THE RELATIONSHIP BETWEEN BODY COMPOSITION AND SEXUAL SATISFACTION IN HETEROSEXUAL, CAUCASIAN YOUNG ADULTS

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ABSTRACT

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Background: Sexual satisfaction is a multidimensional construct encompassing the positive and negative aspects of a sexual relationship and is influenced by many factors.

Objectives: To investigate the relationship between body composition (weight (kg), total fat (kg, %) and trunk fat (kg, %)) and sexual satisfaction in young adults while controlling for age, body image, relationship satisfaction, sexual function and sexual frequency.

Methods: A cross-sectional sample of 157 young adults completed a series of questionnaires and underwent body composition testing (DXA). Stepwise logistic regression models were tested.

Results: For both women and men, trunk fat (kg) but no other body composition variable predicted sexual satisfaction. For women, sexual function had the greatest impact followed by relationship satisfaction, trunk fat (kg) and sexual frequency. For men, relationship satisfaction had the greatest impact followed by sexual frequency, age and trunk fat (kg).

Conclusions: Other variables better predict sexual satisfaction than body composition.
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List of Abbreviations

BISCS = Body Image Self-consciousness Scale
BMI = Body mass index
BMM = Bone mineral mass
DXA = Dual energy x-ray absorptiometry
FM = Fat mass
FSFI = Female Sexual Function Index
GMREL = Global Measure of Relationship Satisfaction
ISS = Index of Sexual Satisfaction
LST = Lean soft tissue
MRT = Medical radiation technologist
MSFI = Male Sexual Function Index
SD = Standard deviation
SHAY = Sex, Health and YOU!
WHO = World Health Organization
1.0 Introduction

Sexuality is an integral part of being human, it is present across the entire life span, and fulfills a number of personal and social needs (Satcher, 2001). Sexuality encompasses more than sexual behaviour and is connected with physical, spiritual and mental health. It is now increasingly recognized that sexual health is important to overall good health and well-being as sexual problems negatively impact quality of life and overall life satisfaction (Bridges, Lease & Ellison, 2004; Laumann et al., 2006).

Sexual satisfaction, a multidimensional construct encompassing the positive and negative aspects of a sexual relationship, is an important part of sexual health and one component of sexuality (Gil, 2007; MacNeil & Byers, 1997). Low sexual satisfaction can impact other areas of sexual function and relationship satisfaction contributing to numerous disorders and problems. Measures of sexual satisfaction have historically been poor; however, numerous research studies continue to describe the factors which influence it (Lawrance & Byers, 1995). Lower actual and/or perceived sexual function has been linked to lower sexual satisfaction in men and women, although resolving a sexual problem does not necessarily lead to an increase in sexual satisfaction (MacNeil & Byers, 1997; King, Holt & Nazareth, 2007). Increased relationship satisfaction contributes to increased sexual satisfaction in both men and women (MacNeil & Byers, 1997, 2009). Body image self-consciousness and body esteem are also related to sexual satisfaction. Men and women reporting a negative body image also reported lower sexual satisfaction (Holt & Lyness, 2007). Lastly, sexual frequency is strongly linked to sexual satisfaction. The more frequently partners engage in sexual activities the higher the sexual satisfaction of both partners (Meltzer & McNulty, 2010; Simms & Byers, 2009).
Though relationships between many important factors and sexual satisfaction have been determined, the relationship between body composition and sexual satisfaction is unknown. Current research has shown that changes in health status may alter body composition, and, as well, that health status may be altered by body composition, during all stages of the life-cycle (Wang, Wang & Heymsfield, 1999). Increased body fat has many clinical consequences with preliminary evidence including those related to sexuality (Esposito & Giugliano, 2005). Limited research has been conducted on Body Mass Index (BMI; kg/m²) and sexual satisfaction; this research suggests only inconsistent or ambiguous associations between body composition and sexual satisfaction (for example, Addis et al., 2006; Bajos, Wellings, Laborde & Moreau, 2010). This may be due to the fact that no sexual satisfaction research to date has been conducted using rigorous, direct measures of body composition. Despite the methodological limitations, preliminary data do suggest an inverse association between body weight and sexual satisfaction whereby individuals with higher BMIs are less likely to be sexually satisfied (Addis et al., 2006; Adolfsson, Elofsson, Rossner & Unden, 2004; Esposito et al., 2007). Preliminary findings in the body of research in this area to date point to the importance of further investigation. Future research must be done on body composition (including body weight, whole body fat and trunk fat) and sexual satisfaction in both men and women.
2.0 Literature Review

2.1 Sexuality

2.1.1 Definition and relationship with quality of life.

Sexuality is an integral part of human existence, despite this, no single definition of sexuality can encompass all of its dimensions. Few definitions have been developed and revised over the years. Langfeldt and Porter (1986) stated:

“…Sexuality is not synonymous with sexual intercourse, it is not about whether we have orgasms or not, and it is not the sum total of our erotic lives. (…) it is in the energy that motivates us to find love, contact, warmth and intimacy; it is expressed in the way we feel, move, touch and are touched; it is about being sensual as well as being sexual…”

In 2002, the World Health Organization (WHO) began developing working definitions to contribute to advancing understanding in the field of sexual health. The WHO’s working definition of sexuality is:

“Sexuality is a central aspect of being human throughout life and encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction. (…) Sexuality is influenced by the interaction of biological, psychological, social, economic, political, cultural, ethical, legal, historical, religious and spiritual factors.”

Sexuality is an integral part of being human; it is present throughout the entire life span, and fulfills numerous personal and social needs. It goes far beyond sexual behaviour and is connected with physical, spiritual and mental health. It is a core
component of personality and a fundamental part of human life which holds significant meaning and value to each individual (Satcher, 2001). Furthermore, sexuality plays an important role in sustaining and improving quality of life and wellness. A satisfying sex life is a critical element of overall health and happiness for many individuals (Bridges, Lease & Ellison, 2004). The importance of sexuality can be demonstrated among individuals with chronic disease. As their disease progresses it may affect sexual function and sexual well-being therefore decreasing quality of life and happiness (Verschuren, 2010). As individuals experience chronic disease, sexuality becomes an important indicator of quality of life (Clayton & Ramamurthy, 2008). Closely linked to quality of life is subjective happiness; Laumann et al. (2006) note that happiness is an important simultaneous outcome of sexual well-being. They found that physical and/or emotional pleasure with partner, satisfaction with sexual function or health, and importance of sex in life all positively impacted subjective happiness (Laumann et al., 2006).

2.1.2 Sexual problems.
Sexuality comprises sexual satisfaction and sexual function, as well as the experience of sexual problems. Men and women report experiencing a wide range of sexual problems. These include: lack of interest in sex, arousal difficulties, anxiety about sexual performance, physical pain during sex, sex is not pleasurable, difficulty lubricating, inability to achieve orgasm, early ejaculation and erectile difficulties (Laumann et al., 2005; Laumann, Paik, & Rosen, 1999). These sexual problems are widespread in North America and negatively impact sexual well-being, mental health, quality of life and overall life satisfaction (Lau, Kim, & Tsui, 2005; Laumann et al., 2006). Sexual problems can be distressing for individuals and their partners resulting in both psychological and
relationship consequences. Sexual problems in women have been associated with lower levels of physical and emotional satisfaction and happiness (Laumann et al., 1999) as well as depression and anxiety (Kaya, Unal, Ozenli, Gursoy & Tekiner, 2006). Among men, erectile dysfunction and low sexual desire are associated with decreased quality of life (Laumann et al., 1999). The causes of and solutions to sexual problems are not clear; social scientists are exploring psychological or social causes to such problems whereas biological scientists are focussed on physiological correlates. Little interdisciplinary work has been conducted to better understand sexual problems. Furthermore, conceptual and methodological flaws (for example, incomplete or narrow measurement of sexual function and sexual satisfaction, unidimensional definition of body image and lack of direct measurement of body composition) make it difficult to understand the role these variables play in sexual problems.

There are numerous factors which can be considered responsible for decrements in sexual function: socio-cultural, political and economic factors; partner and relationship factors; psychological factors as well as medical and physical factors (Tiefer, 2001). These factors can also impact sexuality in positive ways. Nonetheless, sexuality is an important part of sexual health which encompasses more than the presence or absence of disease; it is broad and multidimensional including physical, emotional, mental and social well-being. Sexual satisfaction is an important component of one’s sexuality.

2.2 Sexual Satisfaction

2.2.1 Definition and multidimensional experience.

Until recently, the study of sexual satisfaction was quite limited and hampered by poor conceptualization of the construct (Lawrance & Byers, 1992). Sexual satisfaction is not
simply defined by physical pleasure, nor is it simply the absence of problems, disorders
or dissatisfaction (Byers, 1999; MacNeil & Byers, 1997). Instead, sexual satisfaction
encompasses the overall feeling with which we are left after considering the positive and
negative aspects (or sexual rewards and costs) of our sexual relationship (MacNeil &
Byers, 1997). Sexual satisfaction is multidimensional involving thoughts, feelings,
personal and socio-cultural attitudes and beliefs and biological factors (Gil, 2007). Sexual
satisfaction varies widely from person to person as it is related to prior sexual
experiences, current expectations and future intentions (Penhollow & Young, 2008).
Because of this, each individual has their own idea of what constitutes “good sex” and
will experience sex and sexuality in unique ways.

Much research has been done on sexual function in both men and women (for
e.g., Berman, Berman, Miles, Pollets & Powell, 2003; Irani, Zeighami, & Khezri,
2004; Jones, Leslie, Bilsky, & Bowman, 2008; Mykletun, Dahl, O’Leary & Fossa, 2005;
Schimpf et al., 2010). Research has shown that sexual satisfaction is considered one of
the important dimensions of sexual function (Rosen et al., 2000). Although sexual
dissatisfaction does not have its own diagnostic category, it is important to note that
sexual dysfunctions in any area can lead to sexual dissatisfaction (Rosen et al., 2000).
Problems affecting one domain of sexual function may interact with other domains or
disorders in a complex fashion resulting in substantial overlap among diagnostic
categories (Laumann, Paik, & Rosen, 1999; Rosen, Taylor, Leiblum, & Bachmann,
1993). Having information about the various dimensions of sexual function may assist
health professionals and researchers in understanding the various problems or disorders
seen in individual patients. Despite sexual function comprising of many domains, it can
be limited in providing information about the physical, psychological, relational, social and cultural factors related to sexual satisfaction. Therefore, sexual function should not be the exclusive focus when problems related to sexual satisfaction are presented.

Sex therapy has been criticized for its goal-oriented rather than pleasure-oriented approach. Therapists and clients often focus on the physiological and mechanical outcomes of sexual problems instead of clients’ subjective experience of sexuality, sexual satisfaction and eroticism (Kleinplatz, 2003). Individuals may become aroused and have orgasms but experience disappointment or dissatisfaction with their sexual encounters. As a measure of success, sex therapists should pay attention to whether therapy has resulted in enhanced sexual satisfaction (Handy, Valentich, Cammaaert & Gripton, 1985). Resolving a sexual disorder may decrease sexual dissatisfaction but may not increase sexual satisfaction simultaneously. A pleasure-oriented approach may allow therapists to work through a lens incorporating more factors related to sexual satisfaction than the medicalized goal-oriented approach.

2.2.2 Measurement.

Most research on sexual satisfaction does not explicitly define or operationalize the construct, instead it is assumed to be equivalent to the term adopted by the scale or items selected to measure it (Lawrance & Byers, 1995). Furthermore, measurement of sexual satisfaction has historically been weak, relying on single-item measures that have not been evaluated for reliability or validity (Lawrance & Byers, 1995). For example, Sprecher (2002) asked the question “How sexually satisfying is the relationship to you?” (1 is not at all and 7 is very) to assess sexual satisfaction. As a result she found that relationship satisfaction and sexual satisfaction were related, however, the meaning of...
“sexually satisfying” was subjective to the participant’s definition. Validated questionnaires are needed to assess the construct of sexual satisfaction and should be used longitudinally to determine the direction of causality. As scales on sexual satisfaction are being developed and validated, single item measures are being used less frequently.

Three frequently used, validated questionnaires include the Global Measure of Sexual Satisfaction (Lawrance & Byers, 1998), the satisfaction domain of the Female Sexual Function Index (FSFI; Rosen et al., 2000) and the Index of Sexual Satisfaction (ISS; Hudson, Harrison, & Crosscup, 1981). Other measures less frequently used in the research literature include the 11-item modified Derogatis Sexual Satisfaction Scale answered on a four-point Likert-type scale (Young, Denny, Luquis & Young, 1998), the sexual satisfaction subscale of the Extended Satisfaction with Life Scale, a 5-item, six-point Likert-type scale (Alfonso, Allison & Rader, 1996) and the Pinney Sexual Satisfaction Inventory, a 24-item, 7-point Likert-type scale (Pinney, Gerrard, & Denney, 1987).

The Global Measure of Sexual Satisfaction is a measure of satisfaction within the sexual relationship. Participants rate their sexual relationship on five, 7-point bipolar scales: good-bad, pleasant-unpleasant, positive-negative, satisfying-unsatisfying, valuable-worthless. Low scores indicate less overall satisfaction. The FSFI’s satisfaction domain is specific to women and is comprised of items pertaining to global sexual and relationship satisfaction. There are three satisfaction items scored on a five or six-point Likert-type scales. Higher scores reflect greater sexual satisfaction. The ISS measures the magnitude of a problem in the sexual component of a dyadic relationship on twenty five
items, assessed using 7-point Likert-type scales. Higher scores reflect greater sexual dissatisfaction. The ISS was chosen for the current investigation as it is comprehensive, allows the same measure to be used for both men and women and has been used in dozens of studies which focus on sexual satisfaction in adults in heterosexual relationships. In addition to this, the scale can be used in both clinical and research settings as it is short, easy to administer and score, relevant to treatment outcomes, applicable for use in repeated administrations and has proven to be highly reliable and valid (Hudson et al., 1981).

2.2.3 Factors which influence sexual satisfaction.

Numerous factors can affect sexual satisfaction in both men and women. Sexual function, relationship satisfaction, gender, body image, sexual frequency and body composition all play an important role in determining one’s sexual satisfaction. The relationship between each identified influencing factor and sexual satisfaction will be discussed in greater detail below.

Sexual concerns and problems can affect sexual satisfaction. Often as the number of sexual concerns or problems increases, sexual satisfaction decreases (MacNeil & Byers, 1997). Participants who reported an increasing number of sexual concerns and problems for self and partner had lower sexual satisfaction than participants reporting fewer problems (MacNeil & Byers, 1997). Men and women were not significantly different in this regard, with both genders reporting a similar decrease in sexual satisfaction associated with an increasing number of sexual concerns and problems for self and partner (MacNeil & Byers, 1997). Frank, Anderson and Rubinstein (1978) found that the number of sexual dysfunctions or difficulties for both self and partner was
significantly related to sexual satisfaction. As reported dysfunctions (for example, erectile or ejaculatory dysfunction in men and arousal or orgasmic dysfunction in women) and difficulties (for example lack of interest or inability to relax) increased, sexual satisfaction decreased (Frank et al.). As well, number of difficulties was more strongly and consistently related to overall sexual dissatisfaction than number of dysfunctions (Frank et al.).

Two studies have assessed sexual function and sexual satisfaction in women only (Pujols, Meston & Seal, 2010; King et al., 2007). Pujols et al. reported that sexual function was strongly correlated with sexual satisfaction in women. A high degree of sexual functioning was related to greater sexual satisfaction. Arousal was most strongly correlated with sexual satisfaction, followed by sexual desire, lubrication and orgasm (Pujols et al.). King et al. found that women with sexual partners reported lowest sexual satisfaction when they were assigned an International Classification of Diseases diagnosis and perceived they had a problem. Women with no diagnosis or self perceived problem reported the highest levels of sexual satisfaction. These findings suggest that lower actual and/or perceived sexual function can cause lower sexual satisfaction and thus, research assessing the role of body composition on sexual satisfaction should control for this important variable.

Sprecher (2002) assessed the association between relationship satisfaction and sexual satisfaction in dating couples and discovered that participants’ sexual satisfaction was significantly and positively correlated with their relationship satisfaction. These correlations were stronger for men than for women (Sprecher, 2002). Furthermore, she found that for both men and women, increases in sexual satisfaction between time one
and time two (approximately 1 year) were associated with increases in relationship satisfaction in the same time period (Sprecher, 2002). She was unable to find evidence that sexual satisfaction leads to change in relationship quality or vice versa (Sprecher, 2002). Byers, Demmons and Lawrance (1998) discovered that relationship satisfaction accounted for 67 percent of the variance in sexual satisfaction in men and women who were currently in relationships. The researchers concluded that sexual satisfaction was greater to the extent that overall relationship satisfaction was high (Byers et al.). No gender differences were analyzed. Byers (2005) continued to investigate this association in individuals in long-term relationships and found that individuals with greater relationship satisfaction also report greater sexual satisfaction. She also found that changes in sexual satisfaction were associated with changes in relationship satisfaction for individuals in long-term relationships (Byers, 2005). There were no gender differences in her findings (Byers, 2005). In this study, communication was associated with both sexual satisfaction and relationship satisfaction. Participants with poor communication were likely to report decreases in relationship and sexual satisfaction during the 18 month study period, whereas good communicators reported the opposite (Byers, 2005). Young, Denny, Luquis and Young (1998) investigated possible correlates of sexual satisfaction in marriage and discovered that overall satisfaction with marriage and satisfaction with non-sexual aspects of the relationship were most highly correlated with sexual satisfaction. These two variables are reflective of relationship quality, further demonstrating that relationship quality and sexual satisfaction are related (Young et al.). They did not investigate gender differences. Although it has been measured in numerous ways we can see that relationship satisfaction is related to sexual satisfaction and that, in
some cases, gender differences have been identified. This is why research investigating
the relationship between body composition and sexual satisfaction ought to control for
relationship satisfaction.

