). The social physique anxiety scale: construct validity in adolescent females. *Medicine and science in sports and exercise*, **31** (8), 1129 – 1134.
- Bushman, B. & Brandenburg, T. (2009). Social Physique Anxiety and Obligation to Exercise in College Males and Females. Exercise Activity, Location, and Partners. *Missouri Journal of Health, Physical Education, Recreation and Dance*, **19**, 41-54.
- Carpenter. M., Hasin. S., Allison. B., & Faith. S. (2000). Relationships between obesity and DSM-IV major depressive disorder, suicide ideation, and suicide attempts: results from a general population study. *American Journal of Public Health*, **90**, 251–57.
- Cash. T., Novy. P., & Grant. J. (1994). Why Do Women Exercise? Factor Analysis and Further Validation of the Reasons For Exercise Inventory. *Perceptual and Motor Skills*, **78**, 539-544.

- Caspersen, C., Powell, K., & Christenson, G. (1985). Physical Activity, Exercise and Physical Fitness: Definitions and Distinctions for Health-Related Research. *Public Health Reports*, **2** (100), 126-131.
- Corbin, C. B., Nielsen, B. A., Borsedorf, L., L., & Lawrie, D., R. (1987). Commitment to physical activity. *International Journal of Sports Psychology*, **18**, 215 – 222.
- Crawford, S., & Eklund, R. (1994). Social Physique Anxiety, Reasons For Exercise and Attitudes Towards Exercise Settings. *Journal of Sport and Exercise Psychology*, **16**, 70-82.
- Davies, G. (1990). Body image and weight preoccupation. A comparison between exercising and non-exercising women. *Appetite*, **15**, 13-21.
- Duhrup, M. (2012). A dimensional analysis of the benefits derived from physical activity participation among university students and variation in terms of gender. *African Journal for Physical, Health Education, Recreation and Dance*, **18** (3), 614-627.
- Eklund, R. & Crawford, S. (1994). Active Women, Social Physique Anxiety, and Exercise. *Journal of sport & exercise psychology*, **16**, 431-448.
- Fabricatore, A., & Wadden, T. (2003). Psychological Functioning of Obese Individuals. *Diabetes Spectrum*, **16** (4), 245-252.
- Fallon, E., Hausenblas, H., & Nigg, C. (2005). The Transtheoretical Model and Exercise Adherence: Examining the Construct Associations in Later Stages of Change. *Psychology of Sport and Exercise*, **6**, 629-641.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, **7**, 117-140.
- Flegal, K.M., CaiToll, M.D., Kuczmarski, R.J., Johnson, C.L. (1998). Overweight and obesity in the United States: Prevalence and trends, 1960-1994. *International Journal of Obesity*, **22**, 941.
- Frederick, C. M., & Morrison, C. S. (1996). Social physique anxiety: Personality constructs, motivations, exercise attitudes, and behaviors. *Perceptual and Motor Skills*, **82**, 963-972.
- Gariele, J., Gill, D., Adams, C. (2011). The Roles of Want to Commitment and Have to Commitment in Explaining Physical Activity Behavior. *Journal of Physical Activity and Health*, **8**, 420-428.

- Goldfield, G., Moore, C., Henderson, K., Buchholz, A., Obeid, N., Flament, M. (2010). Body Dissatisfaction, Dietary Restraint, Depression, and Weight Status in Adolescents. *Journal of School Health*, **80** (4), 186-192.
- Hart, E.A., Leary, M.R., & Rejeski, W.J. (1989). The measurement of social physique anxiety. *Journal of Sport and Exercise Psychology*, **11**, 94–104.
- Hemmingsson, E., Page, A., Fox, K., & Rossner, S. (2001). Influencing adherence to physical activity behaviour change in obese adults. *Scandinavian Journal of Nutrition*, **45**, 114-119.
- Hoofnagle, J. (2006). Overweight, Obesity and Mortality. *The New England Journal of Medicine*, **25** (335), 2699.
- Istvan, J., Zavela, K., & Weidner, G. (1992). Body weight and psychological distress. *International Journal of Obesity*, **16**, 999–003.
- Jakicic, J. (2002). The role of physical activity in prevention and treatment of body weight gain in adults. *Journal of Nutrition*, **132**, 3826–3829.
- Kovacova, L., Stejskal, P., Nelus, F., & Elfmark, M. (2011). Adherence to the Exercise Aerobic Program in Women Aged 40 to 65. *Acta Univ. Palacki. Olomuc., Gymn*, **41** (2), 55-63.
- Koyuncu, M., Tok, S., Canpolat, A., Catikkas, F. (2010). Body Image Satisfaction and dissatisfaction, Social Physique Anxiety, Self-esteem, And Body Fat Ratio In Female Exercisers And Non-exercisers in social behavior and personality. *Society for Personality Research*, **38** (4), 561-570.
- Kruger, J., Lee, D., Ainsworth, B., Macera, C. (2008). Body Size Satisfaction and Physical Activity Levels Among Men and Women. *Obesity journal*, **16** (8), 1976–1979.
- Leary, M.R. (1992). Self-presentational processes in exercise and sport. *Journal of Sport & Exercise Psychology*, **14**, 339-351.
- Leary, M.R., & Kowalski, R.M. (1990). Impression management: A literature review and two component model. *Psychological Bulletin*, **107** (1), 34-47.
- LePage, M., & Crowther, J. (2009). The Effects of Exercise on Body Satisfaction and Affect. *Body Image*, **7** (2), 124-130.
- Loock, H., Wilders, C., Strydom, G., & Ellis, S. (2011). Leisure time physical activity participation in women (30-65 years) with high coronary heart disease risk indicators. *African Journal for Physical, Health Education, Recreation and Dance*, **17** (4), 624-635.

Marshall, J., & Biddle, H. (2001). The Transtheoretical Model of Behavior Change: A meta-analysis of applications to physical activity and exercise. *Annals of Behavioral Medicine*, **23**, 229–246.

McAuley, E., and Burham, G. (1993). The social physique anxiety scale: construct validity in adolescent females. *Medicine and science in sports and exercise*, **3** (8), 1129-1134.

McAuley, E, Mihalko, S.L, Bane, S.M. (1996). Acute exercise and anxiety reduction: Does the environment matter? *Journal of Sport and Exercise Psychology*, **18**, 408–419.

Mclaren, L., Hardy. R., & Kuh. D. (2003). Women’s Body Satisfaction at Midlife and Lifetime Body Size: A Prospective Study. *Health Psychology*, **22** (4), 370-377.

McNeal, R. (1998). High school extracurricular activities: closed structures and stratifying patterns of participation. *The Journal of Educational Research*, **91**, 183-191.

Millstein, R., Carlson, S., Galuska, D., Zhang, J., Blanck, H., Ainsworth, B. (2008). Relationships Between Body Size Satisfaction and Weight Control Practices Among US Adults. *Medscape Journal of Medicine*, **10** (5), 119.

Molina-García, J., Castillo, I. & Queralt, A. (2011). Lesiure-time physical activity and psychological well-being in University students. *Psychological Reports*, **109** (2), 453-460.

Monteath, S. & McCabe, M. (1997). The Influence of Societal Factors on Female Body Image. *The Journal of Social Psychology*, **137** (6), 708-727.

Nieman, D.C. (1998). *The Exercise-Health Connection*. Champaign, Illinois: Human Kinetics.

Ogden, J. (2000) *Health Psychology*. 3rd edition. Open University Press.

Preston, A. & Stokes, M. (2011). Contribution of Obesity to International Differences in Life Expectancy. *American Journal of Public Health*, **101** (11), 2137-2143.

Roberts, R., Towell, T. & Golding, J.F. (2001). Glucose, exercise and insulin: Emerging concepts. *Journal of Physiology*, **535** (2), 313-322.