Recent research on women has demonstrated a relationship between body image
and sexual satisfaction. Leopold (2003) discovered that women’s body image self-
consciousness was a significant determinant of satisfaction with one’s sex life. Women
with negative body image reported lower sexual satisfaction scores compared to those
with positive body image (Leopold, 2003). Pujols, Meston and Seal (2010) found that
sexual satisfaction in women was predicted by high body esteem and low frequency of
appearance-based distracting thoughts during sexual activity even after controlling for
sexual function status. Specifically, higher self-rated sexual attractiveness, fewer weight
concerns, higher physical condition and fewer appearance-based thoughts during sexual
activity were factors predicting high sexual satisfaction (Pujols et al.). That is, the higher
women’s esteem regarding their own body parts and functions, the higher their sexual
satisfaction with their partner, over and above the effects of sexual function (Pujols et
al.). Weaver and Byers (2006) found that body image was not associated with sexual
satisfaction in their study of university women. However, methodological limitations
(e.g., not all participants were currently in a relationship; the sexual satisfaction scale had
been altered to ensure that it could be completed regardless of whether a woman was in a
romantic relationship) may have introduced error making it difficult to find significant
relationships among these constructs (Weaver & Byers, 2006).

Holt and Lyness (2007) reported a statistically significant positive relationship
between body image and sexual satisfaction in both male and female college students.
Body image and reflected appraisal significantly contributed to the prediction of sexual satisfaction (Holt & Lyness, 2007). The correlation between body image and sexual satisfaction was significant for both men and women; there were no significant differences in the strength of the relationship (Holt & Lyness, 2007). Penhollow and Young (2008) discovered that concerns about being nude were one of three important variables accounting for a statistically significant amount of variation in sexual satisfaction in men and women. This relationship was stronger for women than for men (Penhollow & Young, 2008). Body image concerns are prominent during sexual activities thus it is logical that individuals who are uncomfortable being nude in front of their partner will have lower sexual satisfaction. These two studies demonstrate that body image concerns are not strictly a female problem and that body image affects sexual satisfaction in both men and women. It is also important to note that in addition to being associated with sexual satisfaction, body image is also associated with body composition. Studies have found that as BMI increases, body image dissatisfaction also increases (Darlow & Lobel, 2010; Gardner & Brown, 2010; Lu, & Hou, 2009; van den Berg et al., 2010). Because of its relationship with both variables, it is important to control for body image when looking at the relationship between body composition and sexual satisfaction.

Recent research has demonstrated that frequency of sexual acts is strongly linked to sexual satisfaction. Ninety two dating couples were studied by Simms and Byers (2009) and they found that the more frequently partners engaged in sexual activities and the more similar men perceived their own and their partner's ideal sexual frequency to be, the higher the sexual satisfaction of both partners. Meltzer and McNulty (2010)
discovered that in married couples, when both partners reported an increased sexual frequency they also reported increased sexual satisfaction (Meltzer & McNulty, 2010). When controlling for gender, age and level of education, Træen (2010) found that sexual dissatisfaction was significantly associated with low sexual frequency. The likelihood of sexual dissatisfaction decreased with a factor of 1.32 for every unit decrease in frequency of sexual intercourse (Træen, 2010). Furthermore, participants reporting sexual dissatisfaction were asked to report reasons for this. Seventy percent of men and 61% of women reported “we have too little sex” as a reason for being sexually dissatisfied (Træen, 2010).

In McNulty and Fisher’s 2008 study of 72 newlywed couples they found that while controlling for initial marital satisfaction, time 1 sexual frequency, age, length of the marriage, and sexual and relationship expectancies, changes in husbands’ reports of sexual frequency positively predicted changes in their sexual satisfaction. Increases in sexual frequency led to increases in sexual satisfaction for men. This result was not found in their wives. Overall, changes in sexual frequency had a stronger effect on changes in husbands’ sexual satisfaction than on changes in wives’ sexual satisfaction (McNulty & Fisher, 2008). It is important to note that sexual satisfaction may influence sexual frequency in that increased sexual satisfaction leads to an increased frequency of sex. Because of the cross sectional nature of the research the direction of this relationship cannot be determined. However, since research has shown a relationship between sexual frequency and sexual satisfaction it is important to control for this variable while investigating the relationship between body composition and sexual satisfaction.
As demonstrated above, there are numerous factors which influence sexual satisfaction and the impact of these factors may be different for men and women. In addition to sexual function, relationship satisfaction, body image, gender and sexual frequency, body composition is an important factor which influences one’s sexual satisfaction. Body composition will be defined and discussed before exploring the current state of knowledge regarding the relationship between body composition and sexual satisfaction.

2.3 Body Composition

2.3.1 Definition.

Human biology research explores the qualitative characteristics of the body including configuration, structure, metabolism, function and modulation (Wang, Wang & Heymsfield, 1999). The study of human body composition is a division of human biology focussed on the in vivo quantification of various body components (e.g. bone, fat, lean soft tissue), the relationship between components, and the changes in components related to numerous influencing factors (Wang, Pierson & Heymsfield, 1992). Body composition research is closely related not only to human biology, but also nutrition and clinical medicine (Wang et al., 1999), as it is linked to human growth, development, aging and exercise.

Research on human body composition has rapidly accelerated since the 1960s and published articles meet a curve of the exponential function (Wang et al., 1999). The increase in research is due to recognition of the mediating relationship between alterations in body composition and overall health (Wang et al., 1999). Changes in health status may alter body composition or may be altered by body composition, during all
stages of the life-cycle (Wang et al., 1999). Research is currently being done on healthy individuals to examine the effect of changes in body composition on health and disease.

2.3.2 Body fat and its consequences.

Body fat is the most variable component of the body, differing among individuals of the same gender, height, weight and ethnicity (Gibson, 2005). There are marked ethnic differences in the amount and distribution of body fat (Wagner & Heyward, 2000; Wu et al., 2007). Lohman and Going (1998) have established percent fat mass (FM) cut offs that correspond to obesity and health risk. For men aged 18 to 40, FM less than 8% is unhealthy, 8 to 22% FM is healthy and recommended and FM greater than 22% indicates obesity (Lohman and Going, 1998). For women FM less than 20% is unhealthy, between 20 and 35% FM is healthy and recommended and FM greater than 35% indicates obesity (Lohman and Going, 1998). According to The *National Health and Nutrition Examination Survey III* the average fat content of non-Hispanic white women aged 20 to 29.9 is 31.0% of their total body weight compared to 21.8% for non-Hispanic white men aged 20 to 29.9 (Chumlea, et al., 2002). Body fat is deposited as essential lipids and is also stored. Essential lipids are located in the bone marrow, central nervous system, mammary glands and other organs whereas stored fat is inter- and intramuscular fat, fat surrounding the organs and gastrointestinal tract, and subcutaneous fat (Lohman, 1981). Clinical consequences of increased body fat include chronic conditions such as heart disease, certain cancers, hypertension, diabetes mellitus, asthma, arthritis and joint pain (Health Canada, 2003; Ogden, Carroll & Flegal, 2003). In addition to this, women with excess body fat, and who are over age 18, are at risk for anovulatory infertility (Rich-Edwards et al., 1994). Consequences of decreased body fat include poor nutritional
status, osteoporosis, infertility, impaired immunocompetence (Hopman et al., 2007), certain cancers (Gilmore, 1999) and risk of fracture (De Laet et al., 2005). For these reasons, body composition measurement, versus estimation or use of proxy measures of body fat (such as BMI), is important not only to determine the amount of body fat and its distribution, but also to identify clinical correlates (e.g. insulin levels) associated with body fat.

2.3.3 Body mass index.
The most widely used anthropometric measurements of body size are height or length and body weight (Gibson, 2005). Height and weight ratios are useful for providing a measure of overweight and obesity in adult populations (Connor Gorber, Tremblay, Moher, & Gorber, 2007). The most commonly used ratio is the body mass index (BMI; also known as Quetelet index), calculated as weight (kg) / height (m)\(^2\) (Gibson, 2005). The WHO (2000) uses BMI to classify adults; BMI <18.50 is underweight, 18.50-24.99 is normal weight, 25.00-29.99 is overweight and ≥30.00 is obese. As BMI increases, the risk of comorbidities also increases (WHO, 2000). Obesity is related to several chronic diseases including: type two diabetes, heart disease, high blood pressure, stroke, musculoskeletal disease, liver disease, gallbladder disease, sleep apnea and some types of cancer (National Task Force on the Prevention and Treatment of Obesity, 2000). Obesity is also related to other health conditions including carpal tunnel syndrome, venous insufficiency, deep vein thrombosis and poor wound healing (National Task Force on the Prevention and Treatment of Obesity, 2000).

Body Mass Index is commonly used in research as it easy, quick, relatively non-invasive and more precise than skin fold thickness measurements (Gibson, 2005). Self-
reported measures are one of the most common ways to collect information on height and weight because of practicality, low cost, and efficiency (they are a good way to sample a large number of individuals) (Connor Gorber et al., 2007). Despite the advantages there are limitations to self-reported measures: questions may be misunderstood, participants may not accurately recall past events, response bias and estimation of actual height and/or weight (Connor Gorber et al.). Connor Gorber et al. conducted a systematic review comparing direct versus self-reported measures for assessing height, weight and BMI. They found that in most studies height was overestimated and weight and BMI were underestimated. These trends were evident for both men and women. Important to note, in many of the studies the standard deviations were large indicating that there was a great deal of individual variability (Connor Gorber et al.). Misreporting can be related to gender, age and actual body size (Rowland, 1990; Villanueva, 2001).

Using self-reported height and weight underestimates the prevalence of obesity and because of this direct measures have been recommended to improve measurement precision (Bélanger-Ducharme, & Tremblay, 2005; Connor Gorber et al., 2007). Direct measures provide a more accurate indicator of population health which is important because of rising obesity rates. Estimates upon which decisions are being made need to be as accurate as possible.

Despite its usefulness, BMI does not differentiate between muscle/lean tissue and body fat. An elevated BMI may be due to muscularity, excess body fat or edema. Because the distribution of body fat is also an important risk factor of disease, it is important to determine the amount and location of body fat (Gibson, 2005); BMI cannot
capture this. Dual energy X-ray absorptiometry (DXA) can be used to provide this additional information and is described in detail below.

2.3.4 Dual energy x-ray absorptiometry.

There are numerous techniques available to measure body composition, a full description of which is beyond the scope of this thesis. DXA is a three compartment model of body composition precisely and accurately measuring FM, lean soft tissue (LST) and bone mineral mass (BMM; Albanese, Diessel & Genant, 2003). DXA was first developed to assess bone mass but is now widely used to quantify FM, LST and their distribution in the body (Mazess, Barden, Bisek & Hanson, 1990). DXA involves transmission of photons at two different energy levels to determine FM, LST and BMM based on different attenuations by each compartment (Mazess et al.). The DXA output provides quantitative information about FM, LST and BMM of the total body and body regions in grams. In addition to this, fat content is given in percentage. Reduced scanning times and minimal radiation dose (0.025 millisieverts, equivalent to two hours of direct sunshine and less radiation than an airplane trip) make DXA a widely accepted tool to measure body composition in research and clinical practice (Albanese et al.).

2.4 Body Composition and Sexual Satisfaction

2.4.1 Current research.

Obesity is emerging as one of the fastest growing pandemics in modern time (Bajos et al., 2010). It has been well established that excess body fat is associated with many chronic conditions and diseases. Less well elucidated is the relationship between body fat and sexuality. Kolotkin et al. (2006) showed that obesity predicted a lack of enjoyment of
sexual activity, and sexual desire, difficulties with sexual performance, and avoidance of sexual encounters in obese men and women aged 18 to 82 years. The impact of body composition on sexual satisfaction has been relatively ignored in the literature. Furthermore, of the limited research in this area, many of the articles do not have body composition and sexual satisfaction as their primary focus. Studies have shown that some individuals believe obese persons are less sexually interested, attractive and/or capable of developing a satisfying romantic relationship than persons of normal weight (Harris, 1990; Regan, 1996). Perhaps researchers fall prey to the same bias and are excluding obese persons from studies on sexuality and relationships as a result. Alternatively, obese persons in certain age ranges and geographic locations may be difficult to find and recruit into studies which call for disclosure of sensitive information regarding body composition and sexual behaviours. Changes in sexual interest and sexual activity have been found to correspond with changes in weight. A decrease in sexual activity and sexual satisfaction was found during periods of weight gain (Bruch, 1973) and an increase during weight loss (Hafner, Watts & Rogers, 1991; Werlinger, King, Clark, Pera & Wincze, 1997).

Studies focusing on the influence of body composition on sexual satisfaction in men and women have yielded conflicting results. This could be attributed to the use of different study samples, self reported vs. measured BMI, and/or different measures of sexual satisfaction (validated and not). Despite the incongruities, the research literature seems to point to a relationship such that increased BMI is related to decreased sexual satisfaction.

Bajos et al. (2010) studied 12, 364 French men and women aged 18 to 69 and
found that 44% of women and 35% of men reported being satisfied with their sexual life with no differences across BMI status. BMI was self-reported and sexual satisfaction was measured using an unvalidated single item measure. A study of 214 female undergraduate students (mean age: 20.6 years) used the validated Global Measure of Sexual Satisfaction (Lawrance & Byers, 1998) to measure sexual satisfaction and self-reported height and weight to determine BMI (Weaver & Byers, 2006). The authors found no relationship between BMI and sexual satisfaction (Weaver & Byers, 2006). This result may be influenced by alterations to the instructions of the scale to allow women who were not in a romantic relationship to complete it. The adaptations to the measure result in it not meeting Lawrance and Byers’s (1995) conceptual definition of sexual satisfaction (which considers sexual satisfaction within the context of a current relationship).

Adolfsson et al., (2004) divided 2, 810 Swedish men and women aged 18 to 74 into age and BMI groups (18 to 49 years and 50 to 74 years; BMI 18.5 to 24.9, 25.0 to 29.9 and ≥30 kg/m²). Sexual satisfaction was assessed using two unvalidated questions answered on a six-point Likert-type scale and BMI was determined using self-reported height and weight. In the univariate analysis, younger, obese men had lower scores on a measure of satisfaction with sexual life indicating that for young men, higher BMIs are correlated with lower sexual satisfaction. This relationship was not seen for any other age or BMI group among men or women. This relationship disappeared in the multivariate analysis providing no clear pattern of an association between BMI and sexual satisfaction when considered in the context of multiple predictor variables.

Although some previous research did not detect a relationship between BMI and
sexual satisfaction, this is not the case for all studies. Addis et al. (2006) conducted a study on 2,109 community-dwelling women aged 40 to 69 years. Using an unvalidated single-item measure of sexual satisfaction and measured height and weight they found that BMI and sexual satisfaction were inversely correlated. That is, as BMI increases, sexual satisfaction decreases. Esposito et al. (2007) studied 118 middle-aged women (age 42.3 years ± 8.4 and 44.7 years ± 8.4). They used the satisfaction domain of the Female Sexual Function Index to measure sexual satisfaction (Rosen et al., 2000). They measured height and weight to determine BMI and measured waist and hip circumference to determine waist-to-hip ratio. A strong inverse correlation between BMI and sexual satisfaction was found (r=-0.56, p<0.001; Esposito et al., 2007). Waist-to-hip ratio showed no correlation with sexual satisfaction. This suggests that the amount of fat is more important than its distribution. It is important to note that studies using self-reported BMI found no relationship between BMI and sexual satisfaction (Bajos et al., 2010; Weaver & Byers, 2006) however, studies using measured BMI found a relationship between these two variables (Addis et al.; Esposito et al.). This may be because self-reported BMI underestimates overweight/obese individuals and therefore these individuals may be underrepresented in the analysis.

2.4.2 Limitations and implications of current research.

The current state of knowledge does not provide a consistent or clear picture of the relationship between body composition and sexual satisfaction. While preliminary data do suggest an inverse association between BMI and sexual satisfaction, the studies on which these conclusions are based are fraught with methodological limitations (for example, Addis et al. 2006; Adolfsson et al., 2004; Esposito et al., 2007). The literature
includes poor measures of body composition using BMI (with the exception of one study using waist to hip ratio; Esposito et al.) which does not provide information on the amount or location of fat in the body. Furthermore, self-reported height and weight are often used instead of measured height and weight which may result in a falsely lower prevalence of obesity (Bajos et al., 2010).

Research to date has often used single item measures which fail to encompass the broad definition of sexual satisfaction (for example, Addis et al. 2006; Adolfsson et al., 2004; Bajos et al., 2010). In addition to this, the questions or validation procedure used are often not described (for example, Addis et al.; Adolfsson et al.; Bajos et al.). Because of this, research on sexual satisfaction may not reflect its broad conceptual nature. Studies (with the exception of Esposito et al., 2007) did not require participants to be in a sexual, romantic relationship at the time of data collection (for example, Addis et al.; Adolfsson et al.; Bajos et al.; Weaver & Byers, 2006). This is problematic as sexual satisfaction refers to the positive and negative aspects of sexual relationships. Participants who are not in a relationship are reporting their satisfaction with self-pleasure, masturbation, previous relationships or multiple partners. In addition to this, not all participants were recently sexually active. Addis et al. reported that only 71% of participants had sex in the past year. The remaining participants may not be able to provide an accurate measure of sexual satisfaction as the sexual event happened too far in the past. Lastly, some studies included women only in their sample (Addis et al.; Esposito et al.; Weaver & Byers). It is important to identify the relationship between body composition and sexual satisfaction for both genders.

Despite the methodological flaws, research conducted to date adds to the body of
knowledge regarding body composition and sexual satisfaction. Research, in general, suggests an inverse relationship between body weight and sexual satisfaction (Addis et al. 2006; Esposito et al., 2007). These findings are important for clinicians as a considerable portion of the Canadian population is overweight or obese (Bélanger-Ducharme & Tremblay, 2004) and these individuals are at increased risk for poorer sexual health status, including decreased sexual satisfaction.
3.0 Rationale, Hypotheses, Objectives

Sexual satisfaction, a multidimensional construct encompassing the positive and negative aspects of a sexual relationship, is a critical element of overall health and happiness for many individuals. Many factors contributing to sexual satisfaction have been investigated including sexual function, relationship satisfaction, gender, body image, and sexual frequency, yet the impact of excess body fat on sexual satisfaction has yet to be determined. One reason for this may be that overweight and obese individuals are stigmatized and assumed to have negative sexual outcomes and to be less sexual. It should not be assumed that overweight and obese individuals are less sexually interested or active in comparison to healthy weight individuals.