Sabbah, H., Vereecken, C., Abdeen, Z., Coats, E., & Maes, L. (2008). Associations of overweight and of weight dissatisfaction among Palestinian adolescents: findings from the national study of Palestinian schoolchildren. *The British Dietetic Association*, **22**, 40–49.

- Sabiston, C., Crocker, P., & Munroe-Chandler, K. (2005). Examining Current Discrepancy Scores and Exercise Motivations as Predictors of Social Physique Anxiety in Exercising Females. *Journal of Sport Behavior*, **28** (1), 68-85.
- Sarwer, B., Wadden, A., & Foster, D. (1998). Assessment of body image dissatisfaction in obese women: specificity, severity and clinical significance. *Journal Consult Clinical Psychology*, **66**, 651–654.
- Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychological Association*, **54** (2), 93-105.
- Silberstein, L.R, Striegel-Moore, R.H, Timko, C., & Rodin, J. (1998). Behavioural and psychological implications of body dissatisfaction: Do men and women differ? *Sex role*, **19**, 219-232.
- Silberstein, R., Stkiegel-Moorre, H., Timko, C., & Rodin, J. (1988). Behavioural and Psychological Implications of Body Dissatisfaction: Do Men and Women Differ? *Sex Roles*, **19**, 219-232.
- Skaal, L. (2011). Factors influencing Healthcare workers' participation in Physical Activity in one public hospital in South Africa: Do healthcare workers have barriers to exercise? *African Journal for Physical Health Education, Recreation and Dance*, **17** (4), 812-822.
- Smith, B., Handley, P., & Eldredge, D. (1998). Sex Differences in Exercise Motivation and Body-Image Satisfaction Among College Students. *Perceptual Motor Skills*, **86**, 723-732.
- Spink, K.S. (1992). Relation of anxiety about social physique to location of participation in physical activity. *Perceptual and Motor Skills*, **74**, 1075-1078.
- Stile, E., & Whitenton, K. (2002). Risk Factors for Body Dissatisfaction in Adolescent Girls: A longitudinal Investigation. *Developmental Psychology*, **38** (5), 669-678.
- Strobe, W. (2000). *Social psychology and health*. Buckingham: open university press.
- Strong, H.A., Mack, D.E., Martin Ginis, K.A., & Wilson, P.M. (2006). Examining self-presentational exercise motives and social physique anxiety in men and women. *Journal of Applied Biobehavioral Research*, **11**, 209–225.

- Swami, V., Salem, N., Furnham, A., & Tovee, M. (2008). Initial examination of the validity and reliability of the female photographic figure rating scale for body image assessment. *Personality and Individual Differences*, **44**, 1752–1761. <http://www.sciencedirect.com.ezproxy.uwic.ac.uk/science/article/pii/S0191886908000512> [Accessed: 15 Jan 2013].
- Thayer, E., Newman, R., & McClain, M. (1994). Self-regulation of mood: Strategies for changing a bad mood, raising energy and reducing tension. *Journal of Personality and Social Psychology*, **67** (5), 910-925.
- Wade, T., George, W., & Atkinson, M. (2009). A Randomized Controlled Trial of Brief Interventions for Body Dissatisfaction. *Journal of Consulting and Clinical Psychology*, **77** (5), 845-854.
- Wojtowicz, E. (2011). Body Mass Index in Female First-Year Students of Full-Time Studies at the Academy of Physical Education and Sport in Gdansk: Reality, Self-Evaluation, Dreams. *Baltic journal of health and physical activity*, **3** (1), 44-54.
- World Health Organization. *Global Health Observatory*. [on-line] <http://apps.who.int/ghodata>. [Accessed September 1, 2010].
- Young, T.K., Bjen-cgaad, P., Dewailly, E., Risica, P.M., Jorgensen, M. E., & Eddesson, S.E.O. (2007.). Prevalence of obesity and its metabolic correlates among the circumpolar unit in 3 countries. *American Journal of Public Health*, **4**, 691-695. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1829350/> [Accessed: 3 oct 2012].

# **Appendices**

**Appendix A**

**Cardiff Metropolitan University (UWIC)**

**Consent form**

I am currently in my final year at Cardiff Metropolitan University (UWIC) studying for my degree in Sport and Exercise Science. Part of my course requires me to complete a dissertation on a subject area of my choice. I have chosen to research how people feel about exercise and physical activity. In order to do this I need participants to fill in my questionnaire. All information collected will remain confidential and you are not expected to give name or address at any point.

I appreciate your time in answering this questionnaire and thank you for your co-operation.

Many Thanks

Cassidy Skinner

**Participant:**

I have agreed to take part in this study and understand if there is anything I do not understand I can ask at any time, I understand that it is voluntary and I can withdraw at any time should I wish to do so, I understand that the information given may be used for research purposes but I will not be identified at any time. Please could you sign and date below and once again all information will remain confidential.

Signature.....

Date.....

Signature of person taking consent.....

Date.....

**Data collection sheet**

Age:.....

Height:.....(m).....(cm) or .....(ft).....(inches)

Your Current weight.....(Kg) or .....(st).....(lb)

Your Ideal weight: .....(Kg) or .....(st).....(lb)

For the following questionnaires you are about to complete, there are no right or wrong answers, so do not spend too much times on any one question. Also please be honest with the answers you give, nobody else will see them as all of the information I receive is kept strictly confidential.

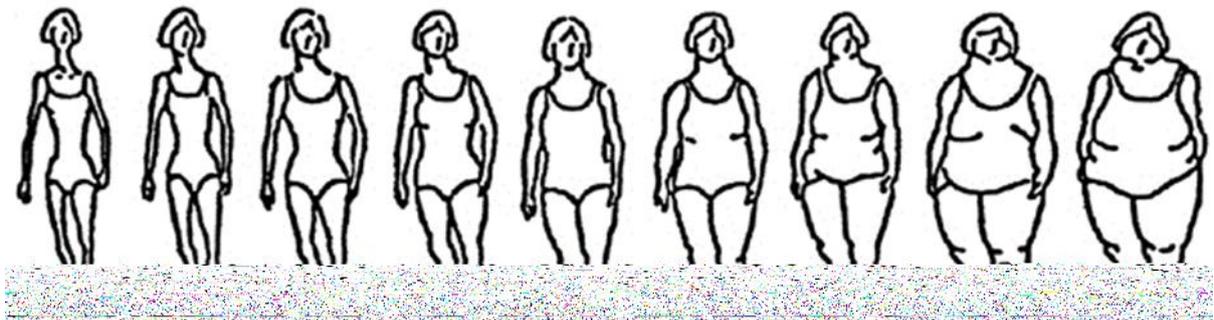
## Appendix B

### Figure Rating Scale

Please look at the silhouettes below, identify using the number below the picture what you believe your current shape is then the shape you would like to be.

Current figure=Number:

Ideal figure=Number:



## **Appendix C**

### **Commitment to Physical Activity Scale**

Please read all 12 items carefully, and then indicate (by circling the appropriate number) the degree to which the statement reflects your opinion

1-strongly disagree   2- disagree   3- uncertain   4- agree   5- strongly agree

- |     |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|
| 1.  | I look forward to physical activity   | 1 | 2 | 3 | 4 | 5 |
| 2.  | I wish there were a more enjoyable way to stay<br>fit than vigorous physical activity | 1 | 2 | 3 | 4 | 5 |
| 3.  | Physical activity is drudgery (work/a chore)  | 1 | 2 | 3 | 4 | 5 |
| 4.  | I do not enjoy physical activity  | 1 | 2 | 3 | 4 | 5 |
| 5.  | Physical activity is vitally important to me  | 1 | 2 | 3 | 4 | 5 |
| 6.  | Life is so much richer as a result of physical activity                               | 1 | 2 | 3 | 4 | 5 |
| 7.  | Physical activity is pleasant   | 1 | 2 | 3 | 4 | 5 |
| 8.  | I dislike the thought of doing regular physical activity                              | 1 | 2 | 3 | 4 | 5 |
| 9.  | I would arrange or change my schedule to participate<br>in physical activity          | 1 | 2 | 3 | 4 | 5 |
| 10. | I have to force myself to participate in physical activity                            | 1 | 2 | 3 | 4 | 5 |
| 11. | To miss a day of physical activity is sheer relief                                    | 1 | 2 | 3 | 4 | 5 |