While preliminary data do suggest an inverse association between body weight and sexual satisfaction, the studies on which these conclusions are based are fraught with methodological limitations. Furthermore, no study has investigated the biological variable of interest underlying “body weight”, that is, body fat and its anatomic location. The lack of information on this topic suggests that this is an area in need of further study. Our hypothesis is that there will be an inverse relationship between weight (kg), total body fat (kg), % total body fat, trunk fat (kg), % trunk fat and sexual satisfaction in both men and women.

Our objective was to investigate the association between body composition (including body weight (kg), total body fat (kg, %) and trunk fat (kg, %)) and sexual satisfaction in young men and women while controlling for age, sexual function, relationship satisfaction, gender, body image, and sexual frequency.
4.0 Methods

4.1 Study Design

Sex, Health and YOU! (SHAY!) was a unique health and sexuality study focused on investigating the relationship(s) between body composition, sexual function, body image and relationship satisfaction in young Caucasian men and women. The design was cross-sectional and observational.

The study was reviewed and approved by the Research Ethics Boards at the University of Guelph (Appendix A). Participants provided written informed consent prior to enrolment, and were provided with a $10 gift card upon study completion. Each participant was entered into a draw to win one of five three-month memberships to a local athletic facility.

4.2 Participants

Participants were recruited from the University of Guelph and surrounding local community in south-western Ontario, Canada. Recruitment techniques were aimed at attracting males and females 18 to 25 years of age, across a range of BMIs. Advertisements were placed on free local online classified sites: Kijiji (http://guelph.kijiji.ca/), Craig’s List (http://guelph.en.craigslist.ca/) and The Cannon (www.thecannon.ca) (Appendix B). Posters were displayed in all main academic buildings, residences and cafeterias on campus as well as community boards in stores throughout the city (Appendix B). A variety of posters was used to attract both genders and various body types. In the spring and summer months research assistants distributed flyers to potential participants on campus and in the community. Newspaper advertisements were used to attract potential participants who did not browse online.
classifieds: the Ontarion (the University newspaper), the Pennysaver and SNAP (both community newspapers; Appendix B). Lastly, e-mails were sent out to various campus list serves and in-class invitations were provided in large undergraduate classes. Potential participants contacted the study coordinator via email. They were sent a screening questionnaire to assess their eligibility (Appendix C). The questionnaire thanked potential participants for their interest, provided information on the study’s purpose and determined participant eligibility based on the inclusion/exclusion criteria described below.

Participants were considered eligible if they were: Caucasian, between 18 and 25 years of age, heterosexual, in a romantic relationship with one partner; and had engaged in sexual intercourse at least once in the past month. Participants were purposely recruited to represent a range of body sizes ranging from healthy weight to obese. Participants were required to be Caucasian due to marked ethnic differences in the amount and distribution of body fat (Wagner & Heyward, 2000) and body image (Ard, Greene, Malpede & Jefferson, 2007; Grabe & Hyde, 2006). Participants must have self-identified as heterosexual due to the influence of sexual orientation on body image and satisfaction (Conner, Johnson & Grogan, 2004; Siever, 1994). Lastly, participants had to have engaged in sexual intercourse (penile-vaginal penetration) at least once in the month prior to participation. One month is an adequate length of time to provide an accurate assessment of current sexual function in individuals (Graham & Bancroft, 2005).

Participants were considered ineligible if they were currently taking anti-depressant medications, as this is one of many factors which may influence sexual function (Werneke, Northey, & Bhugra, 2006).
4.3 Procedures

Eligible participants were invited to the University’s Body Composition and Metabolism Lab (www.uoguelph.ca/bodycomp). Participants were sent an email reminder 48 hours prior to their study appointment to remind them to wear light clothing without metal and to remove all body jewellery (Appendix D). Women were reminded that they could not be pregnant and they should know the date of their last menstrual period. Lastly, the location of the lab was provided with a map.

There were two data collection periods: January to June 2009 and September 2009 to April 2010. Participants arrived at the lab where they were greeted by one of two study coordinators and assigned a participant identification number. Participants were invited to an adjacent conference room in the lab where the study was explained in detail. Each participant was given an opportunity to ask questions before they were given a consent form to participate in the research (Appendix E). This form described the study in detail including the purpose and overview, procedures, benefits to participation, payment for participation, confidentiality, opportunity to withdraw, as well as risks and procedures associated with the dual energy x-ray absorptiometry (DXA) scan.

Participants were informed of the 0.025 millisieverts radiation dose to which they would be exposed by completing the study. Participants were also provided with an ‘order for research DXA scans for ‘Does Size Matter?’’ form (Appendix F), signed by a physician (Jonathan Davids, MD, CCFP, FCFP, CCBOM, Dip. Sport. Med.) permitting the DXA scan for all participants, in accordance with the province of Ontario Healing Arts Radiation Protection Act. This form informed the participants that they would have one
whole body DXA scan including one pelvis and one lumbar spine scan. Each participant provided written, informed consent prior to participation.

The participants were offered refreshments before the study coordinator left the room. Participants then completed a series of structured questionnaires comprised of a variety of scales and measures assessing overall health, body image, relationship satisfaction and sexuality (male and female versions). Participants enrolled in the first half of the study completed the questionnaires on paper; those in the second half completed the questionnaires on lab computers using Survey Monkey (http://www.surveymonkey.com/). Hard copies were available in the case of technical difficulties or unpredicted extended computer use by one participant. The data from the paper copies from the first half of the study were entered into Survey Monkey by the research team.

After the series of questionnaires was completed by the participant, one set of anthropometric measurements was taken by one of two study coordinators. Height was measured with a wall-mounted stadiometer (Seca, Hamburg, Germany). Participants emptied their pockets, removed their socks and shoes, and wore wearing minimal clothing so that posture could be clearly seen. The participants then stood straight with their head in Frankfurt plane, feet together, knees straight and heels, buttocks, shoulder blades and head in contact with the vertical surface of the stadiometer (Gibson, 2005). Arms were hanging loosely at their side as the headboard was lowered until it touched the crown of the head (Gibson, 2005). Height was recorded to the nearest millimetre. Weight was measured initially using a beam balance scale (Seca, Hamburg, Germany) however after this scale developed some technical malfunctions, the BOD POD® scale (Life
Measurement Inc., Concord, CA) was used. Both scales were placed on the same hard surface. The BOD POD® scale was calibrated at the beginning of each study day, using two 10.0 kg weights. Participants stood unassisted in the centre of the platform, relaxed but still, and looked straight ahead (Gibson, 2005). Weight was recorded digitally to the nearest 0.001 kg with the BOD POD® scale and to the nearest 0.01 kg with the beam balance scale. In the Body Composition and Metabolism Lab the coefficient of variation between these two scales is 3.36%.

Lastly, participants underwent body composition testing using dual energy x-ray absorptiometry (DXA; Hologic Discovery Wi, Bedford, MA). Prior to scanning, female participants were asked by the MRT whether there was any chance of pregnancy and the date of their last menstrual period. If the participant could not provide this information they did not have their body composition tested. These participants (n=2) were asked to return for their DXA scan after their next menstrual period. Participants were asked to lie on the scanning bed for approximately six minutes. During this time, x-rays of two different energies were emitted from below the participant and were detected by a moving “arm” above, from head to toe. In accordance with the Ontario government’s Healing Arts Radiation Protection Act, scans were conducted by a trained medical radiation technologist (MRT). All DXA scans, including anatomical landmarking and analyses, were completed by the same MRT. The DXA was calibrated before use on the morning of each study day using a standard calibration block of thermoplastic acrylic resin, according to the manufacturer’s instructions. The MRT quantified whole body fat (kg and %) as well as trunk fat (kg and %) on all participants. The MRT’s DXA coefficient of variation for whole body percent fat mass is 0.76 ± 0.57. The trunk region
was isolated from the head, arms and legs by using the computer generated default lines on the anterior view planogram of the scan. The trunk region extends from a line drawn parallel to and through the base of the neck, through to the axis of the femoral neck and angled with the pelvic bone, separated by a line drawn perpendicular through the arm socket. Trunk fat was obtained from the fat mass in this modified trunk region, and expressed in grams and as a percentage.

Study visits were between one and two hours in duration depending on the amount of time it took participants to complete the questionnaires.

4.4 Measures

4.4.1 Outcome variable.

Sexual satisfaction: The ISS (Index of Sexual Satisfaction, Hudson, 1981), a valid and reliable measure, was used to assess sexual satisfaction in both genders. Hudson, Harrison and Crosscup’s (1981) ISS measures the magnitude of a problem in the sexual component of a dyadic relationship, as seen by the respondent. This scale is related to overall sexual satisfaction within a dyadic relationship. The items were developed on the basis of clinical and personal experience as opposed to the traditional way of selecting the best items from a large pool which measure the construct of interest. The questions represent a number of common client complaints regarding sexual dissatisfaction (Hudson et al.). The ISS is a 25-item self-report scale eliciting responses on a 7-point Likert scale ranging from none of the time to all of the time. The questions are both positively and negatively worded to control for any response set by the client. To get an ISS score, all positively worded items are reverse scored and the equation \( S = (\sum Y - N)(100)/[(N)(4)] \) is used. \( Y \) represents item score and \( N \) is the number of items
completed. The ISS yields scores from 0 to 100; higher scores reflect greater sexual dissatisfaction. The ISS uses two clinical cut off scores. Individuals who score lower than 30 are free of a clinically significant problem in this area while individuals scoring above 30 have a clinically significant problem in this area (Hudson et al.). Individuals scoring above 70 are nearly always experiencing severe distress (Hudson et al.). The ISS has excellent reliability over three heterogeneous samples ($\alpha = 0.906$ to $0.925$) and test-retest reliability at one week is 0.93 (Hudson et al.). The ISS has good internal consistency ($\alpha = 0.91$) and excellent known groups validity, distinguishing between those couples with and without problems in their sexual relationship (Hudson et al.). The $\alpha$ values for women and men in this sample were 0.90 and 0.86 respectively, indicating that the scale demonstrated good internal consistency and was thus appropriate to enter into the regression analysis (Field, 2005). The reliability statistics for the scales and measures used are provided in Table 4.4.1.

**Table 4.4.1 SHAY!'s Chronbach’s $\alpha$ values of the of the scales and measures used**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Chronbach’s $\alpha$</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISS score</td>
<td></td>
<td>0.902</td>
<td>0.859</td>
</tr>
<tr>
<td>GMREL</td>
<td></td>
<td>0.955</td>
<td>0.929</td>
</tr>
<tr>
<td>BISCs</td>
<td></td>
<td>0.963</td>
<td>0.819</td>
</tr>
<tr>
<td>FSFI score</td>
<td>0.808</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>MSFI sex drive score</td>
<td>-</td>
<td>0.776</td>
<td></td>
</tr>
<tr>
<td>MSFI erection score</td>
<td>-</td>
<td>0.329</td>
<td></td>
</tr>
<tr>
<td>MSFI ejaculation score</td>
<td>-</td>
<td>0.113</td>
<td></td>
</tr>
<tr>
<td>MSFI problem assessment score</td>
<td>-</td>
<td>0.353</td>
<td></td>
</tr>
<tr>
<td>MSFI satisfaction</td>
<td>-</td>
<td>N/A (1 item)</td>
<td></td>
</tr>
<tr>
<td>MSFI 11 items</td>
<td>-</td>
<td>0.644</td>
<td></td>
</tr>
</tbody>
</table>
Hudson, Harrison and Crosscup’s (1981) scale does not explicitly define or operationalize sexual satisfaction. However, it was selected for this study because it provides a measure of the concept of sexual satisfaction in a more comprehensive way than other measures (e.g. Stuart and Stuart’s (1973) Marital Precounseling Inventory, Derogatis’ (1975) Sexual Functioning Inventory, LoPiccolo and Steger’s (1974) Sexual Interaction Inventory and Lawrance and Byers’ (1998) Global Measure of Sexual Satisfaction). The measure encompasses the degree of dissatisfaction individuals feel with their current sexual life, (e.g. “Our sex life is very exciting” and “I feel that my sex life is lacking in quality”). The ISS has been used in dozens of studies over the past two decades (for example, Drosdzol, Skrzypulec, Mazur & Pawlińska-Chmara, 2007; Kolo, 1994; Meltzer & McNulty, 2010). Most of the research using the ISS measures sexual satisfaction in adults in heterosexual relationships (Drosdzol & Skrzypulec, 2009; McCabe & Price, 2008; Meltzer & McNulty 2010; Menard & Offman, 2009) thus it is appropriate for the current investigation. However, the index has also been used in studies of single individuals (Drosdzol, et al., 2007; Wielinski, Varpess, Erickson-Davis, Paraschos & Parashos, 2010), people of different sexual orientations (Holmberg & Blair, 2009; Holmberg, Blair, & Phillips, 2010) and individuals who experience disease (Cotrim & Pereira, 2008; Wielinski, et al.). The ISS allows the same measure to be used for both women and men aged 18 years and older and is widely used in both clinical and community populations.

4.4.2 Descriptive variables.

Demographic and health history: Age, gender, year and program of study, relationship status, alcohol use, smoking, physical activity and self-reported health status were
assessed. Participants also reported their current sexual behaviour and provided a brief sexual history. Demographic and sexual behaviour items are found in Appendix G.

4.4.3 Control variables.

Body image: Body image was measured because the literature suggests a strong relationship between body image and sexual satisfaction (Holt & Lyness, 2007; Leopold, 2003; Pujols et al., 2010). Although a number of body image measures were used in the larger study, for the purpose of this thesis investigation, The Body Image Self-consciousness Scale (BISCS; Wiederman, 2000) was selected as it measures women’s body image self-consciousness during physically intimate interactions (Wiederman, 2000). The measure contains fifteen questions answered on a six-point Likert scale. Participants indicated how often they agreed with each statement (zero represented never; five represented always). To obtain a global score the fifteen items were summed. Scores range from zero to seventy-five, with higher scores representing greater body image self-consciousness. The BISCS scale was tested across three samples of young women and has demonstrated high internal consistency (α > 0.93) and high test-retest reliability after 21 days (0.92) (Wiederman, 2000). This scale has also demonstrated convergent, discriminant and incremental validity (Wiederman, 2000). The BISCS was chosen to be included in these analyses because it measures body image specific to the sexual interaction and it is highly correlated with sexual satisfaction. Despite being validated in women only, the BISCS has been used to assess body image in men as well (for example, Aubrey, 2007; Sanchez & Kiefer, 2007). Aubrey (2007) and Sanchez and Kiefer (2007) both found the scale to be reliable for men and women; Cronbach’s α = 0.92 and 0.95.
The $\alpha$ values for women and men in the SHAY! study were 0.96 and 0.82 respectively, demonstrating good internal consistency with this sample as well.

**Relationship satisfaction:** Similar to body image, relationship satisfaction was included and controlled for because the literature suggests an association between relationship satisfaction and sexual satisfaction (Sprecher, 2002; Byers, 2005). The Global Measure of Relationship Satisfaction (GMREL; Lawrance & Byers, 1998) was used to assess satisfaction with the overall relationship. It is based on the Interpersonal Exchange Model of Sexual Satisfaction which proposes that relationship quality affects sexual satisfaction (Lawrance & Byers, 1995). The measure contains five 7-point bipolar scales: *good-bad, pleasant-unpleasant, positive-negative, satisfying-unsatisfying, valuable-worthless*. Scores range from five to thirty-five; higher scores indicate greater relationship satisfaction. The GMREL has demonstrated high internal consistency ($\alpha = 0.95$ at time one and $0.96$ at time two) (Lawrance & Byers, 1998). In the SHAY! Study the $\alpha$ values for women and men were 0.96 and 0.93 respectively, demonstrating good internal consistency with this sample. Of the few measures of relationship satisfaction available, the GMREL has an established history in sexuality research. Furthermore, it was developed based on social exchange theory and validated by Lawrance and Byers (1998).

**Sexual function:** The literature suggests an association between sexual function and sexual satisfaction in men and women (King *et al.*, 2007; MacNeil & Byers, 1997; Pujols *et al.*, 2010). The FSFI was chosen as it specifically measures women’s sexual function. The FSFI provides a framework to assess and treat female sexual dysfunction. It was developed to measure six relevant domains of sexual function in women: desire,
arousal, lubrication, orgasm, satisfaction and pain using 19 items answered on a five-point Likert scale (Rosen et al., 2000). The full scale can be used to obtain a score of women’s sexual dysfunction or domains may be used independently. To score the individual domains the items are summed and multiplied by a domain factor. The six domains are summed to obtain a full scale score. Scores range from two to thirty six. Higher scores indicate greater sexual function. This scale is only appropriate to use if the woman has had some level of sexual activity during the past four weeks (which was a prerequisite for participation in the current study).

The FSFI has high inter-item correlations in all six domains (Cronbach’s $\alpha \geq 0.82$) and high test-retest reliability ($r = 0.79$-$0.86$ for domains; $r = 0.88$ for total scale) (Rosen et al., 2000). The FSFI also demonstrates good internal consistency within the SHAY! Sample with an $\alpha$ value of 0.81. The index also has high discriminant and divergent validity (Rosen et al., 2000). The FSFI is very widely used and has proven to be an objective self-report instrument that is both reliable and valid in research and clinical settings (for example, Berman, Berman, Miles, Pollets & Powell, 2003; Schimpf et al., 2010; Shah, Bukkapatnam, & Rodriguez, 2005; Ziaei-Rad, Vahdaninia, & Montazeri, 2010). It has a strong history in the sexual dysfunction literature being cited hundreds of times in various articles.

The Male Sexual Function Inventory (MSFI) is a measure used to evaluate men on treatments or with conditions that may affect sexual function (O’Leary et al., 1995). It is meant to capture key areas of men’s sexuality as clearly and concisely as possible in a clinical setting. The MSFI covers three functional domains: sexual drive, erectile function and ejaculatory function, as well as problem assessment of these functional domains, and
overall satisfaction. It contains 11 items answered on a five-point Likert scale. Higher scores indicate greater sexual function.

The MSFI has demonstrated moderate to high internal consistency ($\alpha = 0.62$ to 0.95 for domains) and high test-test reliability after one week ($r = 0.79$ to 0.89 for domains; O’Leary et al., 1995). The MSFI domain scores in the SHAY! study had $\alpha$ values $\leq 0.35$ (with the exception of sex drive score $\alpha = 0.77$) indicating that these three domain scores are unreliable in this sample and should not be entered into the regression analysis (Field, 2005). Using a single domain score (sex drive) would not accurately depict sexual function in men and therefore sex drive score should not be entered into the regression analysis alone. Although O’Leary et al. (1995) do not recommend deriving a total score from the 11 MSFI items, a measure of sexual function in men was important to have in order to answer the research questions. The low reliability coefficients of the MSFI domain scores indicated that when used individually, the scores were unreliable in describing men’s sexual function in this sample. Because of this, a total score of the 11 MSFI items was calculated using the mean score of all 11 items. This was the best way to depict average sexual function in men as summing the five subscales or summing the mean of the 5 subscales would not accurately represent each domain. Although the scale alpha for the 11 items was lower than the cut off of 0.7 at 0.64, this was not substantially lower and was still an improvement over the individual subscale alphas (Field, 2005). Results based on the MSFI total score should thus be interpreted with caution given the low alpha.

The MSFI can be used in clinical practice or in research as it has been validated for self-administration and questions are both comprehensive and easy to answer. It has
been widely used in the sexual dysfunction and medical literature being cited in over a dozen articles in the past decade (for example, Irani, Zeighami, & Khezri, 2004; Jones, Leslie, Bilsky, & Bowman, 2008; Mykletun, Dahl, O'Leary & Fossa, 2005). For these reasons, the MSFI was selected for use in the current investigation.

**Sexual Frequency:** Recent research has demonstrated that frequency of sexual acts is strongly linked to sexual satisfaction (McNulty & Fisher, 2008; Meltzer & McNulty, 2010; Simms & Byers, 2009; Træen, 2010). Participants reported their frequency of sexual acts by answering the question “How often do you engage in sexual activity with your partner (e.g. vaginal sex, anal sex, oral sex)”. Answers included rarely (less than once a month), about once a month, 2-3 times a month, at least once a week, several times a week, at least once a day. This single item measure was appropriate for use in the current investigation.

### 4.5 Statistical Analysis

Statistical analyses were performed using the Statistical Package for Social Sciences (PASW version 18.0, Chicago, IL). A $P$ value $\leq 0.05$ indicated statistical significance. Descriptive statistics were gathered about the population separately for women and men. Frequencies were calculated for ethnicity, work status, relationship status and sexual frequency. Values were provided in count and percent of the total group for both men and women. Descriptive statistics were determined for age, relationship duration (length), BMI, % trunk fat, % total fat, ISS score, GMREL score, BISCS score, FSFI score and MSFI score. For each item, the mean, standard deviation and range is reported.

Bivariate correlations were calculated to determine which body composition variables (weight (kg), total body fat (kg), trunk fat (kg), % total fat and % trunk fat)
were significantly and highly correlated with each other and the outcome variable (ISS). Age, body image (BISCS), relationship satisfaction (GMREL), sexual function (FSFI, MSFI) and sexual frequency were also correlated with sexual satisfaction (ISS). Correlations were used to help describe the relationship between the predictor and control variables with the outcome variables.

Cronbach’s alpha was calculated for scales measuring sexual satisfaction (ISS score), relationship satisfaction (GMREL), body image (BISCS) and sexual function (FSFI score) in women and sexual satisfaction (ISS score), relationship satisfaction (GMREL), body image (BISCS) and sexual function (MSFI sex drive, MSFI erection, MSFI ejaculation, MSFI problem assessment, MSFI total score (11 items)) in men. Cronbach’s alpha provides a reliability statistic for how well the scale works within the study population (Field, 2005). Cronbach’s alpha values of 0.7 or higher are generally acceptable; values substantially lower than this indicate an unreliable scale due to increased error (Field, 2005).

For regression the following assumptions were assessed as outlined by Field (2009):

- **Variable types**: All predictor variables must be quantitative or categorical, and the outcome variable must be quantitative, continuous and unbounded.
- **Non-zero variances**: The predictors should have some variation in value.
- **No perfect multicollinearity**: There should be no perfect linear relationship between two or more of the predictors.
- **Independent errors**: For any two observations the residual term should be uncorrelated (independent).
• Normally distributed errors: It is assumed that the residuals in the model are random, normally distributed variables with a mean of 0.

• Independence: All of the values of the outcome variable are independent.

• Linearity: The mean values of the outcome variable for each increment of the predictor(s) lie along a straight line.

If the assumptions of regression are met, the model provided for the specific sample can be accurately applied to the population of interest.

A series of stepwise linear regression models were tested, using sexual satisfaction (ISS) as the outcome variable and body composition (body weight (kg), whole body fat (kg and %) and trunk fat (kg and %)) as the predictor variables in five separate regression models, while controlling for age, body image (BISCS), relationship satisfaction (GMREL), sexual function (MSFI, FSFI) and sexual frequency. Sexual satisfaction was entered as the dependent variable followed by age, relationship satisfaction, body image, sexual function and sexual frequency in block 1 and the body composition variable in block 2. Body composition variables were entered separately in five models as they were significantly and highly correlated with each other. The method chosen to enter the variables into blocks was enter (forced entry). SPSS was asked to display estimates, model fit, $R^2$ change, collinearity diagnostics and Durbin-Watson residuals. A total of five regression models were calculated for each gender, for a total of ten models.
5.0 Results

5.1 Descriptive Statistics of SHAY! Sample

One hundred and seventy one individuals participated in the study. Four were excluded from the analyses because they did not meet the inclusion criteria: age > 25 (n=1), BMI < 18.5 (n=2) and not Caucasian (n=1). An additional five women and five men were excluded from the analyses due to incomplete data. Included in the data analysis were 83 women (53% of total sample) and 74 men (47% of total sample). All participants identified themselves as Caucasian and ranged in age from 18 to 25 years (women: mean=20.8, SD=1.83; men: mean=21.4, SD=2.02). Body Mass Index (kg/m²) ranged from 18.6 to 45.5 for women (mean=25.4, SD=5.03) and 19.9 to 33.8 for men (mean=25.1, SD=3.38). The mean BMI of both women and men is consistent with the WHO (2000) classification for overweight. Index of Sexual Satisfaction scores ranged from 0.7 to 48.0 (mean=17.7, SD=10.8) for women and 0 to 52.1 (mean=16.2, SD=8.8) for men. Scores can range from 0 to 100; higher scores reflect greater sexual dissatisfaction. 85.2% of women (n=75) and 91.1% of men (n=72) had scores less than 30 indicating that they are free of a clinically significant problem. Furthermore, 13.8% of women (n=12) and 6.5% of men (n=5) had scores equal to or greater than 30 but less than 70 indicating that they may have a clinically significant problem but are not experiencing severe distress. Detailed participant characteristics including sexual and relationship characteristics are outlined in Table 5.1 and Table 5.2.
### Table 5.1 Participant characteristics of SHAY! subsample (n= 167)

<table>
<thead>
<tr>
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<th>Male</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>(mean (SD))</td>
<td>Range</td>
<td>(mean (SD))</td>
</tr>
<tr>
<td>Age</td>
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<td>20.8 (1.8)</td>
<td>18-25</td>
<td>21.4 (2.0)</td>
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<tr>
<td>BMI</td>
<td>18.6-45.5</td>
<td>25.4 (5.0)</td>
<td>19.9-33.8</td>
<td>25.1 (3.4)</td>
</tr>
<tr>
<td>Percent trunk fat</td>
<td>12.9-47.5</td>
<td>27.9 (10.8)</td>
<td>6.9-36.9</td>
<td>17.2 (6.9)</td>
</tr>
<tr>
<td>Percent total fat</td>
<td>17.9-47.7</td>
<td>31.3 (7.5)</td>
<td>7.9-33.0</td>
<td>17.6 (5.9)</td>
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</table>

<table>
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<th>Work status</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
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<td>91.0</td>
<td>66</td>
<td>83.5</td>
</tr>
<tr>
<td>In college</td>
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<td>1.1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not working</td>
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<tr>
<td>Working</td>
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<td>5.7</td>
<td>12</td>
<td>15.2</td>
</tr>
</tbody>
</table>

### Table 5.2 Sexual and relationship characteristics of SHAY! subsample (n= 167)

<table>
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<tr>
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<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>(mean (SD))</td>
<td>Range</td>
<td>(mean (SD))</td>
</tr>
<tr>
<td>ISS score¹</td>
<td>0.7-48.0</td>
<td>17.7 (10.8)</td>
<td>0-52.1</td>
<td>16.2 (8.8)</td>
</tr>
<tr>
<td>GMREL score²</td>
<td>13.0-35.0</td>
<td>29.7 (5.3)</td>
<td>18.0-36.0</td>
<td>29.5 (4.5)</td>
</tr>
<tr>
<td>BISCS score³</td>
<td>0-72.0</td>
<td>14.2 (15.8)</td>
<td>0-24.0</td>
<td>4.6 (5.3)</td>
</tr>
<tr>
<td>FSFI score⁴</td>
<td>16.3-32.4</td>
<td>26.19 (3.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSFI score⁵</td>
<td></td>
<td></td>
<td>2.7-4.0</td>
<td>3.5 (0.3)</td>
</tr>
<tr>
<td>Relationship duration (months)</td>
<td>1-91</td>
<td>25.7 (18.1)</td>
<td>1-108</td>
<td>24.5 (21.8)</td>
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</tbody>
</table>

<table>
<thead>
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<th>Relationship status</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
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<td>Casually dating</td>
<td>2</td>
<td>2.0</td>
<td>8</td>
<td>10.0</td>
</tr>
<tr>
<td>Seriously dating</td>
<td>68</td>
<td>77.3</td>
<td>54</td>
<td>68.4</td>
</tr>
<tr>
<td>Living with partner (not married)</td>
<td>14</td>
<td>15.9</td>
<td>12</td>
<td>15.2</td>
</tr>
<tr>
<td>Married</td>
<td>4</td>
<td>4.5</td>
<td>5</td>
<td>6.3</td>
</tr>
<tr>
<td>Sexual Frequency</td>
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<tr>
<td>Once a month</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>2-3 times per month</td>
<td>6</td>
<td>7.0</td>
<td>6</td>
<td>7.8</td>
</tr>
<tr>
<td>At least once a week</td>
<td>33</td>
<td>37.9</td>
<td>20</td>
<td>26.0</td>
</tr>
<tr>
<td>Several times a week</td>
<td>45</td>
<td>51.7</td>
<td>42</td>
<td>54.5</td>
</tr>
<tr>
<td>At least once a day</td>
<td>3</td>
<td>3.4</td>
<td>7</td>
<td>9.1</td>
</tr>
</tbody>
</table>

**Abbreviation:** BMI: Body mass index, ISS: Index of Sexual Satisfaction, GMREL: Global Measure of Relationship Satisfaction, BISCS: Body Image Self Consciousness Scale, FSFI: Female Sexual Function Index, MSFI: Male Sexual Function Inventory
ISS: Scores range from 0 to 100; higher scores reflect greater sexual dissatisfaction. Clinical cut off scores: <30 free of a clinically significant problem, >30 have a clinically significant problem in this area, >70 are nearly always experiencing severe distress.

GMREL: Scores range from 5-35; higher scores indicate greater relationship satisfaction.

BISCS: Scores range from 0 to 75; higher scores represent greater body image self-consciousness.

FSFI: Scores range from 2 to 36; higher scores indicate greater sexual function. Clinical cut off score: ≤ 26 at risk for sexual dysfunction.

MSFI: Higher scores indicate greater sexual function; no clinical cut off score.

5.2 Correlations between Predictor, Control and Outcome Variables

For both women and men all five body composition variables (weight (kg), total body fat (kg), trunk fat (kg), % total body fat and % trunk fat) were significantly and moderately to highly correlated with each other (see Table 5.3 for women and Table 5.4 for men). The r values ranged from 0.437 to 0.972 for women and 0.645 to 0.985 for men, all p values were <0.001. None of the body composition variables were significantly correlated with the ISS (r = 0.040 to 0.120, p > 0.05) for women. For men total body fat (kg), trunk fat (kg) % total body fat, and % trunk fat were significantly and moderately correlated with the ISS (r = 0.265 to 0.336, p < 0.05). Weight (kg) was not significantly correlated with the ISS (r = 0.176, p > 0.05) for men.

Correlations between other control variables (age, relationship satisfaction (GMREL), body image (BISCS), sexual function (FSFI, MSFI) and sexual frequency) and ISS were calculated. Age was not significantly correlated with ISS for women or men (r = 0.055, 0.222, both p > 0.05). Relationship satisfaction was significantly and moderately correlated with ISS for women and men (r = -0.370; -0.519, both p < 0.001). Body image was significantly correlated with the ISS score for women (r = 0.281, p < 0.01) but not with the ISS score for men (r = 0.135, p > 0.05). Sexual function in women
was significantly and moderately correlated with ISS for women \( (r = -0.663, p < 0.001) \)
and sexual function in men was significantly and moderately correlated with ISS for men
\( (r = -0.316, p < 0.001) \). Lastly, sexual frequency was not significantly correlated with ISS
for women \( (r = -0.197, p > 0.05) \) but was significantly and moderately correlated with
ISS for men \( (r = -0.422, p < 0.001) \).
Table 5.3 Correlation values between all variables for women

<table>
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<tr>
<th></th>
<th>Age</th>
<th>GMREL SAT score</th>
<th>BISCS score</th>
<th>FSFI score</th>
<th>Sexual frequency</th>
<th>Weight (kg)</th>
<th>Total body fat (kg)</th>
<th>Trunk fat (kg)</th>
<th>Total body fat (%)</th>
<th>Trunk fat (%)</th>
<th>ISS score</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td>Pearson Correlation</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>n</td>
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<tr>
<td>GMREL SAT score</td>
<td>Pearson Correlation</td>
<td>-.045</td>
<td>-.229</td>
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<tr>
<td>BISCS score</td>
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<td>-.283</td>
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<tr>
<td>FSFI score</td>
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<td>Sexual frequency</td>
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<td>Weight (kg)</td>
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<td>Total body fat (%)</td>
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<td>n</td>
<td>88</td>
<td></td>
<td>86</td>
<td>86</td>
<td></td>
<td>85</td>
<td></td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trunk fat (%)</td>
<td>Pearson Correlation</td>
<td>.027</td>
<td>.308</td>
<td>-.349</td>
<td>.089</td>
<td>.468</td>
<td>.482</td>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.036</td>
<td></td>
<td>.202</td>
<td>.082</td>
<td></td>
<td>.064</td>
<td></td>
<td>.482</td>
<td></td>
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</tr>
<tr>
<td>n</td>
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<td>85</td>
<td></td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISS score</td>
<td>Pearson Correlation</td>
<td>.055</td>
<td>-.370</td>
<td>.281</td>
<td>-.663</td>
<td>-.197</td>
<td>.005</td>
<td>.055</td>
<td>.120</td>
<td>.120</td>
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</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.055</td>
<td></td>
<td>.069</td>
<td>.009</td>
<td></td>
<td>.000</td>
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<td>.067</td>
<td>.066</td>
<td>.066</td>
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<td>n</td>
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</table>

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).
Table 5.4 Correlation values between all variables for men

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>GMREL SAT score</th>
<th>BISCS score</th>
<th>MSFI mean score</th>
<th>Sexual frequency</th>
<th>Weight (kg)</th>
<th>Total body fat (kg)</th>
<th>Trunk fat (kg)</th>
<th>Total body fat (%)</th>
<th>Trunk fat (%)</th>
<th>ISS score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMREL SAT score</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td>.126</td>
<td>.277</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BISCS score</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td>-.175</td>
<td>.124</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSFI mean score</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td>.113</td>
<td>.333</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Sexual frequency</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 77</td>
<td>-.162</td>
<td>.158</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 78</td>
<td>.223</td>
<td>.050</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total body fat (kg)</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td>.179</td>
<td>.114</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trunk fat (kg)</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td>.194</td>
<td>.086</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Total body fat (%)</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td>.129</td>
<td>.257</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trunk fat (%)</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 79</td>
<td>.153</td>
<td>.177</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISS score</td>
<td>Pearson Correlation</td>
<td>Sig. (2-tailed)</td>
<td>n = 77</td>
<td>.222</td>
<td>.052</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
5.3 Validating Assumptions for Linear Regression

The regression assumptions related to variable type, variances, multicollinearity, and independence were met. All Durbin-Watson statistics were 1.7 for women and between 1.5 and 1.6 for men. These values are close to 2.0 indicating that the assumption of independent errors is true, thus the assumption was met. The assumption of normally distributed errors was met; the residuals for women and men all had a mean of zero.

Skewness (symmetry of a distribution) and kurtosis (shape of the distribution regarding its “peakedness”) assessed whether the data was normally distributed. Among women, GMREL, BISCS, weight (kg), total fat (kg) and trunk fat (kg) were not normally distributed while age, FSFI score, sexual frequency, % total fat, % trunk fat, and ISS score were normally distributed. Among men, GMREL, BISCS, MSFI sex drive score, MSFI erection score, MSFI ejaculation score, MSFI problem assessment score, sexual frequency, weight (kg), total fat (kg), trunk fat (kg), % trunk fat, ISS score and MSFI satisfaction score were not normally distributed while age and % total fat were normally distributed. Results from the Shapiro-Wilk test confirmed this, showing that the data were not normally distributed for all of the variables except FSFI score and % total fat for women and % total fat for men as p-values were less than 0.05.

For regression models only the outcome variable(s) need to be normally distributed to meet the assumption of linearity (Field, 2009). According to Shapiro-Wilk the ISS score for women and men were significant indicating that they were not normal. However when looking at the specific Shapiro-Wilk values for ISS score, 0.929 and 0.949 respectively, indicate that ISS score was normally distributed for women and men.
The corresponding histograms confirmed this. Therefore, the ISS score for women and men did not need to be transformed.

5.4 Regression Results for Women

For this thesis, block one and block two of each of the five regression analyses will be discussed. Block one contains the control variables (age, relationship satisfaction, body image, sexual function and sexual frequency) and block two contains the body composition variable of interest (weight (kg), total fat (kg), trunk fat (kg), % total fat, % trunk fat).

5.4.1 Weight (kg).

In the first regression analysis, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 48.7% of the variance in sexual satisfaction (adj $R^2 = 0.487$). The $R^2$ change indicated that the second block, which consisted of the body composition variable weight (kg), did not contribute significantly to the model as it only increased the variance explained by the model by 0.019 (see Table 5.5). Thus, weight (kg) was not a significant predictor of sexual satisfaction in women above and beyond control variables and block two will not be described further.

The control variables sexual function, relationship satisfaction and sexual frequency were significantly associated with sexual satisfaction, as can be seen in block one. The $b$ values for sexual function, relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. Based on the $\beta$ values in block one, it is evident that sexual function had the greatest impact on sexual
satisfaction followed by relationship satisfaction and sexual frequency. The same results were conveyed using the T-statistic.

Table 5.5 Summary of stepwise linear regression analysis for weight (kg) predicting sexual satisfaction in women (n=83)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>Slope B</th>
<th>Std B</th>
<th>Variable p</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>R² Change</th>
<th>Sig F Change</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 90.695</td>
<td></td>
<td></td>
<td></td>
<td>0.519</td>
<td>0.487</td>
<td>0.519</td>
<td>&lt;0.001</td>
<td>16.593</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.248</td>
<td>0.043</td>
<td>0.601</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.530</td>
<td>-0.269</td>
<td>0.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>-0.005</td>
<td>-0.008</td>
<td>0.926</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.849</td>
<td>-0.567</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.546</td>
<td>-0.166</td>
<td>0.042</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight (kg)</td>
<td>-0.105</td>
<td>-0.144</td>
<td>0.079</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 95.754</td>
<td></td>
<td></td>
<td></td>
<td>0.538</td>
<td>0.501</td>
<td>0.019</td>
<td>0.079</td>
<td>14.746</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.391</td>
<td>0.068</td>
<td>0.411</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.582</td>
<td>-0.295</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.004</td>
<td>0.006</td>
<td>0.942</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.839</td>
<td>-0.564</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.464</td>
<td>-0.160</td>
<td>0.046</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Weight (kg)</td>
<td>-0.105</td>
<td>-0.144</td>
<td>0.079</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01

5.4.2 Total fat (kg).

In the second regression analysis, in which total fat (kg) was added to the control variables to predict sexual satisfaction, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 48.7% of the variance in sexual satisfaction (adj R² = 0.487). The R² change indicated that the second block, which consisted of the body composition variable total fat (kg), did not contribute significantly to the model as it only increased the variance explained by the model by 0.021 (see Table 5.6). Thus, total fat (kg) was not a significant predictor of
sexual satisfaction in women above and beyond control variables and block two will not be described further.

The control variables sexual function, relationship satisfaction and sexual frequency were significantly associated with sexual satisfaction, as can be seen in block one. The $b$ values for sexual function, relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. Based on the $\beta$ values in block one, it is evident that sexual function had the greatest impact on sexual satisfaction followed by relationship satisfaction and sexual frequency. The same results were conveyed using the T-statistic.

**Table 5.6** Summary of stepwise linear regression analysis for total fat (kg) predicting sexual satisfaction in women (n=83)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>Slope B</th>
<th>Std B</th>
<th>Variable p</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>$R^2$ Change</th>
<th>Sig F Change</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 90.695</td>
<td></td>
<td></td>
<td></td>
<td>0.519</td>
<td>0.487</td>
<td>0.519</td>
<td>&lt;0.001</td>
<td>16.593</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.248</td>
<td>0.043</td>
<td>0.601</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.530</td>
<td>-0.269</td>
<td>0.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Body image</td>
<td>-0.005</td>
<td>-0.008</td>
<td>0.926</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.849</td>
<td>-0.567</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.546</td>
<td>-0.166</td>
<td>0.042</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 94.875</td>
<td></td>
<td></td>
<td></td>
<td>0.539</td>
<td>0.503</td>
<td>0.021</td>
<td>0.070</td>
<td>14.821</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.349</td>
<td>0.061</td>
<td>0.459</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.602</td>
<td>-0.306</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.002</td>
<td>0.003</td>
<td>0.975</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.863</td>
<td>-0.572</td>
<td>0.000</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.593</td>
<td>-0.169</td>
<td>0.036</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total fat (kg)</td>
<td>-0.162</td>
<td>-0.150</td>
<td>0.070</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01

5.4.3 Trunk fat (kg).
In the third regression analysis, in which trunk fat (kg) was added to the control variables to predict sexual satisfaction, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 48.7% of the variance in sexual satisfaction (adj $R^2 = 0.487$). The $R^2$ change indicated that the second block, which consisted of the body composition variable trunk fat (kg), contributed significantly to the model as it increased the variance explained by the model by 0.039 (p<0.05; see Table 5.7). Thus, trunk fat (kg) was a significant predictor of sexual satisfaction in women above and beyond control variables and block two will be described further.

The significant F-test ($F(6,82) = 15.989$, p < 0.001) indicates that the model is significantly better at predicting sexual satisfaction than using the mean as a best guess. The $b$ values for trunk fat (kg), sexual function, relationship satisfaction and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased.

Trunk fat (kg) was a significant predictor of sexual satisfaction when controlling for sexual function, relationship satisfaction, sexual frequency, age and body image. In this model, trunk fat (kg) [$t(82) = -2.600$, p < 0.05], relationship satisfaction [$t(82) = -2.980$, p < 0.01] and sexual function [$t(82) = -7.272$, p < 0.001] were all significant predictors of sexual satisfaction. Sexual frequency approached significance [$t(82) = -1.808$, p = 0.07] whereas neither age [$t(82) = 0.498$, p = 0.620] nor body image [$t(82) = 0.531$, p = 0.597] were significant predictors of sexual satisfaction. Based on the $\beta$ values in block two, it is evident that sexual function had the greatest impact on sexual satisfaction followed by relationship satisfaction, trunk fat (kg) and sexual frequency. The same results were conveyed using the T-statistic.
Table 5.7 Summary of stepwise linear regression analysis for trunk fat (kg) predicting sexual satisfaction in women (n=83)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>Slope B</th>
<th>Std B</th>
<th>Variable p</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>R² Change</th>
<th>Sig F Change</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 90.695</td>
<td></td>
<td></td>
<td></td>
<td>0.519</td>
<td>0.487</td>
<td>0.519</td>
<td>&lt;0.001</td>
<td>16.593</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.248</td>
<td>0.043</td>
<td>0.601</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.530</td>
<td>-0.269</td>
<td>0.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>-0.005</td>
<td>-0.008</td>
<td>0.926</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.849</td>
<td>-0.567</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.546</td>
<td>-0.166</td>
<td>0.042</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>2</td>
<td>Intercept = 95.285</td>
<td></td>
<td></td>
<td></td>
<td>0.558</td>
<td>0.523</td>
<td>0.039*</td>
<td>0.011</td>
<td>15.989</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.227</td>
<td>0.040</td>
<td>0.620</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.487</td>
<td>-0.247</td>
<td>0.004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.301</td>
<td>0.045</td>
<td>0.597</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-2.075</td>
<td>-0.637</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency</td>
<td>-2.165</td>
<td>-0.141</td>
<td>0.074</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trunk fat (kg)*</td>
<td>-0.202</td>
<td>-0.220</td>
<td>0.011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01

5.4.4 Percent total fat.

In the fourth regression analysis, in which percent total fat was added to the control variables to predict sexual satisfaction, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 48.7% of the variance in sexual satisfaction (adj R² = 0.487). The R² change indicated that the second block, which consisted of the body composition variable percent total fat, did not contribute significantly to the model as it only increased the variance explained by the model by 0.012 (see Table 5.8). Thus, percent total fat was not a significant predictor of sexual satisfaction in women above and beyond control variables and block two will not be described further.
The control variables sexual function, relationship satisfaction and sexual frequency were significantly associated with sexual satisfaction, as can be seen in block one. The $b$ values for sexual function, relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. Based on the $\beta$ values in block one, it is evident that sexual function had the greatest impact on sexual satisfaction followed by relationship satisfaction and sexual frequency. The same results were conveyed using the T-statistic.

Table 5.8 Summary of stepwise linear regression analysis for percent total fat predicting sexual satisfaction in women (n=83)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>$R^2$ Change</th>
<th>Sig F Change</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 90.695</td>
<td>0.519</td>
<td>0.487</td>
<td>0.519</td>
<td>&lt;0.001</td>
<td>16.593</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.248</td>
<td>0.043</td>
<td>0.601</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.530</td>
<td>-0.269</td>
<td>0.002</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>-0.005</td>
<td>-0.008</td>
<td>0.926</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.849</td>
<td>-0.567</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.546</td>
<td>-0.166</td>
<td>0.042</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 98.541</td>
<td>0.531</td>
<td>0.494</td>
<td>0.012</td>
<td>0.163</td>
<td>14.337</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.265</td>
<td>0.046</td>
<td>0.575</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.576</td>
<td>-0.292</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.000</td>
<td>0.000</td>
<td>0.997</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.891</td>
<td>-0.580</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.677</td>
<td>-0.174</td>
<td>0.032</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percent total fat</td>
<td>-0.162</td>
<td>-0.116</td>
<td>0.163</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01

5.4.5 Percent trunk fat.

In the fifth and final regression analysis for women, in which percent trunk fat was added to the control variables to predict sexual satisfaction, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual
frequency, accounted for 48.7% of the variance in sexual satisfaction (adj R² = 0.487). The R² change indicated that the second block, which consisted of the body composition variable percent trunk fat, did not contribute significantly to the model as it only increased the variance explained by the model by 0.018 (see Table 5.9). Thus, percent trunk fat was not a significant predictor of sexual satisfaction in women above and beyond control variables and block two will not be described further.

The control variables sexual function, relationship satisfaction and sexual frequency were significantly associated with sexual satisfaction, as can be seen in block one. The b values for sexual function, relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. Based on the β values in block one, it is evident that sexual function had the greatest impact on sexual satisfaction followed by relationship satisfaction and sexual frequency. The same results were conveyed using the T-statistic.
Table 5.9 Summary of stepwise linear regression analysis for percent trunk fat predicting sexual satisfaction in women (n=83)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>( R^2 )</th>
<th>Adjusted ( R^2 )</th>
<th>( R^2 ) Change</th>
<th>Sig F Change</th>
<th>( F )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 90.695</td>
<td>0.519</td>
<td>0.487</td>
<td>0.519</td>
<td>&lt;0.001</td>
<td>16.593</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.248</td>
<td>0.043</td>
<td>0.601</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.530</td>
<td>-0.269</td>
<td>0.002</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>-0.005</td>
<td>-0.008</td>
<td>0.926</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.849</td>
<td>-0.567</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.546</td>
<td>-0.166</td>
<td>0.042</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 97.052</td>
<td>0.537</td>
<td>0.501</td>
<td>0.018</td>
<td>0.086</td>
<td>14.697</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.302</td>
<td>0.053</td>
<td>0.521</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.591</td>
<td>-0.300</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.002</td>
<td>0.003</td>
<td>0.973</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function**</td>
<td>-1.882</td>
<td>-0.577</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.611</td>
<td>-0.170</td>
<td>0.035</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percent trunk fat</td>
<td>-0.164</td>
<td>-0.142</td>
<td>0.086</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01

5.5 Regression Results for Men

For this thesis, block one and block two of each of the five regression analyses will be discussed. Block one contains the control variables (age, relationship satisfaction, body image, sexual function and sexual frequency) and block two contains the body composition variable of interest (weight (kg), total fat (kg), trunk fat (kg), % total fat, % trunk fat).

5.5.1 Weight (kg).

In the first regression analysis, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 43.6% of the variance in sexual satisfaction (adj \( R^2 = 0.436 \)). The \( R^2 \) change indicated that the second block, which consisted of the body composition variable weight (kg), did not
contribute significantly to the model as it only increased the variance explained by the model by 0.008 (see Table 5.10). Thus, weight (kg) was not a significant predictor of sexual satisfaction in men above and beyond control variables and block two will not be described further.

The control variables relationship satisfaction, sexual frequency and age were significantly associated with sexual satisfaction, as can be seen in block one. The $b$ values for relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. The $b$ value for age was positive; as age increased, sexual dissatisfaction also increased. Based on the $\beta$ values in block one, it is evident that relationship satisfaction had the greatest impact on sexual satisfaction followed by sexual frequency and age. The same results were conveyed using the T-statistic.

**Table 5.10** Summary of stepwise linear regression analysis for weight (kg) predicting sexual satisfaction in men (n=74)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>Slope B</th>
<th>Std B</th>
<th>Variable p</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>$R^2$ Change</th>
<th>Sig F</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 52.537</td>
<td></td>
<td></td>
<td></td>
<td>0.475</td>
<td>0.436</td>
<td>0.475</td>
<td>&lt;0.001</td>
<td>12.136</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age**</td>
<td>1.081</td>
<td>0.255</td>
<td>0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.913</td>
<td>-0.469</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.025</td>
<td>0.015</td>
<td>0.881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.618</td>
<td>-0.174</td>
<td>0.072</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency**</td>
<td>-2.953</td>
<td>-0.295</td>
<td>0.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 47.760</td>
<td></td>
<td></td>
<td></td>
<td>0.483</td>
<td>0.436</td>
<td>0.008</td>
<td>0.313</td>
<td>10.291</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age*</td>
<td>1.037</td>
<td>0.245</td>
<td>0.012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.932</td>
<td>-0.479</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.037</td>
<td>0.022</td>
<td>0.827</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.829</td>
<td>-0.181</td>
<td>0.061</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency**</td>
<td>-2.708</td>
<td>-0.271</td>
<td>0.008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight (kg)</td>
<td>0.069</td>
<td>0.095</td>
<td>0.313</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p \leq 0.05$; ** $p \leq 0.01$
5.5.2 Total fat (kg).

In the second regression analysis, in which total fat (kg) was added to the control variables to predict sexual satisfaction, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 43.6% of the variance in sexual satisfaction \( (\text{adj } R^2 = 0.436) \). The \( R^2 \) change indicated that the second block, which consisted of the body composition variable total fat (kg), did not contribute significantly to the model as it only increased the variance explained by the model by 0.018 (see Table 5.11). Thus, total fat (kg) was not a significant predictor of sexual satisfaction in men above and beyond control variables and block two will not be described further.

The control variables relationship satisfaction, sexual frequency and age were significantly associated with sexual satisfaction, as can be seen in block one. The \( b \) values for relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. The \( b \) value for age was positive; as age increased, sexual dissatisfaction also increased. Based on the \( \beta \) values in block one, it is evident that relationship satisfaction had the greatest impact on sexual satisfaction followed by sexual frequency and age. The same results were conveyed using the T-statistic.
Table 5.11  Summary of stepwise linear regression analysis for total fat (kg) predicting sexual satisfaction in men (n=74)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>Slope B</th>
<th>Std B</th>
<th>Variable p</th>
<th>R² Change</th>
<th>Adjusted R² Change</th>
<th>Sig F Change</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 52.537</td>
<td>0.475</td>
<td>0.436</td>
<td>0.475</td>
<td>&lt;0.001</td>
<td>12.136</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age**</td>
<td>1.081</td>
<td>0.255</td>
<td>0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.913</td>
<td>-0.469</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.025</td>
<td>0.015</td>
<td>0.881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.618</td>
<td>-0.174</td>
<td>0.072</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency**</td>
<td>-2.953</td>
<td>-0.295</td>
<td>0.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 49.037</td>
<td>0.493</td>
<td>0.448</td>
<td>0.018</td>
<td>0.132</td>
<td>10.857</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age*</td>
<td>1.029</td>
<td>0.243</td>
<td>0.011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.914</td>
<td>-0.469</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.028</td>
<td>0.017</td>
<td>0.863</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.699</td>
<td>-0.177</td>
<td>0.063</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency**</td>
<td>-2.567</td>
<td>-0.257</td>
<td>0.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total fat (kg)</td>
<td>0.294</td>
<td>0.139</td>
<td>0.132</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01

5.5.3 Trunk fat (kg).

In the third regression analysis, in which trunk fat (kg) was added to the control variables to predict sexual satisfaction, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 43.6% of the variance in sexual satisfaction (adj $R^2 = 0.436$). The $R^2$ change indicated that the second block, which consisted of the body composition variable trunk fat (kg), contributed to the model as it increased the variance explained by the model by 0.027 (p=0.06; see Table 5.12). Thus, trunk fat (kg) was a borderline significant predictor of sexual satisfaction in men above and beyond control variables and block two will be described further.
The significant F-test \((F(6, 72) = 11.258, p < 0.001)\) indicates that the model is significantly better at predicting sexual satisfaction than using the mean as a best guess. The \(b\) values for trunk fat (kg) and age were positive; as each predictor increased, sexual dissatisfaction also increased. The \(b\) values for relationship satisfaction, sexual frequency and sexual function were negative; as each predictor increased, sexual dissatisfaction decreased.

Trunk fat (kg) was a borderline significant predictor of sexual satisfaction when controlling for age, relationship satisfaction, body image, sexual function and sexual frequency. In this model, trunk fat (kg) \([t(72) = 1.894, p = 0.06]\), was a borderline significant predictor while relationship satisfaction \([t(72) = -5.137, p < 0.001]\), sexual frequency \([t(72) = -2.566, p < 0.05]\) and age \([t(72) = 2.541 p < 0.05]\) were significant predictors of sexual satisfaction. Sexual function \([t(72) = -1.952, p = 0.06]\) approached significance whereas body image \([t(72) = 0.106, p > 0.05]\) was not a significant predictor of sexual satisfaction. Based on the \(\beta\) values in block two, it is evident that relationship satisfaction had the greatest impact on sexual satisfaction followed by sexual frequency, age, sexual function and trunk fat (kg). The same results were conveyed using the T-statistic.
Table 5.12 Summary of stepwise linear regression analysis for trunk fat (kg) predicting sexual satisfaction in men (n=74)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>R² Change</th>
<th>Sig F</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 52.537</td>
<td>0.475</td>
<td>0.436</td>
<td>0.475</td>
<td>&lt;0.001</td>
<td>12.136</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age**</td>
<td>1.081</td>
<td>0.255</td>
<td>0.009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.913</td>
<td>-0.469</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.025</td>
<td>0.015</td>
<td>0.881</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.618</td>
<td>-0.174</td>
<td>0.072</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency**</td>
<td>-2.953</td>
<td>-0.295</td>
<td>0.003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 49.241</td>
<td>0.502</td>
<td>0.457</td>
<td>0.057</td>
<td>0.063</td>
<td>11.258</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age*</td>
<td>0.994</td>
<td>0.235</td>
<td>0.013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.906</td>
<td>-0.465</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.017</td>
<td>0.010</td>
<td>0.916</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.802</td>
<td>-0.180</td>
<td>0.055</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency*</td>
<td>-2.472</td>
<td>-0.248</td>
<td>0.013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trunk fat (kg)</td>
<td>0.458</td>
<td>0.173</td>
<td>0.063</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01

5.5.4 Percent total fat.

In the fourth regression analysis, in which percent total fat was added to the control variables to predict sexual satisfaction, the first block with the control variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 43.6% of the variance in sexual satisfaction (adj R² = 0.436). The R² change indicated that the second block, which consisted of the body composition variable percent total fat, did not contribute significantly to the model as it only increased the variance explained by the model by 0.008 (see Table 5.13). Thus, percent total fat was not a significant predictor of sexual satisfaction in men above and beyond control variables and block two will not be described further.
The control variables relationship satisfaction, sexual frequency and age were significantly associated with sexual satisfaction, as can be seen in block one. The $b$ values for relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. The $b$ value for age was positive; as age increased, sexual dissatisfaction also increased. Based on the $\beta$ values in block one, it is evident that relationship satisfaction had the greatest impact on sexual satisfaction followed by sexual frequency and age. The same results were conveyed using the T-statistic.

<table>
<thead>
<tr>
<th>Table 5.13 Summary of stepwise linear regression analysis for percent total fat predicting sexual satisfaction in men (n=74)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td>2</td>
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<td></td>
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</tbody>
</table>

*p<0.05; **p<0.01

5.5.5 Percent trunk fat.

In the fifth and final regression analysis for men, in which percent trunk fat was added to the control variables to predict sexual satisfaction, the first block with the control
variables, age, relationship satisfaction, body image, sexual function and sexual frequency, accounted for 43.6% of the variance in sexual satisfaction (adj R2 = 0.436). The R2 change indicated that the second block, which consisted of the body composition variable percent trunk fat, did not contribute significantly to the model as it only increased the variance explained by the model by 0.015 (see Table 5.14). Thus, percent trunk fat was not a significant predictor of sexual satisfaction in men above and beyond control variables and block two will not be described further.

The control variables relationship satisfaction, sexual frequency and age were significantly associated with sexual satisfaction, as can be seen in block one. The b values for relationship satisfaction, and sexual frequency were negative; as each predictor increased, sexual dissatisfaction decreased. The b value for age was positive; as age increased, sexual dissatisfaction also increased. Based on the β values in block one, it is evident that relationship satisfaction had the greatest impact on sexual satisfaction followed by sexual frequency and age. The same results were conveyed using the T-statistic.
Table 5.14 Summary of stepwise linear regression analysis for percent trunk fat predicting sexual satisfaction in men (n=74)

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors included in the model</th>
<th>Slope</th>
<th>Std Variable</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>R² Change</th>
<th>Sig F</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intercept = 52.537</td>
<td></td>
<td></td>
<td>0.475</td>
<td>0.436</td>
<td>0.475</td>
<td>&lt;0.001</td>
<td>12.136</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age**</td>
<td>1.081</td>
<td>0.255</td>
<td>0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.913</td>
<td>-0.469</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.025</td>
<td>0.015</td>
<td>0.881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.618</td>
<td>-0.174</td>
<td>0.072</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency**</td>
<td>-2.953</td>
<td>-0.295</td>
<td>0.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Intercept = 48.843</td>
<td></td>
<td></td>
<td>0.490</td>
<td>0.444</td>
<td>0.015</td>
<td>0.170</td>
<td>10.729</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Age*</td>
<td>1.027</td>
<td>0.242</td>
<td>0.011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relationship satisfaction**</td>
<td>-0.899</td>
<td>-0.462</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body image</td>
<td>0.011</td>
<td>0.007</td>
<td>0.944</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Sexual function</td>
<td>-4.631</td>
<td>-0.174</td>
<td>0.067</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sexual frequency**</td>
<td>-2.655</td>
<td>-0.266</td>
<td>0.008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percent trunk fat</td>
<td>0.172</td>
<td>0.127</td>
<td>0.170</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ 0.05; **p ≤ 0.01

5.6 Summary of Regression Results for Women and Men

For women, trunk fat (kg) was the only body composition variable which significantly predicted sexual satisfaction; as trunk fat (kg) increased, sexual satisfaction also increased. Weight (kg), total body fat (kg & %), and % trunk fat were not significant predictors of sexual satisfaction. Sexual function had the greatest impact on sexual satisfaction in women followed by relationship satisfaction, sexual frequency and trunk fat (kg).

For men, trunk fat (kg) was the only body composition variable which approached significance in predicting sexual satisfaction; as trunk fat (kg) increased, sexual satisfaction decreased. Weight (kg), total body fat (kg & %), and % trunk fat were not significant predictors of sexual satisfaction. Relationship satisfaction had the greatest
impact on sexual satisfaction in men followed by sexual frequency, age and trunk fat (kg).
6.0 Discussion

This study contributes to a growing body of literature examining the relationship between body composition and sexual satisfaction. This is the first study to look at this relationship using body fat and its regional distribution (measured using DXA, a sensitive and sophisticated method) and a validated measure of sexual satisfaction. The major findings of this study were that: (1) for women, as trunk fat (kg), sexual function, relationship satisfaction, and sexual frequency increased, sexual satisfaction also increased, (2) for men, as trunk fat (kg) and age decreased and relationship satisfaction and sexual frequency increased, sexual satisfaction increased, (3) weight (kg), total body fat (kg), % total body fat and % trunk fat were not significant predictors of sexual satisfaction in either women nor men.

To be able to provide more conclusive results we attempted to address limitations from previous research in our study so that these limitations would not influence the results and conclusions drawn. With the exception of trunk fat, our results provide evidence demonstrating that body composition is not a significant predictor of sexual satisfaction among Caucasian, heterosexual young adults. It is possible to be confident in these findings, such that they would be generalizable to other similar samples, because of the sophisticated and sensitive measure of body composition used to investigate the relationship between four measures of body composition (total body fat (kg), trunk fat (kg), % total body fat, and % trunk fat) and sexual satisfaction. In contrast, previous research has used a combination of weight, BMI and waist to hip ratio in similar investigations.
6.1 Women

To obtain information on the relationship between the amount and location of fat in the body and sexual satisfaction we used weight (kg), total fat (kg), % total fat, trunk fat (kg), and % trunk fat. Trunk fat (kg) was a significant predictor of sexual satisfaction in women. Surprisingly, a positive relationship existed, such that, as trunk fat increased sexual satisfaction also increased. No other study to date has measured trunk fat as it relates to sexual satisfaction, so it is not possible to compare our findings to others. However, no other research has suggested that an increase in waist circumference (a proxy for trunk fat) would be linked to increased sexual satisfaction. The study that most addresses this relationship is that of Esposito et al. (2007), who found that waist-to-hip ratio was not correlated with sexual satisfaction in healthy weight or overweight/obese women. On reflection, it is perhaps not surprising that Esposito et al.’s study revealed that waist-to-hip ratio was not associated with sexual satisfaction as this ratio adjusts waist circumference for hip circumference. Increased waist circumference is associated with adverse health effects whereas hip circumference is not (Fox et al., 2007). Waist circumference alone would have been a better measure of trunk fat in Esposito et al.’s study. Nonetheless, there are currently no studies in the literature which to our knowledge address this issue. Our results may be interpreted in one of two ways. First, biologically, our results may indicate that location, rather than amount of fat does predict sexual satisfaction in women. While the finding was counterintuitive, it is possible that the variable trunk fat may work through another variable. For example, it may be that women who were very satisfied in their relationships may have had more trunk fat than those who were less satisfied with their relationships, and thus the force driving sexual
satisfaction may in fact have been relationship satisfaction, rather than trunk fat per se. This is an intriguing finding worthy of further investigation. The second explanation relates to mediating relationships. This is supported by the fact that the relationship between trunk fat (kg) and sexual satisfaction was not significant at the bivariate level (see Table 5.3). However when entered into the multivariate model with the control variables (age, body image, relationship satisfaction, sexual function and sexual frequency) the relationship between trunk fat and satisfaction became significant (see Table 5.7). This result is likely attributed to a mediating relationship with one or more of the control variables. Furthermore, the amount of variance in the model accounted for by trunk fat (kg) is small (3.9%) indicating that although there is a statistically significant relationship, it is not likely a meaningful one.

It was surprising that with the exception of trunk fat (kg), body composition (weight (kg), total fat (kg), % total fat, and % trunk fat) was not a significant predictor of sexual satisfaction in heterosexual, Caucasian young women. Previous literature suggested an inverse association between body weight and sexual satisfaction in women (Addis et al., 2006; Esposito et al.). We used rigorous methodology, improving on past limitations expecting to find similar results which would help provide a consistent and clear picture of this relationship. It was hypothesized that higher amounts of body fat would cause lower sexual satisfaction in women because increased fat could interfere with sexual activities by influencing the duration, positions and activities individuals could engage in during sex. For women, excess body fat could interfere with stimulation of the clitoris, the sensitive erogenous zone of the female, inhibiting sexual pleasure and orgasm (O’Connell, Sanjeevan & Hutson, 2005). If the woman does not receive enough
clitoral stimulation, her sexual pleasure and therefore satisfaction will likely be decreased. Body composition may also not predict sexual satisfaction in this sample of young adults because other factors such as relationship satisfaction, sexual function, sexual frequency, body image and age, may be more relevant for reasons which will be discussed below. Further, the relationship between body composition and sexual satisfaction may be obscured because a smaller proportion of individuals who had BMIs greater than 25 kg/m² and percent body fat mass above the cut offs recommended by Lohman and Going (1998) were present in the sample. Our sample had predominantly healthy weight (BMI < 25 = 56.6%) and minimally overweight (BMI = 25 = 12.7%) individuals and 67.0% of women had healthy amounts of total body fat (Lohman & Going, 1998) demonstrating that our sample was not sufficiently overweight/obese to provide significant findings.

Consistent with previous literature, women who experienced lower levels of sexual function reported experiencing lower sexual satisfaction (King et al., 2007; MacNeil and Byers 1997; Pujols, Meston & Seal, 2010). This is not surprising because high levels of sexual function indicate that women have increased arousal, desire, lubrication and decreased pain which would likely be associated with increased sexual satisfaction. Sexual function was the most significant predictor of sexual satisfaction in women. A possible reason for this is the FSFI score was the most highly correlated of the control variables with the ISS. Also, there is a small degree of overlap between the FSFI and ISS as the total score of sexual function contains the sexual satisfaction domain. Because of this, a small change in sexual function may cause a slightly larger change in sexual satisfaction.
As expected, women who reported higher relationship satisfaction experienced higher sexual satisfaction, which is consistent with previous findings (Sprecher, 2002). Individuals who have higher relationship satisfaction are often more committed to their relationship and report higher levels of love (Sprecher, 2002). These individuals may be more committed to working towards satisfaction in numerous areas of the relationship including sexual satisfaction. In addition to this, individuals in committed satisfying relationships may be so satisfied that they have high appraisal for other areas of the relationship, increasing sexual satisfaction. Relationship satisfaction had the second greatest impact on sexual satisfaction in women. The women’s average relationship satisfaction score with their current relationship was high (see Table 5.3) which was also found by Byers, Demmons and Lawrance (1998).

Frequency of sexual acts was linked to sexual satisfaction in women and had the third highest impact on sexual satisfaction. Couples who engaged in sex more frequently were more likely to be sexually satisfied. Simms and Byers (2009) and Meltzer and McNulty (2010) reported similar findings. This relationship is not surprising as it is due to a bidirectional relationship; simply, individuals who have more frequent sex enjoy the sex and therefore have more sex which causes an increase in sexual satisfaction. Most women reported having frequent sex with 92.0% having sex at least once per week (see Table 5.3).

Previous research has demonstrated a relationship between body image and sexual satisfaction, such that increased body image self-consciousness was a significant predictor of sexual dissatisfaction (Holt & Lyness, 2007; Leopold, 2003). Women who felt poorly about their bodies were less likely to be sexually satisfied. Surprisingly, this
relationship was non-significant in our sample of young women. BISCS score was significantly correlated with sexual satisfaction at the bivariate level but the relationship changed at the multivariate level (see Table 5.3). This may be attributed to other variables being better predictors of sexual satisfaction or low average BISCS scores indicating high body image in our sample (see Table 5.2). Possible scores for the BISCS range from 0 to 75 and our sample had a mean score of 14.2 (SD= 15.8) indicating that the average response for each questions was ‘rarely’ which is not sufficiently high to impair sexual satisfaction. The BISCS measures body image specific to a sexual encounter thus it is intuitive that high body image in this context will not negatively impact sexual satisfaction. Our findings are similar to that of Weaver and Byers (2006) who assessed three aspects of body image (the Body Dissatisfaction Scale, Body Image Avoidance Questionnaire and The Situational Inventory of Body-Image Dysphoria) and found that body image was not associated with sexual satisfaction in women. Our methodologically sound procedure addressed their limitations and therefore helped to validate their results. A more general measure of body image looking at how individuals feel about their overall body image as opposed to body image in a sexual encounter may provide different results. If a woman feels poorly about herself overall it may manifest into other parts of her relationship including sexual satisfaction. Also, if our sample had included an equal representation of each body type we may have found lower average body image scores as more variation may have been provided. In our study, body image concerns were not considered a problem when associated with sexual satisfaction; however this may be because individuals with poor body image were not accurately represented in this sample or another body image measure should have been used.
Age was not a significant predictor of sexual satisfaction in women. The study required participants to be in a narrow age range (18 to 25 years). This relationship may have been non-significant because older women were underrepresented in the study as fewer women (28.4%) were in the older half of participants (age 22-25). Another reason for this non-significant relationship is the span of 8 years may not be sufficiently wide to observe changes associated with age across the lifespan in women.

In conclusion with the exception of trunk fat (kg), we found that body composition was not a significant predictor of sexual satisfaction in heterosexual, Caucasian young women. The positive significant relationship that was found between trunk fat (kg) and sexual satisfaction was surprising and no justification beyond statistical reasons can be provided for this relationship. Importantly, women who had higher sexual function, high relationship satisfaction and regular sex were more likely to be sexually satisfied in this sample.

6.2 Men

To obtain information on the relationship between the amount and location of fat in the body and sexual satisfaction we used weight (kg), total fat (kg), % total fat, trunk fat (kg), and % trunk fat. Trunk fat (kg) was a borderline significant predictor of sexual satisfaction in men (p=0.06). An inverse association existed, that is, as trunk fat increased, sexual satisfaction decreased. This indicates that location, rather than amount, of fat predicts sexual satisfaction in men. There is no literature suggesting an inverse association between body composition and sexual satisfaction in men as this information has yet to be reported. Based on what we know about increased amounts of body fat and specifically trunk fat, we hypothesized that higher amounts of body fat would decrease
sexual satisfaction in men. Having excess body fat could negatively influence the duration of sex, as well as the positions and activities that may take place. For men, having high amounts of trunk fat may physically impede the sexual activity as their penis may be less accessible to their partner. As abdominal fat increases the individual’s erection may not be large enough to compete with the excess fat, decreasing stimulation. If the penis is less accessible and stimulation is therefore less intense, orgasm may be harder to achieve and pleasure may decrease ultimately leading to decreased sexual satisfaction.

Research has demonstrated that body composition (specifically BMI) does not influence sexual satisfaction in men (Adolfsson et al., 2004; Bajos et al., 2010), however we corrected previous methodological limitations, by measuring body fat and trunk fat specifically, and replacing BMI with weight and reached a similar conclusion. In our study, weight (kg) as well as amount of total body fat (kg and %) and trunk fat (%), were not significant predictors of sexual satisfaction in heterosexual, Caucasian young men. It was unexpected that weight (kg), total fat (kg), % total fat and % trunk fat were not significant predictors of sexual satisfaction in this population. The body composition variables (except for weight (kg)) were significantly correlated with sexual satisfaction at the bivariate level, however this relationship changed at the multivariate level indicating that other factors such as relationship satisfaction, sexual function, sexual frequency, body image and age, may be more important for reasons which will be discussed below. An explanation for the non-significant relationship between body composition and sexual satisfaction may be that men’s sexuality is robust to physical factors and psychological thoughts (discussed below). Men are less prone to distracting thoughts and
preoccupations with their bodies during sex thus not significantly impacting their sexual satisfaction (Purdon & Holdaway, 2006). Although trunk fat was a borderline significant predictor of sexual satisfaction, the small amount of variance accounted for by this variable indicates that it is not a clinically (or biologically) important predictor. Furthermore, sampling issues may be obscuring the relationship between body composition and sexual satisfaction as the analyses were run with a smaller proportion of individuals who have BMIs greater than 25 kg/m$^2$ and percent body fat mass above the cut offs. Our sample had predominantly healthy weight and minimally overweight individuals and 81.0% of men had healthy amounts of total body fat (Lohman & Going, 1998) demonstrating that our sample was not sufficiently overweight/obese to provide significant findings.

Men who reported higher relationship satisfaction experienced higher sexual satisfaction. This is consistent with previous findings that individuals who have higher relationship satisfaction also have higher sexual satisfaction as they are often more committed to their relationship and report higher levels of love (Sprecher, 2002). The average relationship satisfaction score with their current relationship was high (see Table 5.3) which was also found by Byers, Demmons and Lawrance (1998). Relationship satisfaction had the greatest impact on sexual satisfaction in men. This is not surprising as all participants were in a relationship; results may be different for those who have a different relationship status. Relationship satisfaction may be more important to men because the quality of their sexual relationship influences other areas of their relationship. Our study was cross-sectional in nature, therefore it is not possible to determine the direction of the relationship between sexual and relationship satisfaction. It is suspected
that a fulfilling sex life may impact other areas of the relationship including having a positive impact on relationship satisfaction. It could also be that men who have increased sexual frequency are happier in their relationship and sexually happier (and therefore satisfied) as a result.

Frequency of sexual acts was linked to sexual satisfaction in men. Couples who engaged in sex more frequently were more likely to be sexually satisfied. Simms and Byers (2009) and Meltzer and McNulty (2010) reported similar findings. This bidirectional relationship was expected as individuals who have frequent sex, enjoy it and receive great pleasure from it leading to even more sex and resulting in increased sexual satisfaction. This is likely also tied to the fact that men in the study were in relationships, and all largely satisfied in these relationships. Being happy with your partner likely leads to increased sexual frequency, which in turn may increase satisfaction. Sexual frequency had the second highest impact on sexual satisfaction in men. When directly comparing the β values across gender, sexual frequency was a greater predictor of sexual satisfaction in men than women (β= -0.295 vs. -0.166); this is consistent with other sexuality research indicating men have greater sexual desire for sexual activity, and prefer more frequent sexual interactions, than do women (Baumeister, Catanese & Vohs, 2001).

Although the study required participants to be in a narrow age range (18 to 25 years) age was a significant predictor of sexual satisfaction in men. Age had the third highest impact on sexual satisfaction. The relationship was that as age increased, sexual satisfaction decreased. This may be because younger men have been in relationships of shorter duration where sex is still new and exciting. Thus, as preferred, frequency is high and so is relationship satisfaction causing an increase in sexual satisfaction.
Previous research has demonstrated a relationship between body image and sexual satisfaction, such that low body image predicted sexual dissatisfaction (Holt & Lyness, 2007; Leopold, 2003). In our data, the relationship between body image and sexual satisfaction was not significant in men. This may be attributed to a small range and low average BISCS score indicating high body image in these men (see Table 5.3). The BISCS score was significantly correlated with sexual satisfaction at the bivariate level but the relationship changed at the multivariate level indicating that other variables must be more important when predicting sexual satisfaction. Perhaps body image concerns are not a male problem in this population as male sexuality is robust to psychological distractions. Body image thoughts are less distracting for men and thus do not frequently interfere with sex (Purdon & Holdaway, 2006). We must also consider that the BISCS was validated in women and despite a high chronbach’s alpha (α = 0.819, see Table 4.4.1) it may not be equally relevant for use with men.

The relationship between sexual function and sexual satisfaction was not significant in men. This relationship is not consistent with previous literature as MacNeil and Byers (1997) found that in men as the number of sexual concerns or problems increases, sexual satisfaction decreases. Sexual function was significantly correlated with sexual satisfaction at the bivariate level but the relationship changed at the multivariate level. A possible explanation for this is the small range of MSFI scores (2.7 to 4.0) and a high mean and small standard deviation (mean = 3.5, SD= 0.3). It may be, that men’s sexual function was not impaired enough to impact their sexual satisfaction. Another reason for this relationship is the lower reliability score (α= 0.644) calculated for the MSFI in this population (see Table 4.4.1). We introduced some error to this variable as
we created a total score of the 11 items. Perhaps we do not have a rationale for calculating and using the total score which is consistent with O’Leary et al.’s (1995) comment that sexual function is multidimensional and it is not possible to generate a single score from the individual items.

In conclusion we found that body composition with the possible exception of trunk fat (kg) was not a significant predictor of sexual satisfaction in heterosexual, Caucasian young men. The inverse relationship that was found between trunk fat (kg) and sexual satisfaction was not surprising as increased trunk fat may physically impede sex resulting in decreased stimulation, pleasure, orgasm and satisfaction. Importantly, men who had high relationship satisfaction, engaged in regular sex and were younger were more likely to be sexually satisfied in this sample.

6.3 Clinical Implications

These findings are important for clinicians as 36.7% of the Canadian adult population are overweight and 23.9% are obese (Statistics Canada, 2010). They suggest that the outcomes arising from greater body weight and/or fat may extend beyond traditional chronic disease risk (e.g. cardiovascular disease, type 2 diabetes, hypertension, etc). In a sample of young adults who were predominantly healthy weight (BMI <25; 55.6% women, 57.7% men) we found mixed results regarding the relationship between trunk fat (kg) and sexual satisfaction. In men, there was some indication that body composition has a negative effect on sexual satisfaction; such that as trunk fat (kg) increases, sexual satisfaction decreases, whereas, counter intuitively the opposite was found for women indicating that body composition does not have a negative effect on sexual satisfaction. There are fewer overweight and obese individuals in this age group compared to older
age groups (Statistics Canada, 2010) therefore the inverse relationship between body composition and sexual satisfaction may been seen and possibly amplified across the life span. Because of this statistic and our findings, clinicians should be encouraged to inquire about sexual dissatisfaction as another possible outcome of excess body weight or body fat. Alternatively, the findings also suggest that if people self-identify as sexually dissatisfied, clinicians should not rule out body composition as a possible contributor.

In addition, clinicians should also make inquiries about relationship satisfaction, sexual function, body image and sexual frequency when individuals self-report being sexually dissatisfied as it is clear that these variables are closely intertwined with sexual satisfaction. Individuals with low satisfaction should consider relationship issues, body image self-consciousness, and sexual behaviour issues which may need to be resolved in order to increase sexual satisfaction. By obtaining more detailed information about these variables and solving problems within these areas, clinicians can further assist individuals in increasing their levels of sexual satisfaction.

6.4 Study Strengths and Limitations

There are several strengths in the current study. It was a collaborative and interdisciplinary program of research which included healthy weight, overweight and obese men and women in the same study. To our knowledge, this is the first study to have investigated the direct effect of measured total body fat and its anatomic distribution on sexual satisfaction in both men and women. We used DXA which is a sophisticated and sensitive measure of body composition as opposed to proxy measures such as BMI which have been used in previous research. Unlike DXA, these proxy measures do not distinguish between fat mass and lean mass, and which may have opposing effects on
sexual satisfaction. In this study, one MRT quantified whole body fat (kg and %) as well as trunk fat (kg and %) on all participants to eliminate introduced error in measurement variation. Furthermore, the MRT’s DXA coefficient of variation for whole body percent fat mass is 0.76 ± 0.57 indicating precise measurement.

Despite a long data collection period, the two same research assistants coordinated the study and collected data to help reduce measurement variation between participants. Standardized procedures were used to collect height and weight and validated measures were used to collect information on body image, sexual function, relationship satisfaction and sexual satisfaction in men and women. The same constructs were measured in both genders (using gender specific measures where appropriate) so that the results would be directly comparable. Because of this, each questionnaire was carefully selected so that it would apply to both genders and contained a definition of the specific construct being measured. This way the construct of interest was not subject to the participants’ or researchers’ understanding of the subject as has been demonstrated in previous research using unvalidated single-item questions (Lawrance & Byers, 1995).

This study required participants to be in a sexual, romantic relationship and have had sexual intercourse at least once in the past month. It was important that participants be currently in sexual, romantic relationships as sexual satisfaction considers the positive and negative aspects of current sexual relationships. If participants were not currently in relationships they would be reporting their satisfaction with masturbation or self pleasure. Or, if participants’ previous relationships had ended, their accounts would be less accurate. Having had sexual intercourse at least once in the past month allowed participants to report a more precise representation of their sexual encounter(s) which in
turn provided a more accurate measure of sexual satisfaction. Most previous research did not have these two specific requirements which made it increasingly difficult to draw conclusions or make comparisons regarding sexual satisfaction.

Our research improved on past research by including the BISCS in our study. This scale was validated in women and has been rarely used in research with men (see Aubrey 2007; Sanchez & Kiefer 2007). Despite being validated in women, the BISCS is an important tool to use with men as it measures body image self-consciousness during physically intimate interactions and the literature suggests that the inverse relationship between body image and sexual satisfaction is not limited to women (Holt & Lyness, 2007; Penhollow & Young, 2008). With a Chronbach’s α value of 0.819 it was justified that we could apply this measure to men therefore helping to demonstrate its utility within this population.

The current study investigated the relationship between body composition and sexual satisfaction in healthy weight, overweight and obese subjects. Various body sizes were specifically recruited to analyze a range of body types and make comparisons. Despite vigorous recruitment efforts exploring all avenues to obtain as many overweight and obese participants as possible our study enrolled fewer overweight/obese participants in comparison to healthy weight participants. This is a potential limitation as individuals with a BMI greater than 25 may be underrepresented. However, in general there are fewer overweight/obese people in the 18 to 25 age group when compared to older age groups indicating that we recruited as many participants in this category as possible (Statistics Canada, 2010). The authors purposely chose to exclude underweight subjects due to potential confounding relationships with body image that may influence sexual
satisfaction results. In addition to this, according to Statistics Canada (2010) there are very few underweight individuals in this age category which would have presented a challenge to recruit an adequate sample so that we could accurately portray a relationship between body composition and sexual satisfaction. Thus, underweight individuals are not represented in the data.

A second potential limitation of the current study is that in general volunteers for sex research differ than their non-volunteering counterparts. Volunteers tend to be more sexually experienced, hold more liberal sexual attitudes and are more positive about sex (Morokoff, 1986; Saunders, Fisher, Hewitt & Clayton, 1985). Individuals who have sexual problems may be less likely to participate in sexuality research as they will have to disclose their issues. We acknowledge that because of this we may not be able to generalize our results to the larger Guelph community. Our sample is very homogeneous consisting of Caucasian, heterosexual, university students. Therefore the results cannot be applied to other ethnic and/or sexual orientations and/or individuals who are not in relationships. Lastly, the sample size was large considering the resources required for DXA; however it is inadequate for advanced statistical analyses using structural equation modeling. Structural equation modelling can be used to test a measurement model of body composition and sexual satisfaction with various control variables (i.e. relationship satisfaction, sexual function, body image, sexual frequency).

6.5 Suggestions for Future Research

The current study contributes to the current knowledge by indicating that body composition, specifically trunk fat (kg) may help to predict sexual satisfaction in women and men. In Canada, over 60% of adults aged 40 to 59 and over 65% of adults aged 60 to
79 are overweight/obese compared to 43.5% of adults aged 18 to 39 justifying the need to extend this research to an older cohort (Statistics Canada, 2010). Using purposive sampling to recruit an increased number of adults who are overweight or obese will reduce the risk of these individuals being underrepresented and factors influencing sexual satisfaction can be discovered. Despite the need to recruit more overweight/obese adults, it is important to acknowledge the challenges associated with recruiting these individuals for a sexuality study: they may be sensitive about enrolling in a sexuality study which requires them to disclose personal information and have their weight/body composition assessed. It is also important to note their relationship status and current prescription medications as antidepressants are a cofounding variable affecting body image. Because of the study’s results, the over 60% prevalence of overweight and obesity in Canadian adults (Statistics Canada, 2010) and the negative health effects associated with trunk fat (Fox et al., 2007) this study should be replicated using the same methods in middle aged and older adults to fully understand the relationship between trunk fat and sexual satisfaction in men and women. Once the relationship between body composition and sexual satisfaction is established in an older cohort the research should then be extended to investigate whether and how sexual orientation, ethnicity, menopausal status, aging and chronic disease may affect this relationship.

Previous research by Graham, Sanders, Milhausen and McBride (2004) has shown that the male partner can affect the woman’s sexual arousal. If their partner accepted their body, and accepted and appreciated them, the women were more likely to be aroused. This demonstrates that one partner can influence the other’s sexual experience and since the definition of sexual satisfaction used includes considering the
positive and negative aspects of a sexual relationship (MacNeil & Byers, 1997) future research should consider collecting data on both partners in the relationship. Thus information on both individuals’ age, relationship satisfaction, body image, sexual function, body composition and sexual satisfaction will be identified. It can then be determined if one partner has a problem in any one of these areas whether it will influence the other partner’s sexual satisfaction.

Despite body image not being a significant predictor of sexual satisfaction in men or women, it is important to continue to assess the relationship between these two variables. Body image has been related to sexual behaviours and experiences (Cash & Fleming, 2002) and thus it is logical to continue body image research to determine its relationship with sexual satisfaction. Previous research has demonstrated that increased body image self consciousness is a significant predictor of sexual dissatisfaction in both genders. Using various body image scales and having participants represent a range of scores will help to determine this relationship.

This study identified two relationships such that in men as trunk fat (kg) increases, sexual satisfaction decreases and in women as trunk fat (kg) decreases, sexual satisfaction also decreases. Trunk fat was measured using a sophisticated and sensitive measure. Despite its advantages, DXA requires a lot of resources and skill. Future research using the same cohort of 18 to 25 year olds should investigate if an inverse relationship exists using waist circumference instead of trunk fat (kg) identified by DXA. If trunk fat (kg) can be replaced by waist circumference, it will have tremendous implications for clinicians as waist circumference is easy to determine in comparison to trunk fat (kg) and it may be easier to establish if a clinical relationship exists between the
two variables.

Continuing this research will be an important contribution to the literature as collaborative and interdisciplinary research has yet to be completed in an older cohort and other populations. Considering that sexual difficulties are relatively common and tend to increase with age (Laumann et al., 2005) and the prevalence of overweight and obesity in older age groups it is important that the non-significant results of weight (kg), total body fat (kg and %), and % trunk fat found in the younger cohort are not transferred to older adults and not investigated further. Upon completion, this program of research will have tremendous implications for the understanding of sexual health of Canadians.
7.0 Conclusion

The impact of body composition on sexual satisfaction has been relatively ignored in the literature. Therefore, this study is contributing to sexuality and body composition research by examining this relationship. Our results are not consistent with the limited amount of previous literature as we found that body composition is generally not a significant predictor of sexual satisfaction. However, our results are more conclusive as we improved methodological limitations and used a more sophisticated and sensitive measure of body composition investigating the relationship between five measures of body composition and sexual satisfaction.

The study found that trunk fat (kg) but not weight (kg), total body fat (kg and %), or % trunk fat was a significant predictor of sexual satisfaction in both women and men. In women, a positive relationship existed, such that, as trunk fat (kg) increased sexual satisfaction also increased, whereas in men an inverse relationship existed, such that, as trunk fat (kg) increased, sexual satisfaction decreased. In addition to these findings, sexual function had the greatest impact on sexual satisfaction in women followed by relationship satisfaction and sexual frequency. In men, relationship satisfaction had the greatest impact on sexual satisfaction followed by sexual frequency and age. Body image did not significantly predict sexual satisfaction in men or women.

Our study suggests that the relationship between body composition and sexual satisfaction is neither statistically nor clinically significant in Caucasian, heterosexual young adults who are of largely healthy body weight and size. Despite this finding, sexual satisfaction has an important role in determining overall health and happiness and
it is therefore important to continue to research the relationship between sexual satisfaction and body composition in older age groups and various other populations such as those with different sexual orientations, ethnicities, menopausal status and chronic diseases. A large portion of the Canadian population is overweight or obese and we need to ensure that the sexual health of these individuals is not being compromised by the amount or distribution of fat in their bodies.
8.0 References


Cash, T., & Fleming, E. (2002). The impact of body image experiences: Development of


Holmberg, D., & Blair, K.L. (2009). Sexual desire, communication, satisfaction, and
preferences of men and women in same-sex versus mixed-sex relationships.

*Journal of Sex Research, 46, 57-66.*


Hopman, W.M., Berger, C., Joseph, L., Barr, S.I., Gao, Y., Prior, J.C., *et al.* (2007). The association between body mass index and health-related quality of life: Data from CaMos, a stratified population study. *Quality of Life Research, 16,* 1591-1603.


Behavior, 36, 281-288.

*Sexual & Relationship Therapy*, 18, 95-106.


Morokoff, P.J. (1986). Volunteer bias in the psychophysiological study of female


Træen, B. (2010). Sexual dissatisfaction among heterosexual Norwegians in couple


9.0 Appendices

Appendix A Research Ethics Board Certification of Ethical Acceptability of Research Involving Human Participants

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<th>RESEARCH ETHICS BOARD</th>
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<td>RESEARCH ETHICS BOARD</td>
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<td>RESPONSIBLE FACULTY:</td>
<td>ANDREA BUCHHOLZ</td>
</tr>
<tr>
<td>DEPARTMENT:</td>
<td>Family Relations &amp; Applied Nutrition</td>
</tr>
<tr>
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<tr>
<td>TITLE OF PROJECT:</td>
<td>Sex, Health and You!</td>
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The members of the University of Guelph Research Ethics Board have examined the protocol which describes the participation of the human subjects in the above-named research project and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement.

The REB requires that you adhere to the protocol as last reviewed and approved by the REB. The REB must approve any modifications before they can be implemented. If you wish to modify your research project, please complete the Change Request Form. If there is a change in your source of funding, or a previously unfunded project receives funding, you must report this as a change to the protocol.

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Responsible Faculty, the safety of the participants, and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure
that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-council Policy Statement requires that ongoing research be monitored by, at a minimum, a final report and, if the approval period is longer than one year, annual reports. Continued approval is contingent on timely submission of reports.


Approved: ____________________  Date: ____________________

per

Chair, Research Ethics Board
Participate in Sex, Health and YOU!
A Health and Sexuality Study

Learn about yourself, and how physical activity, body image, body composition, nutrition and relationship satisfaction may influence your sex life!

Why Participate?
It only takes one hour
You will receive a $10 gift certificate
You will be entered in the draw to win 1 of 3 Athletic Club Memberships
See how research is conducted
Confidential

To Participate you must be:
18 to 25 years of age
White/Caucasian
In a heterosexual romantic relationship
Have had sex once in the past month

Contact: bodycomp@uoguelph.ca
The Cannon advertisement.

<table>
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| Description| Participate in Does Size Matter!  
A Health and Sexuality Study |
|            | Learn about yourself, and how physical activity, body image, body composition, nutrition and relationship satisfaction may influence your sex life! |
|            | Why Participate?     |
|            | • It only takes one hour |
|            | • You will receive a $10 gift certificate |
|            | • You will be entered in the draw to win 1 of 3 Athletic Club Memberships |
|            | • See how research is conducted |
|            | • Confidential |
| To Participate you must be: | |
| • 18 to 25 years of age |
| • White/Caucasian |
| • In a heterosexual romantic relationship |
| • Have had sex once in the past month |
| Contact Name | Body Composition and Metabolism Lab |
| Contact Email Address | bodycomp@uoguelph.ca |
| Date Posted | April 17, 2010 |
Recruitment posters and flyers.

What impacts YOUR sexuality?
- Participate in a Health and Sexuality Study -

Why Participate?
- It only takes one hour
- Learn about yourself
- Receive a $10 gift card
- See how research is conducted
- Confidential
- Cleared by the University of Guelph Research Ethics Board

To Participate you must be:
- 18 to 25 years of age
- White/Caucasian
- In a heterosexual romantic relationship
- Have had sex once in the past month

Interested?
Email: bodycomp@uoguelph.ca

University of Guelph
Does SIZE Matter?
A Health and Sexuality Study

Why Participate?
- IT ONLY TAKES ONE HOUR
- YOU WILL RECEIVE A $10 GIFT CERTIFICATE
- YOU WILL BE ENTERED IN THE DRAW TO WIN ONE OF THREE GYM MEMBERSHIPS
- SEE HOW RESEARCH IS CONDUCTED
- CONFIDENTIAL

To Participate:
- YOU MUST BE 18 – 25 YEARS OF AGE
- CAUCASIAN
- IN A HETEROSEXUAL ROMANTIC RELATIONSHIP
- HAVE HAD SEX ONCE IN THE PAST MONTH

INTERESTED? Email bodycomp@uoguelph.ca
DOES SIZE MATTER?
A Health and Sexuality Study

WHY PARTICIPATE?
- It only takes 1 hour
- Receive a $10 gift certificate to your choice of: Shoppers Drugmart, Tim Hortons, Starbucks, etc.
- Be eligible to win a 3 month membership to the Athletic Club
- Find out your exact amount of lean fat, total body fat, etc... for free!

INTERESTED? Contact:
bodycomp@uoguelph.ca

To participate you must:
- Be 18 to 25 years old
- Be Caucasian
- Be in a heterosexual romantic relationship
- Have had sex at least once in the past month
What impacts YOUR Sexuality?

Participate in a Health and Sexuality Study

Body Image

Body Composition

Relationship Satisfaction

Physical Activity

Nutrition

Why Participate?

• It only takes one hour
• Learn about yourself
• Receive a $10 gift card
• See how research is conducted
• Confidential
• Cleared by the U of G Research Ethics Board

To Participate you must be:

• 18 to 25 years of age
• White/Caucasian
• In a heterosexual romantic relationship
• Have had sex once in the past month

INTERESTED?

Email: bodycomp@uoguelph.ca
Have a Few Pounds to Lose?
Participate in Does Size Matter!
A Health and Sexuality Study

Why Participate?
- It only takes one hour
- You will receive a $10 gift certificate
- You will be entered in the draw to win 1 of 3 Athletic Club Memberships
- See how research is conducted
- Confidential

To Participate you must be:
- 18 to 25 years of age
- White/Caucasian
- In a heterosexual romantic relationship
- Have had sex once in the past month

INTERESTED?
Email: bodycomp@uoguelph.ca
Newspaper advertisements.

**DOES SIZE MATTER?**  
*A Health & Sexuality Study*  
**With Compensation**

Participate in this dynamic study analyzing people’s body composition and their sexual relationships/function.

We are looking for women and men that are: in heterosexual romantic relationships, Caucasian, and have had sex in the past month.

Come into our lab once for only one hour, and you will be compensated for your time.

INTERESTED? Contact: bodycomp@uoguelph.ca  
Or Facebook Group: Does Size Matter?

**HAD SEX RECENTLY?**  
*Does Size Matter?-A Health & Sexuality Study*  

Participate in this dynamic study which investigates individual’s body composition and their sexual relationships/function.

We are looking for women and men that are: between 18 and 25, in heterosexual romantic relationships, White/Caucasian, and have had sex in the past month.

Come into our lab once for only one hour, and you will receive a $10 gift card.

INTERESTED? Contact: bodycomp@uoguelph.ca  
Or Facebook Group: Does Size Matter?
Sex, Health and YOU!
Participate in a Health and Sexuality Study!
Learn about yourself, and how physical activity, body image, body composition, nutrition and relationship satisfaction \textit{may} influence your sex life!
It will only take 1 hour, is confidential and you will receive a $10 gift card.
Interested? Email bodycomp@uoguelph.ca
Appendix C

E-mail screening questionnaire.

Hi (insert participant name),

Thank you for your interest in the Sex, Health and YOU! The main purpose of this project is to investigate the link between body composition (how much body fat you have) and sexual functioning. We will also look at whether body image (how you feel about your body) explains the link between body composition and sexual functioning; as well as evaluate whether the effect of body composition on sexual functioning is influenced by relationship satisfaction.

Below is a screening questionnaire. Please fill it out to determine your eligibility for the study. If you are eligible to participate, we would ask you to visit the Body Composition and Metabolism Lab for 1 hour, to have your body composition measured by DXA, and to complete a series of questionnaires. You will be given a $10 gift card and a chance to win one of five 3 month memberships to The Athletic Club!

Thanks again we look forward to you being a part of this study!

SCREENING QUESTIONNAIRE

Please answer these questions by typing an “X” in the space beside your correct response or filling in the appropriate response either in the original format below or by cut and pasting the questions in your reply.

1) Which of these commonly used terms would you use to best describe yourself?

- Heterosexual/straight
- Bisexual
- Lesbian/gay/homosexual
- Other
- Uncertain

2) How do you define yourself?

- Black, African Canadian, African American
- Middle Eastern, Arabic
- South Asian
- East Asian
- Southeast Asian
- Hispanic
- White, Caucasian
- Native
- Other: ____________________

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3) What is your current relationship status?
   - Not dating anyone
   - Casually dating one partner
   - Casually dating more than one partner
   - Seriously dating one person
   - Living with partner but not married
   - Married
   - Widowed
   - Separated/divorced

4) Have you had sexual intercourse (penis-in-vagina penetration) at least once over the past month?
   - Yes
   - No

5) Are you currently taking any prescription medications?
   - Yes
   - No
   If Yes, can you tell me what they are:

6) What is your height? ____

7) What is your weight? ____

8) Age: ____

Thanks for taking the time to fill in this questionnaire!

Emily
Appendix D

Reminder E-mail for eligible participants.

Hello (insert participant’s name),

PLEASE TAKE NOTE OF THE FOLLOWING:

Please wear light clothing with no metal zippers or fasteners (buttons, snaps, etc.) This includes bras for women. If you do have metal on your clothing, we will provide hospital gowns for you to change into.

There is no body jewellery allowed on any part of the anatomy, including eyebrows, ears, noses, tongues, lips, nipples and belly buttons as they will show up on the DXA scan and affect the results.

If you are currently taking any supplements (Vitamins, Calcium, etc.) please either bring them in for your appointment or write down the name brand and dosage.

WOMEN: If possible, please wear a bra top or tank top to avoid metal closures on most bras. There should be no chance women are pregnant due to the small radiation from the DXA scan. In addition, know the day of your last period as this information will be asked of you during your appointment.

The Body Composition and Metabolism Lab can be found in room 206 on the second floor of the JT Powell Building on the University of Guelph campus.

Thanks again for your interest in the Does Size Matter/Sex, Health and YOU! Study. We look forward to seeing you on Friday!

Emily
Appendix E

Consent to participate in research form.

CONSENT TO PARTICIPATE IN RESEARCH

Does Size Matter?

You are being asked to participate in a research study conducted by Dr. Robin Milhausen and Dr. Andrea Buchholz of the Dept Family Relations and Applied Nutrition.

If you have any concerns about this project please feel free to contact:
- Sarah Murray, Graduate Student Investigator and Study Coordinator, tel 519-824-4120 ext 56715, email murray@uoguelph.ca
- Dr. Robin Milhausen, tel 519-824-4120 ext 54397, email mmilhausen@uoguelph.ca
- Dr. Andrea Buchholz, tel 519-824-4120 ext 52347, email abuchhol@uoguelph.ca
- Dr. Jonathan Davids, tel 519-824-4120, ext 52647

PURPOSE AND OVERVIEW
The main purpose of this project is to investigate the link between body composition (how much body fat you have) and sexual functioning. We will also look at whether body image (how you feel about your body) explains the link between body composition and sexual functioning, as well as evaluate whether the effect of body composition on sexual functioning is influenced by relationship satisfaction. A secondary purpose is to determine bone mineral content of young adults.

PROCEDURES
If you volunteer to participate, we would ask you to do the following.

The study day will take place in the Body Composition and Metabolism Lab, room 206 of the J.T. Powell Building at the University of Guelph, and will last approximately 2 hours.

You will start by completing some questionnaires on demographics and overall health, dietary intake, and physical activity. We will then measure your height, weight and waist circumference. This will be done by the Graduate Student Investigator or an Undergraduate Research Assistant.

You will have your body composition analyzed using an instrument called a DXA. It is a quick and painless procedure. We will ask you to change into a hospital gown and lie on a scanning bed for approximately 5 to 7 minutes, during which x-rays will be emitted from below your body and measured above by a moving “arm”. This instrument will measure your whole body (head to toe), as well as your hips and lower back. The whole body scan will tell us your total body fat and trunk fat (for the main research question), and the hip and lower back scans will tell us bone mineral content (for the secondary research question). We will ask you to remove all metal jewelry (including piercings), as metal interferes with the test. A DXA examination to determine body composition involves exposure of the research subject to a small dose of radiation. Each time this procedure is done the radiation dose to the subject is 0.025 millisieverts (mSv), a unit used to measure radiation dose to people. This is less than the daily dose of radiation that a person receives from a variety of different sources (e.g. spending 2 hours in direct sunlight) and less radiation than the amount received during an average flight.

In the general population, the risk of developing fatal cancer is 400 in 2000, approximately 20%. Following one DXA examination this risk will increase by a very small fraction of 1%. (Cancer risk figures from US Food and Drug Administration Center for Devices and Radiological Health, update 17th April 2002). If you are pregnant,
or think you might be pregnant, you should not do this test. This test will be done by a Medical Radiation Technologist. We will ask the first 30 participants of this study to undergo two DXA scans each, taken minutes apart, so that we can calculate repeatability of the measurements.

We will then ask you to complete a second series of questionnaires about your relationship satisfaction and sexuality. Many of these questions are of a sensitive and intimate nature. You will be seated in front a privacy screen so that only you, and no one else, will be able to see your answers. During this time we will provide refreshments.

**POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY**
There are no direct benefits to you for participating in this project.

**PAYMENT FOR PARTICIPATION**
You will receive a $10 gift card for participating in this project, redeemable at local businesses (e.g. Tim Hortons, McDonald’s, etc). Your name will also be entered into a draw to win one of five, 3-month memberships at The Athletic Club.

**CONFIDENTIALITY**
Every effort will be made to ensure confidentiality of any identifying materials obtained during the study. Data are coded immediately and are stored in password-protected computer files. Thus your individual data are not identifiable with your name. Any results published or presented will be done using group data and/or coded (unidentifiable) individual results. Data will be stored in a secure cabinet for two years. After this time, it will be shredded and discarded in confidential waste.

**PARTICIPATION AND WITHDRAWAL**
Your decision to participate in this study is voluntary and you are free to withdraw from the study at any time.

In the unlikely event of an adverse or questionable reaction to any of the experimental interventions, please contact Dr. Robin Milhausen or Dr. Andrea Buchholz (see p. 1 for contact information).

**FURTHER RESOURCES**
If participating in this study has raised issues for you about your body image or sexual functioning, you may choose to access the following resources:

**University of Guelph**
Counselling Services
Level 3, University Centre
University of Guelph
Guelph - Ontario - N1G 2W1
(519) 824-4120 ext. 53244

**The Wellness Centre**
The Wellness Centre
2nd Floor, J.T. Powell Building (Above Student Health Services)
University of Guelph
Guelph - ON - N1G 2W1
(519) 824-4120 ext. 53327

**Couple and Family Therapy Centre**
Department of Family Relations and Applied Nutrition
University of Guelph
Guelph - Ontario - N1G 2W1
(519) 824-4120 ext. 56335

If you have questions regarding your body composition (results from the DXA scanning), please direct these to your family doctor.
RIGHTS OF RESEARCH PARTICIPANTS
You may withdraw your consent at any time and discontinue participation without penalty. This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, please contact:

Sandy Auld, Research Ethics Officer
University of Guelph, 437 University Centre, Guelph, ON N1G 2W1
Telephone: 519-824-4120 ext 56606, Email: sauld@uoguelph.ca, FAX: 519-821-5236

CONSENT
I have read this Consent to Participate in Research. The study has been explained to me to my satisfaction. I understand that I am free to stop participating at any time, even after signing this consent form.

I agree to allow the investigators to use my anonymous data in research publications.

I agree to participate in the Does Size Matter? study.

PARTICIPANT

(Printed name) __________________________ (Signature) __________________________

(Date) __________________________

WITNESS

(Printed name) __________________________ (Signature) __________________________

(Date) __________________________
Appendix F

Order for research DXA scans for ‘Does Size Matter?’.

ORDER FOR RESEARCH DXA SCANS FOR ‘DOES SIZE MATTER?’

Please order one (1) whole body dual energy x-ray absorptiometry (DXA) scan, including one (1) pelvis and one (1) lumbar spine scan, for the research participant listed below. This participant is enrolled in “Does Size Matter?”, a study investigating the relationship between body composition and sexual function in young adults. The study, which will run throughout 2009, has been approved by the University of Guelph Research Ethics Board (REB #08SE030).

The procedure involves scanning the participant from head-to-toe using the Hologic Discovery WI instrument housed in the Body Composition and Metabolism Lab at the University of Guelph. The instrument will be operated by Janice Skafel, Medical Radiation Technologist. Note that each participant will be advised that, should s/he have any questions or concerns regarding their DXA results, to contact their family physician for follow-up.

The first 30 participants of the study will be asked to undergo two (2) whole body DXA scans, to determine repeatability.

______________________________
Participant Name (please print)

______________________________
DXA scan ordered by:

[Signature]


______________________________
Date

Order for research DXA scans
“Does Size Matter?”
Appendix G

Demographic and sexual behaviour items.

Does Size Matter?
2. Demographics and Health Questionnaire 1

This anonymous survey takes about 45-60 minutes to complete and asks about you to report on your perceptions of your physical and sexual health. We will also be asking questions about your current relationship.

If you take this opportunity to contribute information to this study, it is essential that you do so seriously and honestly. Your responses should represent only your own personal opinions and experiences. Every precaution has been taken to ensure that your responses remain private. This study has been approved by the university ethics committee for the protection of human subjects rights.

1. How old are you?

2. Are you:
   - Not Working
   - Working
   - In High School
   - In College
   - In University
   - Other (please specify)

3. If you are in University, what year are you in?
   - First Year
   - Second year
   - Third Year
   - Fourth Year
   - Fifth Year
   - I am a graduate student

4. Are you:
   - Female
   - Male
5. How do you define yourself? (Check one or more responses)

- Black, African Canadian, African American,
- Middle Eastern, Arabic
- South Asian (i.e., Indian, Pakistan)
- East Asian (i.e., China, Japan)
- Southeast Asian (i.e., Thailand, Philippines, Malaysia)
- Hispanic
- White, Caucasian
- Native

Other (please specify)

6. What is your current relationship status?

- Not dating anyone
- Casually dating one or more partners
- Seriously dating one person
- Living with partner, but not married
- Married
- Widowed
- Separated/divorced

7. If you are currently in a relationship or married, how long have you been together?

Years  
Months

4. Do you have any health conditions?

- Yes
- No

If yes, please specify
5. On average, how many alcohol-containing drinks do you consume per week? (One drink is equivalent to: 12 oz beer, 12 oz alcoholic cooler, 4 oz wine, 1 oz hard liquor) 

6. How many alcohol-containing drinks do you consume in an average sitting on a weekday? 

7. How many alcohol-containing drinks do you consume in an average sitting on a weekend? 

8. Do you smoke cigarettes?
   ○ Yes
   ○ No

9. If yes, how many cigarettes do you smoke on an average day?
   ○ Less than 1/2 pack
   ○ More than 1/2 pack to 1 pack
   ○ More than 1 pack

10. If yes, how long have you smoked cigarettes?
    Months
    Years

3. In the last 7 days during the morning, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)
   ○ None
   ○ 1 time last week
   ○ 2 or 3 times last week
   ○ 4 or 5 times last week
   ○ 6 or 7 times last week
4. In the last 7 days, after lunch and before supper, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)
   - None
   - 1 time last week
   - 2 or 3 times last week
   - 4 or 5 times last week
   - 6 or 7 times last week

5. In the last 7 days, during the evening, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)
   - None
   - 1 time last week
   - 2 or 3 times last week
   - 4 or 5 times last week
   - 6 or 7 times last week

6. On the last weekend, how often were you very active (for example: playing sports, exercise classes, strenuous occupational activity, strenuous household or child rearing tasks)? (Check one only.)
   - None
   - 1 time last week
   - 2 or 3 times last week
   - 4 or 5 times last week
   - 6 or 7 times last week
7. Which one of the following describes you best for the last 7 days? Read all five statements before deciding on the one answer that describes you.

- All or most of my free time was spent doing things that involve little physical effort
- I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)
- I often (3-4 times last week) did physical things in my free time.
- I quite often (4-5 times last week) did physical things in my free time.
- I very often (7 or more times last week) did physical things in my free time.

8. Mark how often you did physical activity (for example: playing sports, exercise classes, strenuous occupational activity)

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</table>

9. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

- Yes
- No

If yes, what prevented you?

6. With how many different male partners have you engaged in penis in vagina sexual intercourse in your lifetime? (Enter 0 if you never had sex with a male partner)

7. With how many different male partners have you engaged in penis in vagina sexual intercourse in the last year? (Enter 0 if you never had sex with a male partner)

12. With how many different female partners have you engaged in penis in vagina sexual intercourse in your lifetime? (Enter 0 if you never had sex with a female partner)

13. With how many different female partners have you engaged in penis in vagina sexual intercourse during the last year? (Enter 0 if you never had sex with a female partner)