12. Physical activity is the high point in my day

1 2 3 4 5

## **Appendix D**

### **International Physical Activity Questionnaire**

**1.** During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

\_\_\_\_\_ days per week      **No vigorous physical activities ! Skip to question 3**

**2.** How much time did you usually spend doing vigorous physical activities on one of those days?

\_\_\_\_\_ hours per day \_\_\_\_\_ minutes per day

Don't know/Not sure

Think about all the moderate activities that you did in the last 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 min at a time.

**3.** During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

\_\_\_\_\_ days per week      **No moderate physical activities ! Skip to question 5**

**4.** How much time did you usually spend doing moderate physical activities on one of those days?

\_\_\_\_\_ hours per day \_\_\_\_\_ minutes per day

Don't know/Not sure

Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

**5.** During the last 7 days, on how many days did you walk for at least 10 min at a time?

\_\_\_\_\_ days per week

No walking ! Skip to question 7

**6.** How much time did you usually spend walking on one of those days?

\_\_\_\_\_ hours per day \_\_\_\_\_ minutes per day

Don't know/Not sure

The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

**7.** During the last 7 days, how much time did you spend sitting on a week day?

\_\_\_\_\_ hours per day \_\_\_\_\_ minutes per day

Don't know/Not sure

## **Appendix E**

### **Social Physique Anxiety Scale**

Please read all 12 items carefully, and then indicate (by circling the appropriate number) the degree to which the statement is characteristically true of you.

0= not at all a characteristic true of me

1= slightly a characteristic true of me

2= moderately a characteristic true of me

3= very much a characteristic true of me

4= extremely a characteristic true of me

1. I am comfortable with the appearance of my physique/figure  
0 1 2 3 4
2. I would never worry about wearing clothes that might make me look too thin or overweight  
0 1 2 3 4
3. I wish I wasn't so uptight about my physique/figure  
0 1 2 3 4
4. There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively  
0 1 2 3 4
5. When I look in the mirror I feel good about my physique/figure  
0 1 2 3 4
6. Unattractive features of my physique/figure make me nervous in certain social settings  
0 1 2 3 4
7. In the presence of others, I feel apprehensive about my physique/figure  
0 1 2 3 4
8. I am comfortable with how fit my body appears to others  
0 1 2 3 4
9. It would make me uncomfortable to know others were evaluating my physique/figure

0 1 2 3 4

10. When it comes to displaying my physique/figure to others, I am a shy person

0 1 2 3 4

11. I usually feel relaxed when it is obvious that others are looking at my physique/figure

0 1 2 3 4

12. When in a bathing suit, I often feel nervous about the shape of my body

0 1 2 3 4

## **Appendix F**

### **Reasons to exercise.**

Below is a reasons to exercise scale, please rate each one according to how important you feel it is as a reason to exercise.

Use the scale below, ranging from 1 to 7, in giving your answers.

1            2            3            4            5            6            7

Not at all important      Moderately important      Extremely important

- |     |  |   |   |   |   |   |   |   |
|-----|--|---|---|---|---|---|---|---|
| 1.  | To be slim                                       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2.  | To lose weight                                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3.  | To maintain my current weight                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4.  | To improve my muscle tone                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5.  | To improve my strength                           | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6.  | To improve my endurance, stamina                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7.  | To improve my flexibility, coordination          | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8.  | To cope with sadness, depression                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9.  | To cope with stress, anxiety                     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | To increase my energy level                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | To improve my mood                               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | To improve my cardiovascular fitness             | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. | To improve my overall health                     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. | To increase my resistance to illness and disease | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | To maintain my physical well-being               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | To improve my appearance                         | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. | To be attractive to members of the opposite sex  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |