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**FACULTY OF GRADUATE AND  
POSTDOCTORAL STUDIES**

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**Body Image Concerns in Men with Localized Prostate Cancer**

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Thesis submitted to the Faculty of Graduate and Postdoctoral Studies

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School of Psychology

Faculty of Graduate Studies

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### General Abstract

It has been proposed that body image is an important aspect of quality of life that has received insufficient attention in research on medical populations (Pruzinsky & Cash, 2002). The present study was designed to assess the level of body image concerns in androgen-deprived and non-androgen deprived men undergoing radiation therapy for localized prostate cancer, and a comparison group of men without cancer. The relationship between body image concerns and quality of life, and the influences of disease-specific factors, physical functioning, and cognitive investment in appearance on body image was examined. 55 men receiving androgen deprivation therapy (ADT) and radiation therapy, 41 men receiving radiation only (RT), and 56 cancer-free men (CG) completed global and disease-specific measures of body image and quality of life. Only a minority of men with localized prostate cancer (13-30%) endorsed body image concerns above normative levels. After controlling for educational status, levels of body image concerns were comparable across the three groups. Higher levels of body image distress were associated with worse quality of life scores (mental health subscale, 36-item Short-Form Medical Outcomes Study Health Survey); however, there was no group for whom this relationship was most salient.

Despite ongoing interest in quality of life outcomes associated with ADT, findings from the present study suggest that ADT (for a minimum of 3 months) does not increase risk of body image concerns during radiation treatment. However, bother associated with hormone symptoms, as well as marital status, sexual functioning, perceived physical functioning, and cognitive investment in appearance were associated with body image concerns. Findings provided preliminary support for the cognitive-behavioural model of body image disturbance in cancer patients proposed by White (2000), such that cognitive investment in appearance predicted body image concerns above and beyond demographic,

medical, sexual and physical functioning variables. By focusing on men receiving radiation therapy, including a comparison group, and including a comprehensive battery of disease-specific and theoretically-based body image measures, the present study addressed some of the gaps in the previous research. Findings suggest targeting several factors amenable to counselling or behavioural interventions, such as partner support, cognitive investment in appearance, and bother associated with ADT and physical functioning, to reduce body image concerns. Whereas diverse factors were relevant to body image concerns, findings showed that a specific focus on men's perceived physical functioning, and losing weight would likely improve body satisfaction in men undergoing treatment for localized prostate cancer.

## **1.0 Objectives of Present Study**

The objective of the present study was to investigate the level of body image concerns in androgen-deprived (ADT) and non-androgen deprived men undergoing radiation therapy for localized prostate cancer, and a comparison group of men without cancer. The relationship between body image concerns and quality of life, and the influences on body image concerns in men with prostate cancer was also examined. A further objective of the present study was to test a cognitive-behavioural model of body image disturbance in cancer patients proposed by White (2000).

The following sections introduce the reader to the nature of prostate cancer and the impact of this illness on health-related quality of life. This is followed by a discussion on male body image constructs, and the link between body image concerns and prostate cancer.

## **2.0 Localized Prostate Cancer**

Prostate cancer is the most common form of cancer diagnosed in Canadian men (National Cancer Institute of Canada: Canadian Cancer Statistics 2007). According to the Canadian Cancer Society, an estimated 22,300 men would have been diagnosed with prostate cancer in 2007. An increase in the incidence of prostate cancer in the last ten years has been attributed, in part, to the widespread use of PSA analysis, a screening test that assesses levels of a protein secreted from the prostate gland, prostate specific antigen (PSA) in the blood. Against a background of slowly increasing incidence rates since 1993, mortality rates have declined significantly by 2.7% per year between 1994 and 2003 (National Cancer Institute of Canada: Canadian Cancer Statistics 2007). Currently, prostate cancer causes 4300 deaths per year; third to deaths caused by lung and colorectal cancer. Survival rates for prostate cancer are higher relative to other types of cancer (National Cancer Institute of Canada: Canadian Cancer Statistics 2007). The five-year relative survival

ratio (RSR), defined as the ratio of the observed survival for prostate cancer patients relative to the survival expected for people in the same general population after 5 years, is 92%, with the best prognosis observed among those diagnosed at 50 to 69 years of age (e.g., 95% 5-year RSR). With advances in medical treatment and screening, men with prostate cancer are living increasingly longer lives. Prostate cancer is considered a chronic condition, and as such, is associated with several quality of life challenges both during and post treatment. The present study focused on body image concerns and quality of life during treatment. A brief overview of prostate cancer and its treatment follows.

### 2.1 Diagnosis and Treatment of Localized Prostate Cancer

Prostate cancer refers to a proliferation of cells in the prostate gland that can amass into tissue that interferes with the functioning of surrounding normal cells. In some cases, the cancerous cells spread or metastasize to other regions of the body resulting in increased risk to health and life. At present, little is known about the etiology of prostate cancer (Levy, 1994). The prognosis for survival is substantially improved with early detection, or diagnosis of early stage cancer. Screening for prostate cancer typically begins over age 50, which involves a digital rectal exam and may include serum PSA analysis. A rising PSA level may lead to further investigation in order to determine the presence of disease. For those at potentially higher risk of the disease, men with a family history or of African-American descent, screening may begin as early as age 40 or 45.

Tumour stage, Gleason's grade, and age are important considerations in determining the appropriate treatment recommendations. For therapy with curative intent, options may include surgery (e.g., prostatectomy) or radiotherapy. Prostatectomy refers to the surgical removal of the prostate gland and surrounding tissues and is typically offered to men in good health who are younger than 70, and favour tumour characteristics which include stage,

PSA, and Gleason's grade (Catalona, W.J. & Bigg, S.W., 1990; Zincke, Bergstralh, Blute, Myers, Barrett, Lieber, Martin, & Oesterling, 1994). For those with larger tumours, higher grade disease, or higher stage disease, examples of options for radiation therapy include: external beam radiotherapy in which high energy X-rays or radioactive particles generated outside the body are focused on the tumour, and brachytherapy, where small radioactive pellets are implanted inside the prostate. Following surgery or radiation treatment, patients' clinical status, and PSA levels are then monitored. Clinical signs, symptoms, a rising PSA, or radiological abnormalities may indicate recurrent disease (Zietman, Coen, Shipley, Willett, & Efirid, 1994). For certain men who have other major health problems, an additional treatment option is "watchful waiting", involving a period of surveillance without active immediate treatment (Chodak, 1994; Whitmore, 1994), which is a reasonable choice in selected cases since prostate cancer can be a slow-growing malignancy.

## 2.2 Androgen-Deprivation Therapy as an Adjunct to Treatment

Though not a curative treatment, hormone therapy is commonly used to slow the growth of existing tumours. Hormone therapy acts by various mechanisms depending on the type of therapy, but serves to lower the serum testosterone level, the hormone responsible for facilitating growth in cancer cells. Original research by Huggins and Hodges (1941) showed that androgens are involved in the growth and differentiation of the normal prostate, and in the pathogenesis of prostate cancer, and that malignant tissue is to a degree androgen dependant. Hormone therapy for men with prostate cancer then consists of androgen-deprivation agents, aimed to suppress testosterone levels. There are several hormonal approaches used to achieve low levels of testosterone, including surgical removal of the testicles (e.g. orchiectomy) to physically eliminate the primary source of androgen in the body and nonsurgical hormone therapies including, Luteinizing Hormone Releasing

Hormone (LHRH) agonists as well as steroidal and non-steroidal antiandrogens. LHRH is used to shut down the hypothalamic-pituitary axis testosterone production, while anti-androgens block the body's ability to use circulating androgen. Currently, androgen deprivation therapy (ADT) consists of either: combined androgen blockade, which refers to the combination of an LHRH agonist or castration with an anti-androgen; or monotherapy (either LHRH, or an anti-androgen).

ADT was originally used to delay clinical progression and palliate symptoms of metastatic disease in men with advanced prostate cancer (Huggins & Hodges, 1941; Huggins, Stevens, & Hodges, 1941). To date, results from randomized trials suggest survival benefits of immediate over delayed hormonal treatment post diagnosis for men with locally advanced and metastatic prostate cancer (The Medical Research Council Prostate Cancer Working Party Investigators Group, 1997; Messing, Manola, Sarosdy, Wilding, Crawford, & Trump, 1999). For men with localized prostate cancer (e.g. tumour characteristics: T3/T4), the addition of ADT for 3 years after external-beam radiation therapy is superior to monotherapy alone (Bolla, et al., 1997). At present, many men receive hormonal therapy both during and after treatment for prostate cancer. The increase in use of hormone therapy at all stages of prostate cancer has raised concerns about potential adverse side-effects (Gomella, 2007). There is controversy in the continued use of ADT, for asymptomatic men with a rising PSA in metastatic disease, specifically with regard to whether sufficient evidence exists to support use of ADT when considering the unpleasant side-effects, uncertain survival benefits, and cost-effectiveness of long-term hormone treatment (Fowler, et al., 2002; Talcott, 2002).

A clear goal of any treatment for prostate cancer is to maximize life expectancy. However, longer life expectancies and earlier diagnosis of this disease has increased

patients' and physician's attention toward quality of life concerns associated with the various treatments. The various treatment options for prostate cancer each confer a unique impact on health-related quality of life. As a result, decision-making about treatment usually involves consideration of which aspects of quality of life will be affected.

### 2.3 Health-Related Quality of Life in Prostate Cancer

#### **2.3.1 Localized Versus Metastatic Prostate Cancer**

Health-Related Quality of Life (HRQoL) is a multidimensional construct that typically includes four broad domains: physical, functional, social, and emotional well-being (Cella & Tulsky, 1993). HRQoL is assessed by measuring the extent to which these domains are affected by a medical condition or treatment (Cella, 1995). As recommended with other medical groups, the assessment of HRQoL in men with prostate cancer involves assessment of disease-specific domains including, urinary, bowel, and sexual functioning, as well as assessment of general well-being.

It is clear that men with metastatic prostate cancer experience worse HRQoL as a result of treatment or disease compared to men of similar age without cancer (Litwin, Hays, Fink, Ganz, Leake, Leach, & Brook, 1995; Eton & Lepore, 2002); whereas this is less true of men with localized disease. Among men with metastatic disease, numerous deficits in general HRQoL appear to be more distressing than deficits in disease-specific domains. For example, men with metastatic prostate cancer report more bodily pain, less vitality/energy, and poorer social and emotional well-being, irrespective of treatment type received than men in remission (Albertsen, Aaronson, Muller, Keller, & Ware, 1997). In contrast, men with localized disease report deficits in disease-specific domains like urinary, sexual, and bowel function, while initial deficits in general HRQoL such as a loss of energy, and some difficulty performing daily activities diminish over time (Litwin, McGuigan, Shpall, &

Dhanani, 1999; Lubeck, Litwin, Henning, Stoddard, Flanders, & Carroll, 1999). In a longitudinal comparison of men with localized prostate cancer and age-matched controls, Hoffman and colleagues (2004) found that while men with localized prostate cancer reported significant five-year declines in disease-specific dimensions of quality of life, there was no difference in general HRQoL.

For the most part, this pattern of findings (minimal long-term general deficits in HRQoL) is found across the various types of treatment for localized prostate cancer (Miller, Sanda, Dunn, et al., 2005, Hoffman et al., 2004, Potosky, Legler, Albertsen, Stanford, Gilliland, Hamilton, Eley, Stephenson, & Harlan, 2000), although there are a few exceptions which suggest slightly more favourable outcomes for men undergoing prostatectomy versus external beam radiotherapy (Bacon, Giovannucci, Testa, & Kawachi, 2001; Davis, Kuban, Lynch, & Schellhammer, 2001). In the sample in Bacon et al., (2001), although some differences in HRQoL emerged, mood symptoms did not differ across treatment type. Similarly, in a sample of Australian men, mood (Medical Outcomes Study Health Survey SF-36), did not differ between men receiving radical prostatectomy and men receiving external-beam radiation, nor did men with prostate cancer differ significantly from healthy controls two years post treatment (Newton, Burney, Frydenberg, Millar, & Ng, 2007).

Given the many challenges faced by men with advanced disease, including facing an uncertain outcome regarding survival, the present study focused on men treated for localized prostate cancer.

### **2.3.2 Disease-Specific Health-Related Quality of Life in Men with Localized Prostate Cancer**

Urinary and bowel functioning are two disease-specific aspects of HRQoL affected by both surgery and radiotherapy with localized prostate cancer. Complications may include

urinary incontinence, urethral stricture, fecal incontinence (Bishoff, Motley, Optenberg, Stein, Moon, Browning, Sabanegh, Foley, & Thompson, 1998; Litwin et al., 1995). Bowel problems, while not as common as urinary problems, may be more prevalent in men treated with radiation (e.g. external beam radiotherapy) compared with radical prostatectomy (Potosky, et al., 2000; Shrader-Bogen, Kjellberg, McPherson, & Murray, 1997). General declines in urinary and bowel dysfunction have been shown to dissipate over time (Lubeck et al., 1999). Even so, results from one longitudinal study (n=1291; age range: 39-79), found that only 39% reported complete urinary control a year and a half post surgery (Stanford, Feng, Hamilton, Gilliland, Stephenson, Eley, Albertsen, Harlan, & Potosky, 2000). As noted by Hoffman and colleagues (2004), men with localized prostate cancer suffer from significant declines in urinary functioning up to five years post treatment compared with matched controls, however, no difference in bowel functioning was found.

Prostatectomy and radiation treatment can cause damage to the complex of nerves, blood vessels, and pelvic muscles responsible for erections accounting, in part, for erectile dysfunction (Hassouna & Heaton, 1999; Robinson, Dufour, & Fung, 1997). It is important to distinguish erectile dysfunction, which refers to the persistent inability to attain and maintain penile erection sufficient for intercourse, from sexual dysfunction which is a broad term that can also include problems with desire, or a partner's sexual response (Hassouna, & Heaton, 1999). Findings indicate that problems in these other dimensions (e.g., sexual desire) can be as distressing as difficulties with erectile functioning (Schover, Fouladi, Warneke, Neese, Klein, Zippe, & Kupelian, 2002; Dahn, Penedo, Gonzalez, Esquiabro, Antoni, Roos, & Schneiderman, 2004). In particular, the combination of high sexual desire and low sexual functioning results in shown to result in worse QoL (Dahn et al., 2004).

The impact of treatment on sexual functioning is an important consideration when making treatment choices. In one study, 27% reported this was a minor influence on their treatment choices, while 24% reported this was a major influence on their treatment choices (Schover, et. al., 2002). The specific side-effect of chronic erectile dysfunction is more common following radical prostatectomy in comparison with radiotherapy (Potosky, Davis, Hoffman, Stanford, Stephenson, Penson, & Harlan, 2004), with some improvement noted with nerve-sparing surgery if indicated. However, diminished sexual function has been reported by a large proportion of men in all treatment types: surgery, 50%; external beam radiotherapy, 46%; and brachytherapy, 60%, compared with 16% within a community sample control group (Wei, Dunn, Litwin, Sandler, & Sanda, 2002). In a sample of men undergoing several treatment modalities (prostatectomy, brachytherapy, radiotherapy) Schover and colleagues (2002) showed that 85% of men reported a problem with erectile dysfunction, 45% of men reported low sexual desire, and 65% reported a problem with orgasms within the past 6 months. In this sample, approximately 60% of men were distressed about their erectile and sexual desire problems. Thus far, findings indicate that younger men and men with preserved erectile functioning prior to therapy may be more likely to preserve sexual functioning after treatment (Robinson, Dufour, & Fung, 1997; Schover et al., 2002).

While many men in Canada will experience some loss of erectile functioning as a normal consequence of aging (Feldman, Goldstein, Hatzichristou, Krane, & McKinlay, 1994), in general, men with prostate cancer must adjust to more significant declines in sexual functioning. For example, in one longitudinal study, both men with localized prostate cancer and age and ethnicity matched controls reported a decline in erectile functioning over

a five-year period, however, men with prostate cancer reported worse declines in sexual desire, frequency of sexual activity, and erection quality at follow-up (Hoffman et al., 2004).

### **2.3.3. Androgen Deprivation Therapy and Health-Related Quality of Life**

There are several additional deficits in general, as well as problems in disease-specific HRQoL, noted in men receiving hormonal therapy. ADT may cause several temporary or long-term physical changes such as fatigue, functional decline, increased body fat, and loss of lean body tissue (Cleary, Morrissey, & Oster, 1995; Cassileth, Soloway, Vogelzang, Chou, Schellhammer, Seidmon, & Kennealey, 1992). Other side effects may include: impotence, loss of sexual desire, less intense orgasms, low energy, hot flashes, nausea, diarrhea, breast tenderness, depressive symptoms, and potentially osteoporosis (Daniell, 1997; Denis & Griffiths, 2000; Smith, Finkelstein, McGovern, Zietman, Fallon, Schoenfeld & Kantoff, 2002). Although aging men can experience some of the above effects as a result of natural reductions in testosterone, these side-effects are accelerated in men treated with ADT for prostate cancer (Thompson, Shanfelt, & Loprinzi, 2003). Possibly as a result of reduced physical strength and increased fatigue, men undergoing ADT for greater than 6 months have been shown to have reduced walking speed (i.e., 0.18m/s slower) in comparison with control subjects (Clay, Perara, Wagner, Miller, Nelson, & Greenspan, 2007). As many as 50-80% of men receiving hormone therapy for prostate cancer report hot flashes, a sudden perceived increase in temperature, reddening of the skin, and sweating or chills (Engstrom, 2005; Karling, Hammar, & Varenhorst, 1994). Gynecomastia, or breast growth, results from the increase in estrogen-to-androgen ratio after hormone ablation therapy, and has been shown to occur in 13 - 40% of cases, with slightly higher incidence associated with anti-androgens (Hedlund, 2000). These changes are reversible initially,

however if gynecomastia is present for approximately one year, more permanent tissue changes can occur (Hedlund, 2000).

Not surprisingly, men receiving ADT report more physical discomfort lasting one year past diagnosis, in comparison with non-androgen deprived men (Potosky, Reeve, Clegg, Hoffman, Stephenson, Albertsen, Gilliland, & Stanford, 2002). Men receiving ADT have reported worse HRQoL scores for physical function, general health, and the physical health component summary, using the Medical Outcomes Study Health Survey (Dacal, Sereika, & Greenspan, 2006). Worse fatigue and emotional distress have been observed in men who opt for early versus delayed treatment for non-metastatic prostate cancer (Herr & O'Sullivan, 2000). Similarly, Fowler and colleagues (2002) observed several deficits in HRQoL, including worse perceived mental health, general health, and activity, worry about cancer and dying, and low energy in men treated with ADT and radical prostatectomy compared to men who received surgery alone. ADT also appears to exacerbate sexual difficulties associated with surgery and radiation such that men receiving ADT report lower sexual desire and ability to have intercourse (Hollenbeck, Dunn, Wei, McLaughlin, Han, & Sanda 2002; Fowler, McNaughton Collins, Corkery, Elliot, & Barry, 2002). Fowler and colleagues (2002) further observed that androgen-deprived men reported significantly more body image concerns in comparison with men who were not non-androgen deprived. Others have observed additional deficits in self-image in androgen deprived men (Lubeck, Grossfeld, & Carroll, 2001).

Despite the aversive side-effects of ADT, Potosky and colleagues (2002) showed that men who chose hormone therapy also reported more satisfaction with their treatment decision than men undergoing radiation alone. Satisfaction with treatment choices and knowledge of improved survival associated with hormone therapy may result in some

improvements in quality of life, although this has not been studied. In addition, several of the above noted differences in HRQoL were considered negligible after controlling for comorbidities (Dacal et al., 2006; Litwin, et. al., 1999). This suggests that many men with prostate cancer are starting out with a lower baseline level of HRQoL, which may be due to the effects of aging and/or other disease processes.

In summary, findings suggest few differences in general quality of life between men with and without localized prostate cancer. However, differences are observed in disease-specific indices of quality of life, such as sexual and urinary functioning, and bodily changes associated with ADT for those men choosing this treatment approach, and these differences appear to persist over time.

#### **2.3.4 Body Image and Quality of Life in Men with Prostate Cancer**

It has been proposed that body image is an important aspect of quality of life that has received insufficient attention in research in medical populations (Pruzinsky & Cash, 2002), including cancer patients (White, 2002). The research on body image and cancer has been largely atheoretical, of poor quality, and until recently, more focused on women with breast cancer (White, 2002). Although limited by the use of unvalidated measures, preliminary research suggests that men with prostate cancer may be at risk of body image concerns, and that such concerns may impact patients' overall quality of life, and well-being. In their study of quality of life in men following prostatectomy, Perez and colleagues (2002) found that body image concerns made a significant contribution to overall emotional well being and general quality of life after controlling for treatment-related variables (e.g. type of surgery, time since surgery, and age), and additional patient variables (e.g. urinary incontinence, and activities of daily living). Moreover, these concerns contributed to a greater proportion of variance in overall well being and quality of life than sexual functioning, including

frequency of sexual activity and desire, and were present up to 2 years post treatment (Perez et al., 2002). The specific symptom of gynecomastia arising from ADT is expected to result in body image concerns (Di Lorenzo, Autorino, Perdonà, De Placido, 2005). In a qualitative study of men with advanced prostate cancer, participants reported feelings of disgust at the feminization of their bodies, including gynecomastia, resulting from their hormone treatment (Navon & Morag, 2003). As noted above, it has been suggested that men treated with androgen deprivation therapy may be at greater risk of body image disturbance, although these concerns were also reported in men undergoing prostatectomy alone (Fowler, et al., 2000). Prior to discussing the possible links between prostate cancer and its treatment and body image concerns, a definition of body image, current methodological limitations, and a review of possible factors contributing to body image concerns in men will be considered.

### **3.0 Body Image**

#### **3.1 Definition of Body Image**

Up until recently, there has been considerable confusion in the literature with respect to the definition of the body image construct and its measurement (Cash & Pruzinsky, 2002). Body image was originally defined as “the picture of our own body which we form in our own mind” (Schilder, 1950, p.11). This definition of body image was then extended to include both perceptual and subjective components, for example, the picture of our body shape, size, and form in our minds, and our feelings and attitudes regarding these bodily attributes (Cash & Pruzinsky, 2002). Despite eventual agreement that the construct of body image is multidimensional in nature, including both perceptual and attitudinal dimensions, there continues to be variability in the definition of body image used in the literature (Cash & Pruzinsky, 2002). Thompson (1996) noted at least 14 different terms used to denote certain aspects or dimensions of body image, illustrating the confusion around its definition,

and as a result, the difficulty comparing findings across studies. For example, researchers have used the term body image interchangeably with specific components of body image such as satisfaction with weight, and other constructs such as self-image, self-esteem and sexuality (White, 2000). An additional difficulty in the study of body image disturbance has been the focus on clinical populations. Reas and Grilo (2004) note that earlier research on body image focused on the assessment of weight and shape concerns in eating disorders. As a result, currently, there is a paucity of measures to assess body image difficulties in non-clinical populations or those with medical disease.

More recently, researchers have drawn on cognitive-behavioural theory to conceptualize body image. The cognitive-behavioural approach emphasizes three dimensions of body image that may each independently or in combination contribute to body image disturbance: appearance-related cognitions, affect, and behaviour (Cash, 1994). Using this approach it is possible to assess body image in one or more dimensions and along a continuum. For example, an individual may report some dissatisfaction or negative thoughts about appearance, but not indicate sufficient impairments in other dimensions such as persistent distress about appearance, or behaviours that suggest an excessive focus on compensating for appearance or avoiding evaluation of appearance by others, which would be consistent with clinical body image disturbance. Reas & Grilo (2004) conclude that an advantage of using this framework is that it identifies individual factors that maintain or contribute to body image disturbance making this approach applicable across diverse populations.

In keeping with this approach, Thompson (1999) provides the following definition of body image: “a persistent report of dissatisfaction, concern and distress that is related to an aspect of appearance... [and] some degree of impairment in social relations, social activities,

and occupational functioning.... (p.11), highlighting the affective and behavioural dimensions of body image disturbance. In his cognitive-behavioural model of body image disturbance in cancer patients, White (2000) further elaborates on the cognitive elements of body image disturbance, providing the following working definition of a clinically significant body image problem: "A clinically significant body image problem is defined as the existence of a marked discrepancy between the actual or perceived appearance or function of a discrete bodily attribute(s), and an individual's expressed ideal regarding this bodily attribute(s). This discrepancy, by virtue of significant personal investment and association with dysfunctional assumptions about appearance mediates negative emotional and behavioural consequences, which interfere significantly with normal routine, occupational functioning, social functioning, or relationship quality" (p. 189). The requirement of interference in functioning to denote clinical disturbance is consistent with the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2004). The model proposed by White (2000) will be elaborated upon further below.

### 3.2 Cognitive-Behavioural Model of Body Image Concerns in Cancer Patients

In his model, White (2000) draws on cognitive-behavioural theory and self-discrepancy theory to predict who will be at greater risk of body image concerns following cancer treatment. Cognitive and behavioural theories posit that an individual's thoughts or appraisal of events influences his or her affect and behaviour, and that these thoughts emerge from one's most central ideas about the self, or core beliefs (Beck, 1995). According to Beck (1964), core beliefs are formed in childhood and early experiences develop them into assumptions about how individuals see themselves, evaluate their behaviour, and view the future. With respect to body image, developmental influences such as peer and familial

communication or teasing about weight may affect an individual's body image experience, and make appearance overly salient to self-worth. Core beliefs make up the specific content of cognitive structures in the mind called schemas. Schemas are overarching cognitive structures that are used for screening, coding, and evaluating stimuli in the environment, allowing individuals to categorize and interpret experiences in a meaningful way (Beck, 1995).

Schemas are activated by important events or stressors such as illness. For example, a change in appearance from illness or treatment will activate appearance-related schemas, leading to a number of automatic thoughts or assumptions. Those whose self-evaluation is unduly influenced by appearance will perceive, and interpret information encountered in their environment in a biased way, exhibiting negative or distorted automatic thoughts (e.g. "Everyone is staring at my surgical scar", "My partner is staring at my scar, and is thus not attracted to me"). Distortions in these automatic thoughts or assumptions can, in turn, lead to negative emotions or maladaptive behaviours.

White (2000) also borrows from self-discrepancy theory, which suggests that individuals are motivated to match their ideal and actual selves (Higgins, 1987). With respect to body image, negative evaluations of appearance arise when there is a discrepancy between one's ideal and perceived current shape, and that the size of the discrepancy influences the intensity of resultant distress. Cancer and its treatment can cause alterations to appearance, whether real or perceived, which can lead to an actual/ideal self-discrepancy. However, it has been suggested that this discrepancy will only result in distress to the extent that the individual is invested in bodily attributes discrepant from one's ideal (Cash & Szymanski, 1995). For example, an individual receiving ADT for prostate cancer may be

dissatisfied with loss of lean muscle mass only to the extent that he is invested in having a lean, muscular shape.

In combining these two theoretical approaches, White (2000) suggests that appearance-related schemas influence investment in overall and individual aspects of appearance, and evaluation of appearance as discrepant from one's ideal self. These negative thoughts are associated with greater distress or dissatisfaction in situations where one's appearance is evaluated, and can lead to compensatory behaviours to improve appearance or avoidance behaviours. Specifically, in his model, White (2000) suggests a moderating influence of investment in appearance on body image concerns for cancer patients, such that negative thoughts (e.g., actual-ideal self-discrepancy) about aspects of the body altered by disease or treatment will be positively associated with situational distress to the extent that they are invested in those aspects of their appearance.

Few studies have examined the relationships between investment in appearance, body dissatisfaction, and associated affect or behaviour among older men, and no study to date has examined these relationships in men with prostate cancer. Muth and Cash (1997) examined these relationships in a sample of college-aged men and showed that investment in appearance (e.g., assessed through degree of attentiveness to appearance and frequency of behaviours aimed to improve appearance) and negative evaluation of appearance (self-ideal self-discrepancy) explained 59% of the variance in self-reported body image distress. Further, they showed that body-image-related distress was found to be a linear combination of investment in appearance and evaluation of appearance. This result was derived from a regression analysis, in which two factors derived from principal components analysis (which were conceptually linked to two facets of body image: evaluation/affect and cognitive investment in appearance), were included as potential predictors of body image distress.

These findings provide indirect support for the cognitive-behavioural model of body image suggested by White (2000).

While the cognitive-behavioural model emphasizes the role of investment in appearance in body image disturbance, it is not clear to what extent older men endorse such an investment. In addition, it is not clear to what extent investment in appearance exerts an influence on body image concerns in comparison with disease, age-related, or other demographic factors. While the model proposed by White (2000) emphasizes cognitive factors, there are several other possible aspects of bodily functioning that may be relevant in the study of male body image, and may be particularly relevant to men being treated for prostate cancer. The existing literature on male body image was explored to determine other possible predictors of male body image concerns.

### 3.3 Body Image Concerns in Men

Although the focus on appearance and the importance placed on body weight and shape in North American culture is expected to also influence men, considerably more research has examined body image in women. Even less is known about the impact of aging on body image in men. Emerging findings suggest that body image concerns are reported in older men, and that these concerns can affect quality of life. In a qualitative study using a sample of middle-aged women and men, findings suggest that while tolerant of weight gain in others, both older men and women describe low mood as a result of gaining weight (Ziebland, Robertson, Jay, & Neil, 2002). Further, a recent study using a sample of 2155 Dutch men, aged 20-59, demonstrated that *perceived* overweight was related to reduced scores for general health and vitality on a measure of quality of life (the RAND-36) while actual measured overweight (BMI) did not correlate with quality of life after controlling for age, education, and perceived overweight (Burns, Tijhuis, & Seidell, 2001). In a recent

review of college-aged men and younger, it was noted that men do report body dissatisfaction with their shape and weight (McCabe & Ricciardelli, 2004), and body image disturbance is associated with adverse effects on psychological well being, such as poor self-esteem (Lerner, Karabenick, & Stuart, 1973), social anxiety (Cash & Smith, 1982), and self-consciousness and depressive symptoms (Thompson, 1990).

### 3.4. Factors Contributing to Body Image in Men

#### **3.4.1 Body Mass Index**

There is some evidence that actual weight influences body image concerns among younger men. Specifically, body mass index (BMI) provides a measure of body fat based on height and weight ( $\text{kg}/\text{m}^2$ ) that is often used to determine the relationship between shape and body satisfaction. Among college-aged men, Muth and Cash (1997) showed a curvilinear relationship between body dissatisfaction and weight, such that men with a high or low BMI demonstrated the highest levels of body dissatisfaction. McCabe & Ricciardelli, (2004) suggest that among younger men, lower BMI is associated with wanting to be a bigger size, whereas high BMI is associated with desire to be slimmer. However, in one study of college-aged men no relationship was found between BMI and body image disturbance (Hausenblas & Fallon, 2002). In contrast, the research on body image disturbance in women suggests a linear relationship between weight gain and body image concerns, such that women tend to report more body dissatisfaction as their weight increases.

Some research suggests that older men are less concerned about their weight than their younger counterparts. Several studies show that adult men who are overweight tend to under-assess their weight status (Kuchler & Variyam, 2003; Paeratakul, White, Williamson, Ryan, & Bray, 2002; Crawford & Campbell, 1999). For example, data from a National Health and Nutrition Examination Survey, using a representative sample of the U.S.

population, show that more overweight and obese men perceive their weight as normal than overweight or obese women, and that in particular men over age 65 more frequently under assess their weight status (Kuchler & Variyam, 2003). That older men who are overweight tend to see themselves as normal, suggests little body dissatisfaction. In a study of Scottish men aged 35-64 years (n=1105), approximately a quarter of overweight men considered themselves to be an appropriate weight, while 25% of men who were normal weight were dissatisfied with their shape (Ziebland, Thorogood, Fuller, & Muir, 1996). Other findings show that both men and women define an ideal BMI as higher than current health definitions with increasing age (Crawford & Campbell, 1999). Of interest in this study, men of normal weight, but whose BMI exceeded their definition of overweight were more likely to report actively trying to lose weight or avoid weight gain compared to men whose BMI fell beneath their definition of overweight (Crawford & Campbell, 1999). Thus, perceptions of overweight rather than actual weight may lead to weight control behaviours. Taken together, these findings suggest that actual weight (e.g. BMI) may not make a significant contribution to body image concerns in older men, perhaps due to expectations of weight gain with age, or misperceptions of healthy weight.

#### **3.4.2. Sociocultural Ideals**

It is unclear to what extent concern about appearance impacts on body image in older men. Much research, at least among younger males, suggests that men typically strive for a lean, muscular shape, in line with the sociocultural ideal for males (McCabe & Ricciardelli, 2004; Pope, Gruber, Mangweth, Bureau, deCol, Jouvent, & Hudson, 2000). For example, Pope and colleagues (2000) assessed body image preferences in three countries, and found that men, aged 20-24, preferred a shape that was on average 13kg more muscular than their current shape. While some have suggested that it is specifically men who invest in this ideal

(e.g. weightlifters) who are most likely to experience body dissatisfaction (Blouin & Goldfield, 1995), others note an increase in sociocultural pressures on men's image to be lean and muscular, which may lead to increased body image concerns in men (Grogan, 1999). In one experiment, Leit, Gray, & Pope, (2002) showed an increase in body dissatisfaction scores among college-aged men following a brief presentation of media images portraying muscular men. This suggests an influence of media exposure on body dissatisfaction in younger men.

Results from qualitative work similarly suggest that men do endorse an ideal body type, one that is of mesomorphic shape (lean and muscular) (Adams, Turner, & Bucks, 2005; Grogan & Richards, 2002). Males in these studies (ranging in age from 18-35) described feeling that this ideal arises from exposure to media ideals, or from historical and evolutionary assumptions of dominance, power, and masculinity associated with this shape. Findings also reveal that while men may experience body image concerns, the current cultural environment does not support men expressing such concerns. In studies using semi-structured interviews and focus group methodology, being concerned about one's appearance and verbalizing these concerns was viewed as obsessive, or even effeminate (Adams, Turner, & Bucks, 2005; Grogan & Richards, 2002).

Older men may similarly desire a more muscular shape as they experience loss of muscle tone with age. Ziebland et al., (2002) examined perceptions of body image and weight change in middle age (35-55 years) found that a quarter of men (n=8/34) described wanting to gain weight to develop a more muscular physique, while nearly half described having tried to lose weight in recent years. Figure rating studies suggest indirectly that men want to lose weight, or to be lean (Lamb, Jackson, Casiday, & Priest, 1993; Rozin & Fallon, 1988). Whitbourne & Skultety (2002) hypothesize that the current cohort of older adults may

be less concerned about appearance than middle aged adults, since this latter generation has been more exposed to, if not participant in, increasing societal pressure to look younger, and thinner. This would suggest that a desire to meet socio-cultural ideals of appearance may be a more relevant issue for the men and women that follow the cohort studied in this sample. However, older men may desire to lose weight and to increase their fitness for the associated health benefits rather than to improve appearance per se (Ziebland et al., 2002). In particular, views regarding the importance of a lean shape for optimal health may become increasingly salient with age and contribute to desire for a leaner shape.

### **3.4.3. Physical Functioning and Exercise**

Several findings from qualitative research suggest that men pull in aspects of how their body functions into their body image, and that limitations in physical functioning due to aging or disease will influence body image in older men. Men must adapt to the negative effects of aging on body competence and health, such as decreased strength, mobility, and endurance, and it has been suggested these changes may be more relevant to body image, than the negative effects of aging on appearance (Ogden, 1992, Whitbourne & Skultety, 2002). In a qualitative study of body image and aging, findings revealed that men indicated that they tend to view their bodies holistically, while women focus their attention to individual parts of their body (Halliwal & Dittmar, 2003). Findings suggested a tendency for men and women to construe the importance of their bodies differently: whereas men tended to focus on functionality, women tended to focus on display. Men of all ages in this study (22 to 65) described the body as important because of what it allows a person to do, and expressed concerns about becoming less active or able due to age. In addition, these men (n=20) viewed loss of health or ability as more important than appearance changes associated with older age. This focus on the body in terms of what it can no longer “do” was

also raised in another qualitative study of men's experience with retirement (Drummond, 2003). The observed relationship between exercise behaviour and body image also supports the idea that men's body image is influenced by function. For example, in a sample of college-aged men, those who reported greater exercise behaviour also reported higher levels of body satisfaction (Hausenblas & Fallon, 2002).

The ability to carry out activities of daily living plays a significant role in determining emotional well being and overall quality of life among older men in general, and among men with prostate cancer (Perez et al., 2002). Compared to disease-free men, men with prostate cancer are expected to experience worse functional decline than is expected with increasing age, particularly among those undergoing ADT (Clay et al., 2007). Results from a randomized controlled trial of men with prostate cancer who were androgen deprived showed that resistance training significantly reduced fatigue (e.g. reduced interference from fatigue on activities and roles in daily living), improved muscle fitness, and improved overall HRQoL (Segal et al., 2003). The improved muscle fitness reflected actual improvements in physical functioning, such as the ability to do more repetitions of leg and chest press, but did not affect actual appearance since there were no differences in BMI or waist circumference between men in the exercise and control groups. Therefore, the benefits in quality of life can be attributed to the improvements in physical functioning, more so than improvement in appearance. While not tested, improving strength, levels of fatigue, and overall physical functioning from exercise may improve body image in these men as well. Overall, experiencing barriers to carrying out everyday activities or one's typical exercise routine, as a result of the aging process may lead to worse body dissatisfaction in older men. It is expected that the additional limitations to functioning

conferred by disease and its treatment will lead to worse body image in men with prostate cancer.

#### **3.4.4. Sexual Functioning**

Very little research has been conducted on the relationship between body image and sexual functioning in men. However, as with other physical limitations that may result from the natural aging process; diminished sexual functioning may also contribute to body image disturbance. The literature on gender socialization and male sexuality suggests that social and cultural forces shape men's experiences of sexuality and sets a standard for sexual performance. For men, this standard often rests on a narrow definition of sexuality, erectile functioning (Zilbergeld, 1992). Not meeting this standard of performance in turn invalidates one's identification as a man (Zilbergeld, 1992). If men place importance on the ability of their body to perform sexually in terms of their physical identity, difficulties in sexual functioning may lead to worse body image. These men may interpret sporadic but normal declines in erectile function to mean entire loss of potency or sexuality, and may develop negative thoughts about their body as a result.

In addition to cultural influences on men's sexuality, several other psychological factors impact on, and are affected by sexual functioning, including, the quality of one's relationship, emotional well-being, previous sexual abuse or trauma, body image, low self-esteem, poor communication, and stresses of daily living (Ducharme, 2004). In a qualitative study including prostate cancer patients, Fergus et al., (2002) found that loss of sexual functioning and sexual desire presented a significant challenge to men's experiences of masculinity, which for some resulted in low mood, and a diminished ability to experience pleasure in other aspects of their lives. The effects of sexual functioning difficulties on

quality of life outcomes, such as body image, may be global, or may be context-specific (i.e., during or after intimacy), however, this has not been studied.

Alternatively, body image may impact on sexual functioning. Perceived physical attractiveness may increase confidence sexually, whereas concerns about appearance may lead to a diminished ability to feel satisfied, or to satisfy a partner. It is hypothesized that men's appeal sexually is more likely associated with non-appearance characteristics such as personality, attentiveness, and sexual skill (Wiederman, 2002). However, in a sample of college-aged men, Meanna & Nuninck (2005) studied the nature of cognitive distractions during sexual activity and found that distraction about performance was predicted in part, by negative body image. In another study of the relationships between body image and sexuality at different stages in the lifespan, Davison & McCabe (2005) showed that body image variables predicted sexual self-efficacy, sexual satisfaction, and low sexual optimism after controlling for self-esteem, depression, anxiety, and BMI in middle aged men (age 30-50). Specifically, high body image satisfaction uniquely accounted for variance in these sexual outcomes. Of interest, these relationships were not found in the younger or elderly men in the sample. Although limited by small sample size, the findings suggest that middle-age is a particularly relevant period when body image and sexual functioning influence each other in men. In general, the relationships between sexual functioning and indices of emotional well-being are likely to be complex. Thus far, the relationships between several aspects of sexuality (e.g., sexual desire, functioning) and body image have been studied in women with breast cancer, (i.e., Fobair, Stewart, Chang, D'Onofio, Banks, & Bloom, 2006), and in men with testicular cancer (Rudberg, Nilsson, & Wikblad, 2000). In these studies, a negative body image is linked with worse functioning.

### 3.5 Body Image, Illness, and Cancer

In a review of body image in the oncology setting, White (2002) suggests that several factors may increase risk of body image concerns, including the impact of treatment on appearance and loss of tissue (e.g., scarring, or disfigurement), the abrupt and permanent nature of the bodily change, pre-existing body image concerns, the extent to which the change in appearance serves as a reminder of disease, and the particular psychological importance of the body part affected by treatment (e.g., prostate). Many cancer patients must adjust to changes in physical appearance, or to prostheses as result of disease or treatment, which likely bears an impact on their body image (Anderson & Johnson, 1994). Among men with testicular cancer, using a testicular prosthesis is associated with improved body image concerns, such that men with prostheses are less concerned when undressing in front of other men (Adshead, Khoubehi, Wood, & Rustin, 2001; Incrocci, Hop, Wijnmaalen, & Slob, 2002). Several studies have examined these relationships among women. For women with breast cancer, breast-conserving surgery in contrast with mastectomy is associated with better body image (Moyer, 1997). When comparing levels of body satisfaction, traumatic stress (defined as intrusive thoughts and avoidant behaviours regarding breast changes), and situational distress (when one's appearance will be evaluated) after treatment for breast cancer, women receiving breast conserving therapy showed the least body image disturbance in comparison with women receiving mastectomy, or mastectomy with reconstruction therapy (Yurek, Farrar, & Andersen, 2000).

In addition to the impact of cancer and its treatment on appearance, Pruzinsky (2002) explains that a critical dimension of body image that is especially relevant to medical populations, is the value placed on body integrity and functioning. For many medical conditions, body image concerns may reflect an underlying sense of diminished body

integrity that accompanies the effects of disease or its treatment. In men treated with orchiectomy and radiotherapy for testicular cancer, half ( $n = 166$ ) felt their body had “changed” as a result of treatment (Incrocci et al., 2002). With regard to body integrity, Yurek and colleagues (2000) showed additional reconstruction surgery following mastectomy resulted in improvement in general thoughts about one’s body, but at a cost of experiencing similar levels of traumatic stress and situational distress as women receiving mastectomy alone. These findings suggest a change in the affective domain of body image related to more “assault” to the body, however, these relationships have not yet been studied among older men. Thus, in addition to physical changes due to treatment or simply aging, body image concerns in cancer patients may reflect a sense of changed body integrity due to illness or its treatment.

### 3.6 Link Between Body Image Concerns and Prostate Cancer

Currently, there is a paucity of research on the prevalence of body image concerns among older men, and among older men with specific medical conditions. Although current research is sparse regarding specific influences on men’s body image in older age, it seems reasonable to suggest a role for concern about appearance, as well as diminished bodily integrity or functioning as a result of aging or illness. If these factors do contribute to body image concerns in men, then there are several reasons to suggest that men with prostate cancer would exhibit worse body image than older men of similar age. The first relates to the various consequences of treatment for prostate cancer on one’s sense of body integrity. For example, in addition to receiving a diagnosis of a serious illness, experiencing disease-specific deficits in urinary and bowel functioning, may contribute to an overall sense of one’s body “falling apart”. Although these symptoms tend to resolve following treatment, men in the present sample will be assessed during treatment, when the majority will be

experiencing such symptoms. These types of symptoms often result in feelings of frustration or shame (Tovian, 2002), which, in turn, may lead men to have a more negative relationship with their bodies.

Additionally, the experience of prostate cancer and its treatment typically also involves other declines in bodily functioning, such as reduced energy associated with RT for some, and significant impairments in sexual functioning for the majority. Should aspects of bodily functioning contribute to men's esteem of their bodies; the experience of treatment for prostate cancer will exacerbate any difficulties in physical or sexual functioning already experienced by men in this age cohort. By the time men are diagnosed with prostate cancer, they are likely to have already experienced declines in their sexual functioning for some time. Thus, men may have developed several assumptions about the meaning of this decline. Sexual functioning has been suggested to be highly relevant to perceived masculinity (Zilbergeld, 1992). If there is a significant relationship between perceived masculinity (the ability to perform or maintain typical male roles) and body image, then it follows that men with prostate cancer would be at greater risk of body dissatisfaction.

In particular, those men who receive ADT may be at particular risk of body image concerns. With respect to physical appearance, if older men consider a lean, muscular shape important, weight gain from ADT may lead to worse body image in prostate cancer patients. In addition to its appearance-related side-effects in terms of weight gain and muscle loss, ADT can confer an additional impact on body integrity and functioning by decreasing overall physical strength, and increasing uncomfortable physical symptoms such as hot flashes, and fatigue. ADT is also linked with several additional specific deficits in HRQoL such as erectile, bowel and urinary functioning, and poorer self-image. Although there are several posited reasons why men with prostate cancer, and particularly those receiving ADT,

would exhibit worse body image concerns than men of similar age, this is the first study to investigate these proposed group differences.

#### **4.0 Present Study**

The present study addressed the following research questions: To what extent are body image concerns endorsed by men with prostate cancer? How do men with prostate cancer compare with men of similar age on current measures of body image? What is the relative impact of body image concerns on quality of life in each of the treatment groups and among controls? In addition, for men with prostate cancer who endorse body image concerns, what factors contribute to such concerns?

A final objective of the present study was to test a model of body image disturbance in men with prostate cancer. While a model of body image disturbance in cancer patients has been proposed (White, 2000), highlighting the role of investment in appearance, it is unclear whether these cognitions significantly influence body image concerns above and beyond demographic variables, and age- or disease-related changes in functioning that may contribute to body image concerns in these men. Therefore, the moderation relationship proposed by White (2000) that investment in appearance moderates the relationship between negative evaluation of appearance (altered by disease or treatment) and body image distress was examined after demonstrating the predictive value of investment in appearance in body image concerns among men with prostate cancer.

#### *A Priori Hypotheses*

A first hypothesis tested was that men with prostate cancer would differ significantly from age-matched controls on measures of body image concerns. In light of research findings suggesting that men receiving ADT report more body image concerns than non-androgen deprived men with prostate cancer (Fowler, 2002), it was hypothesized that men

with prostate cancer receiving ADT would exhibit more body image concerns, specifically in terms of their evaluation of appearance, and situational distress (e.g. when one's appearance is evaluated by others) than the comparison groups: men with and without prostate cancer. The proportions of men who are appearance-schematic on the ASI-R are not expected to differ across groups.

A second hypothesis proposed was that measures of body image will account for variability in quality of life over and above disease categorization. Based on the presented literature, it is hypothesized that individuals with more body image concerns would endorse worse overall quality of life. Further, it was hypothesized that measures of body image would account for variability in quality of life differently for each study group. Given the impact of the side-effects of ADT on body shape and functioning, it was hypothesized that the relationship between body image concerns and quality of life would be most salient in men in the ADT group relative to the comparison groups.

A third hypothesis tested was that age, BMI, as well as aspects of physical functioning and sexual functioning (affected by treatment), would contribute to body image disturbance in men with prostate cancer. Specifically, it was expected that age would be negatively associated with body image concerns such that younger men would report more body image concerns. Limitations in physical functioning (e.g. perceived poor physical health; minimal exercise) and sexual functioning (e.g. worse functioning and bother) would also be positively associated with body image concerns in men with prostate cancer. It was hypothesized that a cognitive measure of investment in appearance would be positively associated with body image concerns in this population. Finally, it was further hypothesized that investment in appearance would significantly account for variance in body image

concerns above and beyond that accounted for by demographic and aspects of bodily functioning affected by treatment.

A fourth hypothesis tested was a cognitive-behavioural model of body image disturbance in cancer patients proposed by White (2000). It was hypothesized that investment in appearance, and body dissatisfaction, would be positively associated with distress in situations when appearance is evaluated. It was further hypothesized that the interaction of investment in appearance and body evaluation would significantly account for variance above and beyond that predicted by these variables alone in their association with body image distress.

#### *Additional Analyses*

An additional post hoc analysis was conducted focusing on predictors of body satisfaction. From the literature, it is unclear whether the same predictors relevant to body image concerns, are similarly important to body satisfaction in older men. Addressing those factors related to body dissatisfaction may not be sufficient to cause improvements in body esteem. In order to develop a better understanding of what factors are important in terms of building men's body image or esteem, it would be important to determine which factors contribute to body satisfaction. Therefore, demographic variables, as well as aspects of bodily functioning, and cognition (investment in appearance) were also explored in terms of their associations with body satisfaction.

This study is making an original contribution to the literature on body image, and quality of life in men with prostate cancer. Previous research on body image concerns in older men is limited, as is the extent and impact of these concerns among men with prostate cancer. This is the first study to compare body image concerns in men with prostate cancer and men without disease, which will address the question of whether these concerns are

particularly relevant to this population. This study also addresses some of the gaps in the literature regarding measurement of body image concerns by using standardized measures of body image, and by combining global and disease-specific measures. A further contribution of this research to the literature was the investigation into the relative importance of cognitive factors and other suggested predictors of body image among men with prostate cancer.

## Methods

### **1.0 Design**

The main hypotheses for this study were tested using a cross-sectional design. The proposed study was reviewed by the Ottawa Hospital Research Ethics Board, as well as the Kingston General Hospital/ Queen's University Research Ethics Board for ethics approval prior to initiation of the study (see Appendix A).

### **2.0 Participants**

An a priori power analysis suggested that, in order to detect a medium effect size maintaining a .05 alpha level and a power of .80, 52 men per group were necessary (Cohen, 1992). A medium effect size was hypothesized as this is consistent with findings of previous research (Perez et al., 2002; Schrover et al., 2002). For the proposed multiple regression analyses, a sample size of 122 was required in order to have sufficient power to detect effects (Tabachnik & Fidell, 2001).

In total, 121 men diagnosed with localized prostate cancer were approached to participate in the study, of which 96 agreed to participate: 55 men receiving ADT in addition to radiation therapy, and 41 men receiving radiation therapy only. Recruitment of men receiving only radiation therapy was more challenging, and may be due to a number of reasons, including: increased knowledge among patients about the survival benefits of ADT and thus greater uptake, current research at TOH investigating the effects of timing of ADT (pre- and during radiation), as well as possibly more men diagnosed with tumour characteristics that favour ADT during the study period.

Approximately 20% of men diagnosed with prostate cancer that were approached to participate in the study refused, or declined to return the mailed questionnaire package. Only two men agreed to complete a refusal questionnaire, and cited insufficient time and

participation in other research projects as reasons to decline participation in the present study.

A total of 56 control subjects were recruited from general practitioner offices, at a local community centre, through a community paper, and through an on-line and print version of a senior recreational paper (e.g., "50 plus"). It was not possible to determine a response rate for participants in the control group given the uncertain number of people who viewed these advertisements.

Therefore the final sample consisted of 152 participants, including men with prostate cancer receiving androgen deprivation therapy (ADT;  $n=55$ ), men with prostate cancer receiving only radiation (RT;  $n=41$ ), and healthy men in the community (CG;  $n=56$ ).

Participants diagnosed with localized prostate cancer were divided into two groups: men receiving androgen deprivation therapy in addition to radiation therapy (ADT), and men receiving radiation therapy only for localized prostate cancer (RT), based on information contained in their medical charts. General inclusion criteria for all participants included being functional in English (i.e., able to complete the assessment battery), and no previous history of another cancer. Men in the ADT group were to be in receipt of hormone therapy (combined androgen blockade, orchiectomy, or luteinizing hormone-releasing hormone (LHRH) agonist with a nonsteroidal antiandrogen, or monotherapy) for at least 3 months. This time period is considered sufficient to allow for the side-effects of ADT to develop (Thompson et al., 2003). Men receiving salvage-radiation following a previous prostatectomy were also included in the present study. Based on a recent study of Japanese men, the experience of salvage radiation post prostatectomy due to disease recurrence is not expected to result in worse HRQoL outcomes (Namiki, Saito, Tochigi, Ioritani, Terai, & Arai, 2007).

Although it would have been ideal to age-match men in the three groups prior to examining group differences, the smaller sample size in the RT group would have meant an overall sample size of 41 per group, which would have limited the power to detect group comparisons. As such, age was included as a covariate.

Exclusion criteria for all participants included the presence of an imminent life-threatening condition (e.g., renal failure, significant cardiovascular illness), given the gravity of these conditions, and/or the presence of severe psychopathology (i.e., psychosis) or dementia, which would have precluded their ability to complete the questionnaire. Participants in the comparison group were excluded if they presented with a previous history of any cancer.

### **3.0 Procedure**

Oncologists at the Ottawa Hospital Integrated Cancer Program were informed about the purpose and nature of the study, as well as the specific inclusion and exclusion criteria for patients. Treating physicians approached patients diagnosed with localized prostate cancer during the study period who met the study inclusion criteria prior to the initiation of their treatment. Interested men were asked to review a consent form (see The Patient Information and Consent Form, Appendix B), which described the purpose of this study. Patients who agreed to participate in the study signed the consent form, which indicated their consent to be mailed a questionnaire package and to receive a telephone call by the investigator in which further details about the study were provided. All men who were identified by physicians as eligible for the study were phoned by the investigator. During the phone call, the patient's mailing address was confirmed, and he was told that he would receive a package in the mail approximately mid-way to toward the end of his radiation treatment. The package contained: (a) an introductory letter to participants, thanking them

for their involvement in the study and instructing them to mail the completed package to the investigator, (b) a copy of the Patient Information and Consent Form for their records (c) the questionnaires, and (d) a stamped envelope with a return address. It was made clear to patients that participation in the study was voluntary, and that the decision to participate would in no way affect their medical care. Attempts to minimize the possibility of coercion using this recruitment procedure included the opportunity to decline participation: (1) when first approached by the oncologist, (2) after reading the Patient Information Letter and Consent Form, (3) during the phone call with the investigator, and (4) at the time of receiving the questionnaire package. Patients who did not return their questionnaire package within 2 months received a reminder telephone call by the investigator who requested completion of the questionnaire if the respondents were willing.

Patients who were approached about the study and who refused participation were asked to complete a Refusal Questionnaire. Those who refused to participate and who agreed were mailed a Refusal Questionnaire (see Appendix C).

Participants in the CG group were self-referred in response to advertisements in local general practitioner's offices, a local community centre (RA Centre in Ottawa), through a community paper, and through an on-line and print version of a senior recreational paper (e.g., "50 plus"). Interested participants initiated contact by phone or email with the investigator, who provided a description of the study and obtained the mailing address from those who were interested in the study. Participants in the CG group returned a completed consent form (see Appendix B) with their questionnaire package. A record of the number of questionnaires sent to control participants was kept. Of 158 packages mailed to those who contacted the investigator, 56 were returned.

## **4.0 Measures**

### **4.1 Rationale for measures and subscales**

Several measures were used to assess dissatisfaction and concerns about body image in this sample, since currently no standard scale exists in the literature (Hopwood, Fletcher, Lee, & Al Ghazal, 2001; White, 2000). In addition, Pruzinsky & Cash (2002) suggest using a combination of global and illness-specific measures of body image when assessing body image concerns in medical populations. Measurement reflects a cognitive-behavioural conceptualization of body image. The Body Image Scale (Hopwood et al., 2001), which was developed to accompany clinical trials assessing quality of life in various cancer populations, was used as a disease-specific body image measure. This scale taps into evaluation or thoughts about physical attributes affected by cancer treatment. Measures reflecting both global attributions of attractiveness and evaluation of specific bodily aspects were included. Specifically, the Appearance Evaluation subscale of the Multidimensional Body Self-Relations Questionnaire (MBSRQ) was used as a global measure of one's feelings of general attractiveness, while the Body Areas Satisfaction Scale of the MBSRQ was used to determine ratings of satisfaction with specific body areas. Participants were also presented with a range of figural silhouettes in order to assess men's ideal or preferred body shape, as well as ideal-self/actual-self discrepancy, another proposed measure of evaluation of one's body. The Situational Inventory of Body Image Dysphoria-Short Form (SIBID-S) was used to assess affect, specifically, the frequency of negative feelings about appearance in everyday life situations. The Appearance Schemas Inventory-Revised (ASI-R) was used to assess cognitive investment in appearance. In this way, three aspects of the cognitive-behavioural conceptualization of body image concerns were addressed: thoughts, situational distress, and schemas.

## 4.2 Questionnaires for Participants

### **4.2.1 Body Image Measures**

*The Body Image Scale (BIS)*. The BIS (Hopwood et al., 2001; see Appendix C), is a 10-item self-report measure of body image change since diagnosis or treatment of cancer. The BIS was designed as a brief screening measure of body image disturbance to complement a quality of life measure developed by the European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Study Group: the EORTC QLQ-C30 (Aaronson et al., 1993). The development of the scale was patient-focused through interviews with cancer patients of a variety of diagnoses (e.g. breast, cervical, colorectal, testicular and lymphoma) and health professionals; however, the authors acknowledge a leaning to an affective-cognitive-behavioural model of body image disturbance, which evolved from the items most frequently generated by patients and health professionals (Hopwood et al., 2001). The scale is applicable to patients with any cancer site or form of cancer treatment. Respondents have four options for rating body image changes since diagnosis or treatment, ranging from “not at all” (score 0), “a little” (score 1), “quite a bit” (score 2), and “very much” (score 3). The ten items are summed, yielding a range of scores from 0-30, such that higher scores reflect greater body image disturbance as a result of cancer or cancer treatment. Psychometric properties of a revised version of the scale, in which items were changed to be consistently negatively phrased, were then obtained from a sample of 682 breast cancer patients. A mean score of 7.64 was obtained, with a SD of 7.22. The authors report a Cronbach’s alpha statistic of 0.93, with item alphas ranging between 0.92 and 0.93. The BIS shows good discriminant validity, as scores distinguished women treated by mastectomy and women receiving conservative surgery in the expected direction. The authors noted an increase in body image concerns over time since treatment (Wilcoxon

$z=-5.08, p<0.001$ ) in a sample of 56 women assessed 2 weeks and 4 months postoperatively, indicating good sensitivity to change. A clinical threshold score or cut-off score for body image disturbance is not yet available. In the present study, one item inquiring about the presence of a scar was removed in accordance with the author's suggestions, given the lack of relevance to this cancer group. Cronbach's alpha for the 9-item scale was .81.

*Body Areas Satisfaction Scale (BASS).* The BASS is an eight-item subscale of the Multidimensional Body-Self Relations Questionnaire (MBSRQ, Cash, 1990). The MBSRQ is a comprehensive 69-item questionnaire assessing body image attitudes, and includes 10 factor scales, as well as additional subscales, including the BASS. On the BASS, participants are asked to rate their degree of satisfaction-dissatisfaction with discrete body features (e.g., weight, upper torso, and face) on a Likert scale anchored at the extremes with 1 (very dissatisfied) to 5 (very satisfied). Accordingly, high scores reflect greater satisfaction with individual body aspects. The BASS has good psychometric properties, with a reported internal consistency of .76, and 1-month stability of .73 (Cash, 1990). Recently, a Cronbach's alpha of .78 was obtained in a mixed sample of male and female undergraduates (Hausenbaus & Fallon, 2002). Cronbach's alpha for the current sample of men with prostate cancer was .82, and .81 for the total sample.

*Appearance Evaluation (AE).* The AE subscale of the MBSRQ (see Appendix C) contains 7 items that assess feelings of general attractiveness. On a five-point scale, participants rate their disagreement-agreement with statements, such as "I like my looks just the way they are", and "Most people would consider me good looking". A mean score of the 7 items are calculated, whereby higher scores reflect a more positive evaluation of overall appearance. A Cronbach's alpha of .88 is reported in a sample of male undergraduates, and

1-month test-re-test reliability is .91 (Cash, 2000). Cronbach's alpha for the current sample of men with prostate cancer was .78, and .77 for the total sample.

*The Appearance Schemas Inventory - Revised Short Form (ASI-R)*. The ASI-R (Cash, 2007; Cash, Melnyk, & Hrabosky, 2004) (see Appendix C), is a 20-item questionnaire that assesses underlying beliefs and assumptions about the importance, meaning, and implications of physical appearance in one's life. Sample items are: "What I look like is an important part of who I am"; "I seldom compare my appearance to that of other people I see". Items are rated on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The mean of the 20 items is calculated to obtain the ASI-R Composite score. Cash and colleagues (2004) reported Cronbach's alpha coefficient of 0.90 for the Composite score from a sample of college-aged males (n=135). In terms of construct validity, these authors found that women scored higher than men on the composite score as expected and that higher overall scores were significantly associated with greater body image dysphoria for each gender (Cash et al., 2004). On a Stroop task, college-aged women who scored above norms on the ASI, showed greater Stroop interference in colour naming appearance versus non-appearance words, indicating selective information processing (Labarge, Cash, & Brown, 1998), demonstrating further construct validity of the ASI. In the present study, Cronbach's alpha was .72 for men with prostate cancer, and .66 for the total sample.

*The Situational Inventory of Body Image Dysphoria – Short Form (SIBID-S)*, Cash, 2002) is a measure of body image related distress (see Appendix C). The SIBID-S inquires about the frequency of negative body image emotions in 20 everyday life situations. Situations include interpersonal interactions, grooming, eating, physical activity, intimacy, and physical self-focus. Participants rate negative appearance-related emotions for each

situation on a 5-point scale ranging from 0 (never) to 4 (always or almost always), with higher scores indicating greater cross-situational body dysphoria. On the scale of 0 to 4, Cash et al., (2002) observed a mean score of 1.17 (SD=0.76) among college-aged men. The SIBID-S has acceptable internal consistency for men (Cronbach's alpha = 0.93,  $n=455$  college-aged men) and for women (Cronbach's alpha = 0.94,  $n=1465$ ), and test-retest reliability over a one-month period of  $r=0.81$  in a sample of 30 men (Cash, 2002). Cash (2002) writes that the SIBID-S is appropriately correlated with investment in physical appearance and body image dissatisfaction in men and women, but it is not meant as a substitute for these measures. For example, Cash (2003) reports a significant positive association of 0.56,  $p<0.001$  with the ASI-R among men. The short-form scale also showed predicted sex differences, such that women tend to report more body image dysphoria in situational contexts than men (Muth & Cash, 1997). A modest correlation has been observed between the original SIBID and social desirability,  $r=-0.22$  (Cash, 1994). The original SIBID has also shown responsiveness (e.g. reductions in scores) to cognitive-behavioural body-image therapy, providing some face validity. In the current sample, Cronbach's alpha was .94 for men with prostate cancer, and .94 for the total sample.

*Figure Rating Scale.* Participants reviewed a set of illustrations of a variety of body shapes used in a qualitative study of weight concerns in a non-clinical, middle-aged sample (Ziebland, et al., 2002). The figures are ordered in terms of increasing body fat on a numbered scale. Participants were asked to choose the figures that best represented their "current shape" and their "desired" shape. The difference (current – desired) was used to indicate perceived discrepancy. These items were contained in the PCS (see Appendix C).

*Body-Image Ideals Questionnaire – Importance subscale (BIIQ).* The BIIQ Importance subscale contains 11-items from the BIQ (Cash & Szymanski, 1995), that asks

participants to rate the importance of various bodily aspects, such as, body proportions, weight, chest size, physical strength, physical coordination, and overall appearance.

Respondents rate the importance of these attributes on a 4-point Likert scale, from “not important” to “very important”. A previous reliability estimate for this subscale among college-aged men was  $\alpha = .81$  (Cash & Szymanski, 1995). For the current sample, Cronbach’s alpha was .86 for men with prostate cancer, and .84 for the entire sample.

#### 4.2.2 Quality of Life Measures

*The Expanded Prostate Cancer Index Composite* (EPIC, see Appendix C). The EPIC (Wei et al., 2000) was used to assess sexual functioning and function-related bother, as well as hormone functioning, and hormone-related bother among men with prostate cancer. The EPIC was developed to assess specific aspects of quality of life relevant to men with prostate cancer that are not captured in other HRQoL instruments used with this population. The EPIC is a modification of the University of California - Los Angeles Prostate Cancer Index (UCLA-PCI) and includes additional items assessing a variety of urinary, bowel, sexual, and hormonal symptoms unique to prostate cancer patients. The EPIC provides four domain-specific scores. Of interest to this study were two domains reflecting sexual and hormone functioning. The Sexual Domain score of the EPIC, which is further divided into two scores assessing Function and Bother, was used to assess sexual functioning. The Function subscale contains 9 items that ask about frequency and quality of erections, sexual intercourse, sexual desire, and orgasm in the last four weeks. The Bother subscale contains 4 items that ask about how much of a problem the above aspects of sexual functioning are during the last four weeks. Means for the Sexual Functioning, Sexual Bother, Hormone Functioning, and Hormone bother subscales are 29.5 (24.0), 41.1 (30.1), 84 (15.3), and 88.7 (13.6) respectively, and Cronbach’s alpha values for the above subscale scores are .92, .84, .51, .73

respectively (Wei et al., 2000). Test-retest reliability measures for these scales ranged from .73 to .90.

In the present study, all four subscale scales were linearly transformed by subtracting the lowest possible raw score from the actual raw score, and dividing this number by the possible raw score range. This value was multiplied by 100 to create a 0-100 transformed score. Higher scores on sexual functioning subscale reflect better sexual functioning; whereas higher scores on the sexual bother subscale reflects more bother, or worse sexual quality of life. For the current sample, Cronbach's alpha was .94 for both the sexual functioning and sexual bother subscales among cancer patients. Cronbach's alpha was .38 for hormone functioning and .58 hormone bother. Examination of Cronbach's alpha values when scale items were removed, revealed that the item regarding frequency of hot flashes was particularly problematic for men. When this item was removed, Cronbach's alpha was .68. When including men in the CG, Cronbach's alpha was .96, .90, .48, .59 for sexual functioning, sexual bother, hormone functioning, hormone bother respectively.

*Past Sexual Behaviour.* The frequency of past sexual behaviour was assessed for the 6 months prior to diagnosis. At the time of being diagnosed, approximately a third may have pre-existing erectile dysfunction, which is associated with worse sexual outcomes post-treatment (Schover et al., 2002) and may influence body image. Men were asked to indicate how many times per month they had sexual intercourse across the 6 months prior to their diagnosis. Men also rated the frequency of past sexual desire across the 6 months prior to their diagnosis. Questions pertaining to past sexual behaviour were contained in the PCS (see Appendix C).

*The Short Form Health Survey (SF-36).* The SF-36 is a measure of HRQoL used in the Medical Outcomes Study (Ware & Sherbourne, 1992). The SF-36 was used as a measure

of perceived physical functioning and quality of life in both the patient and comparison group. The SF-36 includes one multi-item scale that assesses eight health concepts: 1) limitations in physical activities because of health problems; 2) limitations in social activities because of physical or emotional problems; 3) limitations in usual role activities because of physical health problems, 4) bodily pain; 5) general mental health (psychological distress and well-being); 6) limitations in usual role activities because of emotional problems; 7) vitality (energy and fatigue); and 8) general health perceptions. The survey was constructed for self-administration for those 14 years of age and older. For a general practise sample (n=1980), Cronbach's alpha > 0.85 and reliability coefficients > 0.75 were reported for all dimensions except social functioning, with good construct validity in terms of distinguishing between groups with expected health differences (Brazier et al., 1992). Published reliability statistics typically exceed 0.80, and have been replicated in twenty-four patient groups with differing diagnoses, including prostate cancer (McHorney, Ware, Lu, & Sherbourne 1994; Ware, Kosinski, & Keller, 1994). Reliability estimates for physical and mental summary scores obtained for males were .92 and .89 respectively (Ware et al., 1993). Higher scores indicate better function in each domain. Transformed scale scores were obtained by subtracting the lowest possible raw score from the actual raw score, and dividing this number by the possible raw score range. This value was multiplied 100x to create a 0-100 transformed score. Cronbach's alpha for the Physical Functioning subscale was .89 for the men with prostate cancer, and .88 when control subjects were included. Internal consistency for the Mental Health subscale was .75 for the men with prostate cancer, and .80 for the entire sample.

*Exercise Behaviour.* The Leisure-Time Exercise Questionnaire (LTEQ, Appendix C) was used to measure self-reported frequency of strenuous, moderate, and mild exercise

undertaken for a minimum of 20 minutes during an average week (7 days) (Godin & Shephard, 1985). From the LTEQ a total exercise index is generated using the following formula:  $3x$  (mild) +  $5x$  (moderate) +  $9x$  (strenuous). The LTEQ shows adequate reliability and validity as a measure of exercise behaviour (Godin, Jobin, & Bouillon, 1986).

#### **4.2.3 Demographic Variables and Covariates**

*Demographic Variables* (see Appendix C). Several items were included to assess variables that may be confounded with the other predictor variables in their relation to body image concerns, such as age, education, ethnicity, employment, marital status, medical conditions, weight, height, previous history of another type of cancer, and type of cancer treatment. Men were asked also about to indicate whether they experienced an increase in breast growth since receiving treatment for prostate cancer (of > 4 or >5 cm in diameter). The following information was corroborated from the patient's medical chart: date of biopsy (i.e., used to determine time since diagnosis), stage of cancer at diagnosis, Gleason score, treatment received, start of ADT, Prostate Specific Antigen test results, previous medical conditions. Body Mass Index was calculated by  $\text{weight (lb)} / [\text{height (in)}]^2 \times 703$ . The above items were administered to controls, excluding questions B1-7, and C12-C14, as they related to the treatment of prostate cancer (see Appendix C).

## Results

### 1.0 Preliminary Analyses

Prior to the analyses, data were checked for missing values. SPSS Version 15 Missing Value Analysis (MVA) was used to evaluate the percentage and patterns of missing data. A total of 429 individual values out of a total of 33088, or 1.2%, were missing in the dataset. The MVA implementation of the expectation – maximization (EM) algorithm was used to estimate values for the missing data. Although there may be a bias resulting from this procedure (Von Hippel, 2004), the impact is negligible given the small number of estimates imputed. Data were then screened for univariate outliers using SPSS Frequencies and SPSS Explore. For variables included in analyses of group differences, univariate outliers were examined by group separately. As recommended by Tabachnick and Fidell (2001), outliers were reduced to fit within a normal distribution (minimum increment required to reduce the standardized score to less than  $\pm 3.29$ ). Assumptions were verified for all analyses, and when required, transformations were conducted in order to reduce skewness. Multiple regressions were performed on raw and transformed data, and in the case where results were identical, untransformed data are reported for ease of interpretation (Tabachnick & Fidell, 2001).

All data were also checked for multivariate outliers using Mahalanobis distance. For each specific set of analyses, cases whose Mahalanobis distance exceeded a critical value at  $p < .001$  (Tabachnick & Fidell, 2001) were eliminated from the data set for that analysis.

### 1.1 Descriptive Statistics

Table 1 displays demographic data and health characteristics for all participants. A series of chi square analyses were conducted on categorical variables and one-way analyses of variance (ANOVA) were performed for continuous variables. There was a significant

difference in age between groups,  $F(2, 149) = 5.86, p < .01$ , partial  $\eta^2 = .07$ . Using Tukey's post-hoc comparisons, a significant difference was observed, such that men in the control group were significantly younger than men with prostate cancer receiving androgen deprivation therapy,  $p < .01$  (see Table 1). Men in the control group were more likely to be employed full-time  $\chi^2(6, N=152) = 18.28, p < .01$ , and were more likely to have partially or fully completed university studies  $\chi^2(6, N=152) = 14.01, p = .03$ . There were no significant differences in marital status  $\chi^2(5, N=152) = 12.83, ns$ , or ethnicity  $\chi^2(3, 152) = 6.19, ns$ , between the three study groups.

There were no significant differences in mean body mass index,  $F(2, 149) = 2.69, ns$  between the three groups. Chi square analyses revealed no significant group differences in current medical conditions (i.e., or comorbid conditions for men with prostate cancer), including hypertension  $\chi^2(2, N=152) = 1.46, ns$ , diabetes  $\chi^2(2, N=152) = .62, ns$ , cardiac illness  $\chi^2(2, N=152) = 1.32, ns$ , osteoarthritis  $\chi^2(2, N=152) = .88, ns$ , or history of a mental health condition  $\chi^2(1, N=152) = 1.25, ns$ .

Table 1. Mean Age, Ethnicity, Marital Status, Education, Employment Status, BMI, and Health Characteristics of Participants.

<i>Variable</i>	<i>ADT</i> ( <i>n</i> = 55)	<i>RT</i> ( <i>n</i> = 41)	<i>CG</i> ( <i>n</i> = 56)
Mean Age <sup>1</sup> (SD)	68.45 (5.51)	65.40 (5.82)	64.48 (7.37)
Age (%)			
50-59	10.9	14.6	26.8
60-69	36.4	51.3	46.4
70-79	52.7	34.1	26.8
Ethnicity			
(% Caucasian)	100	97.6	100
Marital status (%)			
Married/Common-law	78.2	82.9	91.1
Divorced/ Separated	9.1	14.6	7.1
Widowed	9.1	2.4	1.8
Education <sup>2</sup> (%)			
Some/completed high school	45.5	31.7	21.4
Some/ completed college	20.0	19.5	10.7
Some/ completed university	18.2	26.8	44.6
Some/completed graduate studies	16.4	22.0	23.2
Employment <sup>3</sup> (%)	14.5	22.0	44.6
BMI (kg/m <sup>2</sup> )	27.16 (3.62)	27.81 (4.87)	26.09 (2.65)
Previous mental health condition (% Yes)	10.9	12.2	17.9
Other medical conditions (%)			
Hypertension	27.8	37.5	37.5
Osteoporosis	5.6	5.0	3.6
Diabetes	5.6	2.5	3.6
Cardiac Illness	13.0	7.5	7.1
Other	9.3	15	10.7

<sup>1</sup>Post-hoc analyses revealed a significant age difference between ADT and Controls,  $p < .05$

<sup>2</sup>Control subjects were more likely to have partially or fully completed university studies,  $p < .05$

<sup>3</sup>Control subjects were more likely to be employed full-time,  $p < .05$

Table 2 displays medical treatment characteristics of men with prostate cancer. There was no significant difference in time since diagnosis between the two groups of men with prostate cancer  $F(1, 94) = 1.36$ , ns. Chi square analysis revealed no significant differences in the proportion of men who had a previous prostatectomy  $\chi^2(1, N=96) = .48$ , ns. As expected, men who were androgen deprived had a higher PSA level  $F(1, 94) = 14.55$ ,  $p < .01$  than men receiving radiation for prostate cancer only. There was a non-significant trend for more men in the ADT group to report an increase breast growth since treatment (21.8% compared with 7.5% of men in the RT group),  $\chi^2(1, N=96) = 3.57$ ,  $p = .06$ .

Table 2. Stage of Illness, Time since Diagnosis<sup>1</sup>, Gleason Score, PSA, and Treatment for Men with Prostate Cancer.

<i>Variable</i>	<i>ADT (n = 55)</i>	<i>RT (n = 41)</i>
Stage of Illness (%)		
Stage II	90.9	92.7
Stage III	9.1	7.3
Mean years since diagnosis (SD)	2.01 (0.89)	2.24 (1.09)
Range (no. years since biopsy)	1-6.8	1-5.2
Time since diagnosis (%)		
<2003	7.3	14.6
2004	3.6	9.8
2005	45.5	39.0
2006	43.6	36.6
Gleason (Mode)	7	6
PSA <sup>2</sup> (Mean $\pm$ SD)	11.22 (7.29)	6.43 (3.67)
Previous Prostatectomy		
% Yes	16.4	21.9
Length of ADT		
% 6 months	78	-
% 36 months	22	-

<sup>1</sup> Date of Biopsy

<sup>2</sup> Measurement taken at the time of diagnosis: ADT > RT,  $p < .05$

Correlations between demographic and treatment variables and dependent variables are presented in Appendix D. In subsequent analyses, demographic and treatment variables identified as significantly different between groups were entered as covariates. In the case that a covariate was not significant, analyses are presented without the inclusion of the variable.

At present there is no standard measure of body image for older men, or men with cancer. Therefore, current sample means and reliability estimates for body image measures along with published scale norms and reliability estimates are reported in Table 3. The sexual functioning subscales of the EPIC have been validated in relatively few samples, thus sample means and reliability estimates for these scales are also presented below.

Table 3: Percent Reporting Concerns, Means (Standard Deviations), and Reliability Estimates for Body Image and Sexual Functioning Measures Compared with Normative Samples<sup>1</sup>.

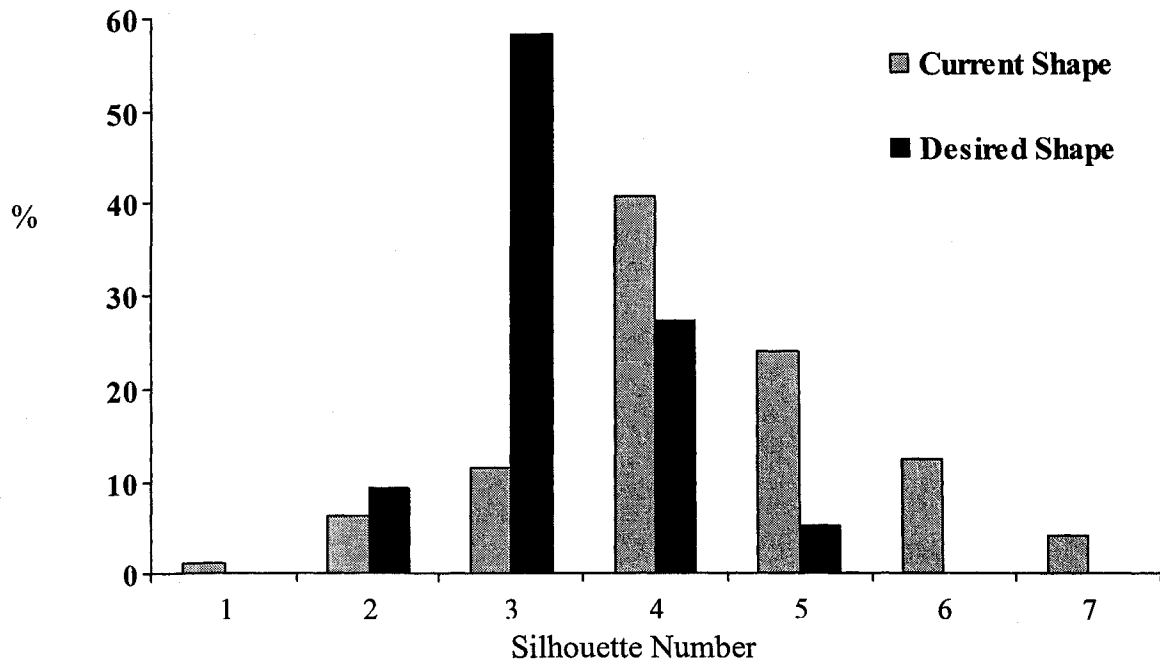
<i>Measure</i>	<i>No. of items</i>	<i>% Respondents with PC Reporting Concerns<sup>2</sup> (N=96)</i>	<i>Mean of Respondents with PC (N=96)</i>	<i>Published Norm Mean (SD)</i>	<i>Cronbach's alpha ADT (n=54)</i>	<i>Cronbach's alpha RT (n=41)</i>	<i>Cronbach's alpha CG (n=56)</i>	<i>Published Cronbach's alpha</i>
Body Image Scale Mean (BIS)								
Total Score	9	30.21	12.21 (3.41)	-	.72	.88	-	.93
Mean			1.36 (0.38)					
Appearance Evaluation (AE)	7	17.71	3.45 (0.57)	3.49 (0.83)	.74	.81	.76	.88
Body Dissatisfaction (BASS)	9	13.54	3.55 (.56)	3.50 (0.63)	.87	.70	.78	.77
Investment in Appearance (ASIR)	20	38.54	2.76 (0.59)	3.05 (0.64)	.84	.89	.92	.90
Situational Body Image Distress (SIBID-S)	20	16.63	0.52 (0.52)	1.17 (0.76)	.94	.94	.94	.93
Silhouette Rating Scale (SRS) <sup>3</sup>								
Range of Desired Shapes	2	29.17	-1.06 (.85) 2-5	- 3-5	.77	.79	.85	-
Sexual Functioning (SF)	9	57.29	19.74 (22.91)	29.5 (24.0)	.94	.91	.91	.92
Sexual Bother (SB)	4	50.00	41.0 (34.32)	41.1 (30.1)	.95	.91	.81	.84
Hormone Functioning (HF)	5	43.75	68.75 (16.46)	84.0 (15.3)	.26	.52	.72	.51
Hormone Bother (HB)	6	46.88	15.70 (13.78)	88.7 (13.6)	.55	.68	.61	.73

PC = Patients with prostate cancer receiving ADT and RT, or RT alone. <sup>1</sup> Published norms based on male subjects, and where possible specified by age. <sup>2</sup> Patient Means of AE < 3; BASS < 3; ASIR > 3; SIBID-S ≥ 1; SRS > 1.07; BIS > 1.36; EPIC SF < 19.74; SB > 41.00; HF < 68.75; HB > 15.70 <sup>3</sup> Ideal Shape – Current Shape = weight and shape discrepancy. 29% reported discrepancy ≥ -2

## **2.0 Hypothesis 1: Measurement of Body Image Concerns and Group Comparisons**

Table 3 describes reliability estimates for body image measures used in the current study. Cronbach alpha values for the body image measures were within the acceptable range (.72 to .94), including a value of .81 on the BIS (Hopwood et al., 2001), a measure of body image concerns developed specifically for cancer patients, and validated only on a sample of women with breast cancer to date. On the BIS, 30% of men with prostate cancer endorsed a few to noteworthy changes in their appearance as a result of disease or treatment, with scores above the sample mean. On measures of body image developed on non-medical populations, a conservative approach was used to indicate the presence of body image concerns. On the measures of general feelings of attractiveness (AE), and satisfaction with specific bodily aspects (BASS), mean scores lower than 3, a neutral response on a Likert scale of 1-5, were considered indicative of body image concerns. Using this approach, 17% of men receiving treatment for prostate cancer reported feelings of general unattractiveness. Thirteen percent of men reported feeling mostly or very dissatisfied with individual body aspects (e.g., torso, chest). In addition, 38% of the men with prostate cancer were considered appearance-schematic on the ASI-R (mean score > 3). On a measure of appearance-related distress (SIBID-S), 17% of men described having negative feelings “sometimes” to “almost always” in situations where their appearance is evaluated, with a mean score  $\geq 1$ . Men were also shown pictures of body silhouettes and were asked to identify the picture closest to their own, and to their desired shape. Twenty-nine percent of men with prostate cancer reported a shape discrepancy (ideal – current shape), indicating a desire to be 2 or 3 figures smaller than their current shape. Four percent preferred to be 1 figure larger. Figure 1 contrasts men’s descriptions of their own body shape with their preferred body shape.

Figure 1. Proportion of Reported Current and Desired Shapes by Silhouette Number for Men with Prostate Cancer (N=96).



A between-subjects MANCOVA was performed in order to examine group differences in body image concerns. Of interest were three dependent variables: a measure of global evaluation of appearance (Appearance Evaluation scale of the MBSRQ); a measure of cognitive investment in appearance (ASI-R); and a measure of situational body image distress (SIBID-S) (see Table 4). Age, educational status, and employment status were entered as covariates. As age and employment status were not significant covariates, results are presented without the inclusion of these variables. Since the correlations within the residual sum of squares cross-products matrix produced in the analysis revealed correlations greater than .30 among the dependent measures, Tabachnick and Fidell (2001) suggest that the use of a MANCOVA is a better strategy than three unique ANCOVAs. With the use of a  $p < .001$  criterion for Mahalanobis Distance, one multivariate outlier was removed from the data set; therefore the analysis was conducted using a sample of 151 men.

There was a significant omnibus effect for educational status (partial or completion of university studies),  $F(3, 145) = 3.57, p = .02$ , partial  $\eta^2 = .07$ . After controlling for educational status, there was a significant omnibus effect for group, (Wilks' Lambda)  $F(6, 290) = 2.33, p = .03$ , partial  $\eta^2 = .05$ . Univariate tests were then inspected to determine which of the three DVs likely contributed to the overall effect. With the use of a Bonferroni correction for Type 1 error, alpha would be set at 0.02 for three tests of group differences. However, a recent review dealing with multiplicity in findings suggests a Bonferroni correction may be an unnecessary overcorrection, particularly when examining differences on endpoint variables with shared variance (Schulz & Grimes, 2005). Given that the body image measures were significantly correlated ( $r = .2$  to  $r = .45$ ), it was decided not to apply the adjustment. Inspection of univariate tests revealed a significant difference between

groups on Appearance Evaluation  $F(2, 147) = 3.21, p = .04, \text{partial } \eta^2 = .04$ , where men with prostate cancer receiving radiation only (RT) scored slightly lower than men in the ADT group. In addition, a significant difference was observed between groups on the measure of situational body-image distress  $F(2, 147) = 3.43, p = .03, \text{partial } \eta^2 = .05$ , where men in the comparison group endorsed more situational body-image distress than men in the ADT group,  $p = .05$ . There were no group differences in investment in appearance.

Table 4. Means (Standard Deviations) and Correlations of Investment in Appearance (ASIR), Appearance Evaluation (MBSRQ), and Appearance-Related Distress (SIBID-S).

<i>Variable</i>	<i>ADT</i> (n = 54)	<i>RT</i> (n = 41)	<i>CG</i> (n = 56)	<i>AE</i>	<i>ASIR</i>	<i>SIBID-S</i>
Appearance Evaluation <sup>1</sup> (AE)	3.58 (0.52)	3.30 (0.59)	3.48 (0.51)	1.00	0.11	-0.42**
Investment in Appearance (ASIR)	2.79 (0.55)	2.71 (0.63)	2.87 (0.65)		1.00	0.45**
Appearance-related Distress <sup>2</sup> (SIBID-S)	0.46 (0.44)	0.54 (0.54)	0.68 (0.50)			1.00

<sup>1,2</sup> Post-hoc analyses revealed significant differences, where ADT > RT on AE,  $p < .05$ , and CG > ADT on SIBID-S,  $p < .05$

\*\*  $p < .01$

### **3.0 Hypothesis 2: Impact of Body Image Concerns on Quality of Life**

The goal of this analysis was to examine the relationship between body image and quality of life and, further, to determine whether a measure of body image accounts for variability in quality of life differently for each study group. An ideal measure of body image concerns in older men has not yet been established, however, it was decided to use a measure of appearance-related distress (SIBID-S). Mental Health scores (SF-36) were used as the outcome variable, and participant type, body satisfaction, and their interactions were entered into the regression model as predictor variables. Age, educational status, and employment status were entered as covariates. A logarithmic ( $\log_{10}$ ) transformation was used to address moderate to severe (positive) skewness in SIBID-S scores, and a reflect and logarithm transformation was performed to address negative skewness in Mental Health scores (Tabachnick & Fidell, 2001). One multivariate outlier was identified and removed from the data set, so that the final sample consisted of 151 men.

Age was a significant covariate and was entered in the first step of the regression. Participant type (ADT versus RT; ADT versus CG) was entered as two dummy-coded variables in Step 2. Body image distress scores were entered in Step 3 in order to determine whether body image accounts for variability in quality of life over and above age, and disease status. Interactions between the dummy-coded variables for participant type and body image scores were entered in the third step, in order to address whether there may be a particular group for whom body image distress had a greater influence on quality of life.

Bivariate correlations between body image measures and mental health scores are reported in Appendix D. In the present sample, correlations between mental health and body image measures were significant, albeit low, and in the expected direction. They suggest a negative relationship between body image distress (SIBID-S) and mental health. Similarly,

investment in appearance (ASI-R), and mental health (SF-36) were negatively correlated.

Whereas, general attractiveness (AE) and satisfaction with specific body parts (BASS) were positively correlated with mental health scores.

Table 5 displays the unstandardized regression coefficients ( $B$ ), standard error of the coefficients, Beta, partial correlations, and  $R^2$  change. Step 1 indicated that age significantly predicted variance in mental health scores,  $R = .23$ ,  $R^2 = .05$ ,  $F(1, 149) = 8.38$ ,  $p < .01$ . Step 2 revealed that participant type (ADT; RT; CG), did not account for any variance in mental health scores. Step 3 indicated that body image distress significantly predicted variance in mental health scores,  $R = .42$ ,  $R^2 = .17$ ,  $F(1, 146) = 19.94$ ,  $p < .001$ . Approximately, 11% of the variance accounted for in mental health scores was explained by body image distress. In Step 4, interactions between participant type and body image concerns added a non-significant additional 2% of the variance,  $F(2, 144) = 1.35$ , ns. Examination of unique predictors revealed that age and body satisfaction scores were predictive of mental health scores.

Table 5: Hierarchical Regression of Disease, Body Image Concerns (SIBID-S), on Quality of Life (Mental Health, SF-36).

<i>Variables</i>	<i>MH</i> <sup>1</sup>	<i>Age</i>	<i>SIBID-S</i> <sup>2</sup>	<i>B</i>	<i>SE B</i>	$\beta$	<i>sr</i> <sup>2</sup>	$\Delta R^2$
N = 151								
Step 1								
Age	-.23**			-.05	.02	-.18	.03*	.05**
Step 2								
ADT vs. RT, CG	-.07	.26**		.68	.52	.20	.009	.01
RT vs. ADT, CG	-.06	-.07		.28	.57	.07	.001	
Step 3								
SIBID-S <sup>2</sup>	.37**	-.14*		6.58	1.72	.52	.08**	.11**
Step 4								
Dum1 x SIBID-S	.06	.15*	.37**	-3.76	2.30	-.25	.01	
Dum2 x SIBID-S	.07	-.09	.32**	-2.50	2.52	-.15	.005	.02
				Intercept = 6.37				
Means	4.49	66.18	.18					
Std. Dev.	1.67	6.56	.13					

\* $p < .05$ ; \*\* $p < .01$ <sup>1</sup> Reflect and square root transformation of MH.<sup>2</sup> Logarithmic transformation of SIBID-S.

#### **4.0 Hypothesis 3: Predictors of Body Image Concerns**

Prior to examining the relative importance of bodily functioning or integrity affected by age or treatment, and cognitive predictors (e.g., investment in appearance) of body image concerns, group differences in physical and sexual functioning were examined. Although not included in the regression analysis below, control subjects were included in the investigation of group differences to assess whether men with prostate cancer in this sample do indeed report impaired sexual functioning. A between-subjects MANCOVA was performed in order to examine group differences in sexual functioning, with age, educational and employment status included as covariates. Differences on four dependent variables were examined: current sexual functioning (EPIC sexual functioning), bother associated with current sexual functioning (EPIC sexual bother subscale), past sexual functioning (PCS), and past sexual bother (PCS). Since the correlations within the residual sum of squares cross-products matrix produced in the analysis revealed correlations greater than .30 among the dependent measures, Tabachnick and Fidell (2001) suggest that the use of a MANCOVA is a better strategy than four unique ANCOVAs. Employment status was not a significant covariate, and results are presented without the inclusion of this variable. Although educational status was a significant covariate, it accounted for a significant difference in one out of the four variables (e.g., current sexual bother), and was thus removed from the analyses.

With the use of Wilks' criterion, there was a significant effect for age, (Wilks' Lambda)  $F(4, 144) = 6.49, p < .01, \text{partial } \eta^2 = .15$ . After adjusting for differences in age, there was a significant omnibus effect for participant type (e.g., ADT, RT, CG), (Wilks' Lambda)  $F(8, 288) = 15.64, p < .01, \text{partial } \eta^2 = .30$ . Inspection of univariate tests revealed significant differences in current sexual functioning  $F(2, 148) = 62.26, p < .01,$

partial  $\eta^2 = .46$ ; and past sexual bother  $F(2, 148) = 5.96, p < .01$ , partial  $\eta^2 = .08$ . There was a trend for differences in current sexual bother  $F(2, 148) = 2.56, p = .08$ , ns. There was no significant difference in past sexual functioning  $F(2, 148) = .95$ , ns. Post-hoc comparisons revealed that men with prostate cancer receiving androgen deprivation therapy (ADT) reported worse sexual functioning than men receiving radiation only (RT), who in turn, reported worse sexual functioning in comparison with men in the control group. Men in the control group reported higher levels of past sexual bother compared with men with prostate cancer. There was a non-significant trend for men with prostate cancer (ADT and RT) to report higher scores on current sexual bother, compared with men in the control group. Means and standard deviations are presented in Table 6.

Results from two ANOVAs revealed no differences in physical functioning  $F(2, 148) = 1.41$ , ns, between the three study groups. There was a non-significant trend regarding exercise behaviour,  $F(2, 148) = 2.48, p = .09$ , ns, such that men in the control group endorsed more frequent exercise. Scores on remaining SF-36 subscales are also presented in Table 6, indicating either some deficits among men with prostate cancer or no significant differences from controls.

Table 6: Means (Standard Deviations) for Sexual Functioning Outcomes (EPIC) and SF-36 Variables among Men with and without Prostate Cancer.

<i>Variable</i>	<i>ADT</i> (n = 54)	<i>RT</i> (n = 41)	<i>CG</i> (n = 56)
Current Sexual Functioning <sup>1</sup> (EPIC)	9.55 (16.08)*	33.45 (23.84)*	56.97 (22.63)*
Current Sexual Bother <sup>2</sup> (EPIC)	41.30 (36.37)	39.48 (31.45)	28.02 (24.71)
Past Sexual Functioning <sup>3</sup> Past Sexual Bother <sup>4</sup> (Likert scale, 1-5)	4.24 (3.17)	5.10 (3.69)	5.55 (2.89)
<b>SF-36<sup>1</sup></b>			
Physical Functioning	78.61 (21.07)	83.54 (19.53)	84.55 (18.05)
Role – Physical <sup>5</sup>	50.00 (41.78)*	58.54 (41.31)*	78.57 (32.13)*
Bodily Pain	74.87 (22.54)	71.66 (27.91)	73.05 (22.73)
General Health	69.50 (19.15)	66.90 (20.05)	72.23 (19.03)
Vitality	61.20 (19.74)	58.90 (24.53)	66.07 (18.87)
Social Functioning	78.94 (22.63)	78.35 (28.23)	86.83 (20.14)
Role - Emotion	83.33 (31.56)	70.73 (40.96)	80.08 (33.68)
Mental Health	80.07 (14.17)	78.93 (14.75)	75.36 (17.46)

\* $p < 0.01$

<sup>1</sup> Higher scores reflect better HRQOL; scores were linearly transformed.

<sup>2</sup> Higher scores reflect more sexual bother, or worse HRQOL; scale scores were linearly transformed.

<sup>3</sup> 6 months pre diagnosis for men with prostate cancer, and the first 6 months of the past year for men in the CG.

<sup>4</sup> Composite of frequency of intercourse per month and sexual desire (Likert scale, 0-4).

<sup>5</sup> Tukey post-hoc analyses revealed: CG>RT>ADT

In order to examine the influence of investment in appearance on body image concerns above and beyond that accounted for by demographic and medical variables, aspects of treatment (e.g., sexual functioning, hormone symptoms) and physical ability (e.g., activities of daily living, exercise), a hierarchical multiple regression was performed. A measure of body image concerns (BIS) was used as the outcome variable and physical ability (Physical Functioning subscale, SF-36; exercise frequency, GodLTEQ), sexual functioning (sexual functioning and sexual bother subscales of the EPIC), hormone functioning (hormone functioning and bother subscales of the EPIC), and investment in appearance (ASIR) were entered into the regression model as predictor variables. The following demographic and treatment variables were entered as potential covariates: age, educational status, employment status, BMI, marital status, previous prostatectomy, time since diagnosis, and number of months on ADT. Treatment type (e.g., ADT vs. no ADT) was also included as a covariate as planned. With the exception of marital status, none of the above variables were significant predictors of body image concerns; therefore results are presented without the inclusion of these variables. No multivariate outliers were identified.

Table 7 displays the zero-order correlations, unstandardized regression coefficients ( $B$ ), standard error of the coefficients, Beta, partial correlations, and  $R^2$  change. After Step 1, with treatment type (ADT vs. no ADT) and marital status entered as covariates,  $R^2 = .14$ ,  $F\Delta(2, 93) = 7.39$ ,  $p < .001$ . After Step 2, the addition of physical functioning and exercise frequency did not account for any significant additional variance in body image concerns  $R^2 = .14$ ,  $F\Delta(2, 91) = .24$ , ns. Step 3 indicated that sexual functioning significantly predicted additional variance in body image concern scores,  $R = .46$ ,  $R^2 = .21$ ,  $F\Delta(2, 89) = 3.79$ ,  $p < .05$ . After accounting for sexual functioning, Step 4 indicated that hormone symptoms

predicted additional variance in body image concern scores,  $R^2 = .40$ ,  $F\Delta(2, 87) = 13.88.39$ ,  $p < .001$ , with  $\Delta R^2 = .19$ . In Step 5, investment in appearance added a significant increment in  $R^2 = .45$ ,  $F\Delta(1, 86) = 6.9$ ,  $p < .01$ , adding an additional 4 % of variance in body image concern scores. After Step 5, with the addition of all independent variables,  $R = .67$ ,  $F(9, 86) = 7.65$ ,  $p < .001$ .

Table 7. Hierarchical Regression of Treatment (PT), Marital Status, Physical Functioning (PF), Sexual Functioning (SF), Hormone Functioning (HF), Hormone Bother (HB) and Investment in Appearance (ASIR) on Body Image Concerns (BIS).

<i>Variables</i> N = 96	<i>BIS</i>	<i>PT</i>	<i>PF</i>	<i>Ex</i>	<i>SF</i>	<i>SB</i>	<i>HF</i>	<i>HB</i>	<i>ASIR</i>	<i>B</i>	<i>SE B</i>	$\beta$	$sr^2$	$\Delta R^2$
Step 1														
PT (ADT vs. none)	-.01									-.91	.69	.13	.01	
Marital Status	-.37**	.06								-3.19	.75	-.38	.12**	0.14**
Step 2														
PF (SF-36)	-.07	.13								.04	.02	.21	.03*	
Exercise (GodLITEQ)	.05	0.6	.17*							-.002	.01	-.01	.0001	0.005
Step 3														
Sexual Functioning	.03	.52**	.21*	.07*						.001	.02	.01	3.6e-5	
Sexual Bother (EPIC)	.29**	-.04	-.10	-.08	-.18*					.009	.009	.09	.006	.07*
Step 4														
Hormone Functioning	-.33**	.39**	.34**	.06	.31**	-.17*				-.02	.03	-.11	.004	.19**
Hormone Bother (EPIC)	.47**	-.25**	-.31**	-.03	-.19*	.26**	-.78**			.09	.03	.34	.04**	
Step 5														
Investment in Appearance (ASIR)	.40**	-.08	-.08	.17*	-.04	.31**	-.19*	.31**		1.38	.53	.24	.044**	.04**
											Intercept = 6.75			
Means	12.21	1.43	80.50	41.83	19.74	41.0	68.75	15.70	2.76					
Std. Dev.	3.41	.50	20.53	25.32	22.91	34.32	16.46	13.78	0.59					

\*  $p < .05$ ; \*\*  $p < .01$

### **5.0 Hypothesis 4: Test of a Cognitive-Behavioural Model of Body Image Concerns in Cancer Patients**

A hierarchical regression analysis was performed in order to examine the moderation analysis proposed by White (2000), who hypothesized that investment in appearance moderates the relationship between perceived discrepancy of one's actual from one's desired appearance, and appearance-related distress. In Step 1, covariates (e.g., age, educational status, employment status, marital status), as well as participant type, were entered, followed by body image dissatisfaction (BIS) in the second step. In Step 3, investment in appearance was entered as measured by the ASI-R. In Step 4, the interaction of body image dissatisfaction and investment in appearance were entered. Since age was not a significant covariate, results are presented without the inclusion of this variable. With the use of a  $p < .001$  criterion for Mahalanobis Distance, no multivariate outliers were identified.

Table 8 displays the zero-order correlations, unstandardized regression coefficients ( $B$ ), standard error of the coefficients, Beta, partial correlations, and  $R^2$  change. After Step 1, with marital status entered as a covariate,  $R = .25$ ,  $R^2 = .06$ ,  $F\Delta (1, 94) = 6.39$ ,  $p < .01$ . In Step 2, and Step 3, significant relationships were observed between dissatisfaction and appearance-related distress,  $R = .66$ ,  $R^2 = .44$ ,  $F\Delta (1, 93) = 62.01$ ,  $p < .001$ , and between investment in appearance and appearance-related distress  $R = .68$ ,  $R^2 = .46$ ,  $F\Delta (1, 92) = 4.64$ ,  $p < .05$ . However, the interaction term did not reach significance  $R = .68$ ,  $R^2 = .47$ ,  $F\Delta (1, 91) = .21$ , ns (see Table 7). After Step 4, with the addition of all independent variables,  $R = .68$ ,  $R^2 = .47$ ,  $F (4, 91) = 19.88$ ,  $p < .001$ .

Table 8. Hierarchical Regression of Marital Status, Body Dissatisfaction (BIS), Investment in Appearance (ASIR), and test of Moderation Interaction (BIS x ASIR) on Appearance-Related Distress (SIBID-S).

Variables N = 96	SIBID- S	Marital Status	BIS	ASIR	B	SE B	$\beta$	$sr^2$	$\Delta R^2$
Step 1									
Marital Status	-.25**				-.03	.11	-.02	.0004	.06**
Step 2									
Body Dissatisfaction (BIS)	.66**	-.37**			.06	.08	.36	.003	.38**
Step 3									
Investment in Appearance (ASIR)	.41**	-.09	.40**		.04	.27	.05	.0001	.03*
Step 4									
ASIR x BIS	.67**	-.31**	.91**	.73**	.01	.02	.30	.001	.001
							Intercept = -.612		
Means	.52	.80	12.21	2.76					
Std. Dev.	.52	.40	3.41	.59					

\*  $p < .05$ ; \*\*  $p < .01$

## **6.0 Additional Analysis**

An additional analysis was performed in order to examine whether predictors of body image satisfaction resembled those variables predicting body image concerns. A hierarchical regression analysis was performed combining both treatment groups (e.g., PC+ADT and PC), with a measure of body satisfaction (BASS subscale; MBSRQ) as the outcome variable, and body integrity (e.g., physical and sexual functioning), and cognitive aspects of body image (e.g., investment in appearance) as predictor variables. Age, educational status, employment status, BMI, marital status, treatment variables (e.g., length of time on ADT) were added as covariates. With the exception of BMI, none of these variables were significant predictors of bodily satisfaction; therefore results are presented without the inclusion of these variables.

With the use of a  $p < .001$  criterion for Mahalanobis Distance, no multivariate outliers were identified. A reflect and square root transformation was used to address moderate skewness in physical functioning scores (e.g., physical functioning subscale of the SF-36), and a square root transformation was applied to sexual functioning (e.g., EPIC) scores (Tabachnick and Fidell, 2001). Multiple regressions were performed on raw and transformed data. Since the results were not similar, results based on transformed data are reported (Tabachnick & Fidell, 2001).

Table 9 displays the zero-order correlations, unstandardized regression coefficients ( $B$ ), standard error of the coefficients, Beta, partial correlations, and  $R^2$  change.  $R$  was significantly different from zero after the first step only. After Step 1, with BMI entered as a covariate,  $R^2 = .10$ ,  $F(1, 94) = 10.85$ ,  $p < .001$ . After Step 2, the addition of physical functioning and exercise frequency did not account for any significant additional variance in body satisfaction  $R^2 = .13$ ,  $F(2, 92) = 1.63$ , ns. Step 3 indicated that sexual functioning did

not account for any additional variance in body satisfaction scores,  $R^2 = .17$ ,  $F(2, 90) = 1.88$ , ns. In Step 4, the addition of investment in appearance did not account for any additional variance in outcome scores,  $R^2 = .17$ ,  $F(1, 89) = .38$ , ns. After Step 4, with the addition of all independent variables,  $R = .42$ ,  $F(6, 89) = 3.09$ ,  $p < .01$ . Examination of unique predictors indicates that BMI and Physical Functioning were significant predictors of body satisfaction,  $p < .05$ . There was also a trend for sexual functioning to be negatively correlated with body satisfaction,  $p = .06$ , ns.

Table 9. Hierarchical Regression of BMI, Physical Functioning (PF), Sexual Functioning (SF), and Investment in Appearance (ASIR) on Body Satisfaction (BASS).

<i>Variables</i>	<i>BAS</i>	<i>BMI</i>	<i>Ex</i>	<i>PF</i>	<i>SF</i>	<i>SB</i>	<i>ASIR</i>	<i>B</i>	<i>SE B</i>	$\beta$	$sr^2$	$\Delta R^2$
N = 96												
Step 1												
BMI	-.32**							-.03	.01	-.26	.05*	0.10**
Step 2												
Exercise (GodLTEQ)	-.001	-.09						-.001	.002	-.04	.001	
PF <sup>1</sup> (SF-36)	.26**	0.31**	-.15					-.055	.03	-.22	.04*	0.03
Step 3												
Sexual Functioning	-.17*	.06	.04	-.18*				-.035	.02	-.19	.03	
Sexual Bother (EPIC)	.02	-.13	-.08	.14	-.11			.000	.002	.02	.0003	.04
Step 4												
Investment in Appearance (ASIR)	-.04	-.16	-.17*	.07	.01	.31**		-.06	.55	-.06	.003	.003
										Intercept = 5.00		
Means	3.55	27.44	41.83	80.50	19.74	41.00	2.76					
Std. Dev.	.56	4.2	25.31	20.53	22.91	34.32	0.59					

\*  $p < .05$

\*\*  $p < .01$

<sup>1</sup> Reflect and square root transformation of PF. Untransformed, this variable is positively correlated with BASS.

## Discussion

The present study investigated the extent and nature of body image concerns in men receiving treatment for localized prostate cancer and a comparison group of healthy peers. To the author's knowledge, this is the first study to assess body image concerns in men during radiation therapy for localized prostate cancer. The relationship between body image and quality of life in each of the study groups was investigated. Furthermore, findings from the present study revealed specific factors that influence body image concerns among men with prostate cancer. A final question of the present study was whether findings supported a cognitive-behavioural model of body image concerns in cancer patients proposed by White (2000). Findings expanded upon previous research that demonstrated a link between body image and quality of life post prostatectomy (Perez et al., 2002), and between body image and adjuvant hormone therapy (Fowler et al., 2002). By focusing on men receiving radiation, including a comparison group, and including a comprehensive battery of disease-specific and theoretically-based body image measures, the present study addressed some of the gaps in the previous research.

### **1.0 Measurement of Body Image Concerns in Men with Prostate Cancer**

To assess the extent of body image concerns among men receiving treatment for localized prostate cancer, the proportion of men endorsing concerns was evaluated and group means on current measures were examined. Given the methodological concerns in this field, and the fact that to date, there are no standardized measures of body image concerns for older men, or men with illness, the present study included a variety of measures of body image. Reliability estimates were considered good (e.g., Cronbach alpha values ranged from .72 to .94), including the BIS (Hopwood, et al., 2001), a disease-specific measure of body image concerns. In the present sample, mean scores on current body image measures were

indicative of normative levels of body image concerns on the AE, and BASS subscales of the MBSRQ, although somewhat lower scores were observed on a measure of appearance-related distress (SIBID-S).

Almost a third of men treated for prostate cancer (30%) reported a few to noteworthy changes in their body as a result of disease or treatment, using the BIS. Findings further revealed that a minority of men receiving treatment (RT, or RT combined with ADT) for localized prostate cancer endorsed body image concerns on standardized measures to the point of feeling mostly, or very dissatisfied with various aspects of their appearance (e.g., 13-17%). The present findings confirm previous suggestions that a minority of individuals with medical conditions would exhibit these concerns (Pruzinsky & Cash, 2002). It is possible that the levels of body image concerns reported by men in the current sample are accurate. Alternatively, respondents may have underreported their concerns, as men are assumed to feel less comfortable endorsing concerns about physical appearance (Mishkind et al., 1986). However, the present findings are comparable to that reported among younger men. Muth and Cash (1997) found that 22% of undergraduate males reported body dissatisfaction on several body image measures, including the MBSRQ used in this study. The findings are also consistent with scores on a measure of social physique anxiety found in men, aged 65, participating in an exercise intervention study (McAuley, Marquez, Jerome, Blissmer, & Katula, 2002). Perceived weight status, using categorical ratings of one's weight or shape as "just right", or "overweight", or "too thin", may be considered a possible indicator of body dissatisfaction. Although it is unclear what "just right" refers to, findings suggest most men perceive themselves in this category (Burns, Tijhouise & Seidell, 2001). Wardle & Johnson (2002) have shown within a sample of British men with a mean age of 48, even those who are considered overweight, are likely to perceive themselves as having

an acceptable weight, and 25% of these overweight men were not attempting any means of weight control.

The use of figure rating scales to indicate weight and shape discrepancy, an indicator of body dissatisfaction, is increasingly common within the literature on overweight and obesity. In the present study, a higher proportion of men reporting a perceived body shape discrepancy were found using this method relative to the standardized measures. Overall, 29% of men with prostate cancer, who, on average were classified as overweight, reported a preference to be 2 or 3 figures smaller than their current shape. This number rose to 78% when men who endorsed an ideal shape of at least 1 shape smaller to 3 figures smaller than their current shape were included. In the present sample, men's choice of an ideal shape was indeed lean, and this is consistent with a study of ideal shapes among middle-aged, disease-free men (Ziebland et al., 2002). It is unclear why men in this sample chose a lean ideal. Several researchers have noted an increase in media presentations of the mesomorphic aesthetic ideal for males (Leit et al., 2002; Pope, Olivardia, Borowiecki, & Cochane, 2001). This shape is also increasingly associated with better health and with masculinity in the media, which may also contribute to men's preference to be slimmer. The specific factors that were predictive of body image concerns in the current sample will be discussed in the sections below.

Of interest, these findings suggest that older men who are overweight do not differ considerably from their younger counterparts regarding body preferences. Among younger men, the majority who are overweight desire to be smaller, and of those who are not overweight, 24 % preferred to lose weight (Neighbors & Sobal, 2007). However, findings consistently show that among younger men, there are similar proportions of those who desire to be larger than their current shape and those preferring to be thinner than their current

shape (e.g., 34% and 43% in Davis & Cowles, 1991; 45% compared with 40% in Drewnowski & Yee, 1987). A bimodal relationship was not apparent in this sample of older men, and this may be due to the fact that there were fewer men who were underweight.

### 1.1 Hypothesis 1: Group Comparisons

The prediction that men receiving ADT for prostate cancer would exhibit more body image concerns than men receiving RT only, who, in turn, would endorse worse body image than a comparison group of healthy controls, was not confirmed. In contrast, men receiving ADT appeared somewhat protected by body image concerns. After controlling for educational status, examination of group differences revealed that men receiving ADT reported less appearance-related distress relative to their non-diseased peers, and lower levels of general unattractiveness than men receiving RT alone. Although findings reached statistical significance, examination of partial  $\eta^2$  calculations of effect sizes (.04, .05) suggested that the distributions of scores on these measures were almost identical (Cohen, 1992). In other words, these differences were not noteworthy.

The relationship between medical illness and body image is unclear. To the author's knowledge no studies have compared body image in male cancer patients in comparison with healthy controls. One explanation for the relatively minor group differences found in the present study may involve timing of when the body image measures were completed. In the current sample, men completed their questionnaires midway or toward the end of their radiation treatment. At this stage, some men may not have had sufficient time to experience the full effects of treatment (i.e., weight gain, sexual difficulties). In particular, the effects of ADT are expected to worsen considerably with time and to persist past cessation of treatment, and for some men the sexual functioning difficulties associated with RT develop

after treatment (see Thompson, et al., 2003; Clay et al., 2007). As well, at this stage in the treatment process, many men may continue to be in “information-gathering” mode regarding the illness and treatment regimen (Gray, Fitch, Phillips, Labrecque, & Klotz, 1999). In facing all of the challenges related to this illness, which tend to be quite practical and time-consuming (i.e., transportation, travel time to appointments, costs associated with transportation and taking time off work), it may be that most men are less concerned about the impact of treatment on their bodies, and are instead more concerned about the efficacy of treatment and their survival. Once the immediate demands of treatment have subsided, it is possible that body image concerns may surface several months to years later, as has been shown in a sample of women with breast cancer using the BIS (Hopwood et al., 2001), and among men with testicular cancer (Pool, Jaspers, & van de Wiel, 2003).

The specific finding that men in the ADT group reported slightly higher feelings of attractiveness in comparison with men in the RT group is difficult to explain. Respondents were in receipt of ADT for a minimum of three months when they completed the measures, which is a sufficient amount of time to experience the adverse side-effects of this medication. These side-effects are associated with either appearance-related changes and/or reduced body integrity, which in turn, is expected to result in negative body evaluations (White, 2002; Pruzinsky, 2002). In the quality of life literature, it has been shown that men receiving ADT may experience more physical discomfort than men receiving RT alone, however they also tend to feel more positive about their treatment decision (Potosky et al., 2002). Lower decisional conflict and satisfaction with treatment choices, are likely very important to one’s adjustment to illness. Therefore, one possible explanation for the current findings is that men receiving ADT may consider themselves to be doing “everything they can” in helping their body to fight cancer, which may compensate for any negative thoughts

about the body. It is also possible that men in the ADT group may be less concerned about any physical changes associated with treatment, because they have been told by their physicians that these changes are temporary, and will subside when they stop taking their medications. This may lead some men in the ADT group to make fewer negative evaluations about their bodies.

With respect to affective dimensions of body image, lower levels of appearance-related distress were observed among men in the ADT group in comparison with control subjects. Although some men undergoing treatment for cancer may harbour negative thoughts about their body, their level of distress may be secondary to more pressing concerns relating to their survival. On the other hand, men with prostate cancer have also been shown to minimize their (general) concerns and need for support in order to aid in coping with their illness (Gray, Fitch, Phillips, Labrecque, & Fergus, 2000). This tendency may result in a lower overall propensity to express distress during treatment for cancer among men. White (2002) suggests that appearance-related changes associated with cancer can be distressing to patients when they serve as a reminder of disease. For some men receiving ADT, the side-effects may, in time, serve as such a reminder. In contrast, during treatment, the men may view such symptoms as evidence that they are “fighting the disease”. It would be important to re-assess the level of body image concerns in men receiving ADT post-radiation treatment.

The finding of no differences in investment in appearance was expected. According to a cognitive-behavioural conceptualization, this variable is considered to moderate the emergence of body image concerns in situations when one’s appearance is evaluated or compromised (White, 2000). The measure used in this study (ASI-R) tapped into self-schemas, which are not expected to differ across groups among a non-clinical population.

These findings are consistent with a study of men (n=15) and women (n=30) diagnosed with either malignant melanoma or were considered at risk for skin cancer, where no group differences were observed on a measure of investment in appearance, the Measure of Body Apperception (Carver, Pozo-Kaderman, Price, Noriega, Harris, Derhagopian, Robinson, & Moffat, 1998) (Lichtenthal, Cruess, Clark, & Ming, 2005).

That educational status was a significant covariate of body image concerns in the current sample, is consistent with previous relationships observed between higher education, and perceived overweight (Paeratakul, White, Williamson, Ryan, & Bray, 2002). It has been suggested that individuals with higher levels of education are more likely to work in professional jobs that require a dress code, and therefore may experience a focus on appearance to a greater degree. The use of a covariate is only a statistical control (Tabachnick & Fidell, 2001). Given the significant difference in educational status between controls in the current sample and men with prostate cancer, it is possible that this may have accounted for the higher levels of body image distress observed in the control participants. As well, the number of men with co-morbid conditions (e.g., hypertension, cardiovascular disease) did not differ among the three study groups. These conditions are typically chronic, and have some bearing on one's physical functioning. It is possible, that these medical conditions may have an impact on body image, and make differences due to cancer alone difficult to detect.

## **2.0 Hypothesis 2: Influence of Body Image Concerns on Quality of Life**

The prediction that body image concerns would be predictive of quality of life scores was confirmed. In the current sample, 11% of the variance in mental health scores was accounted for by a measure of body satisfaction. However, there was no particular group for whom this relationship was most salient. In keeping with minimal group differences on body

image measures in the present study, the quality of life of men with prostate cancer was not differentially affected by body image concerns. Men receiving ADT did not experience a particularly negative impact on quality of life as a result of their body image concerns. At least within this sample of cancer patients, findings indicate that additional treatment is not internalized in a negative manner with regard to one's body image. That men with and without cancer did not differ on mental health scores is consistent with previous research that suggests deficits in quality of life appear to be focused in disease-specific domains such as urinary and bowel functioning rather than overall quality of life (Litwin et al., 1999; Perez, et al., 2002; Hoffman et al., 2004).

Although many variables likely contribute to a measure of general psychosocial functioning, or overall mental health, these findings support a specific influence of body image concerns on mood in older men. These results support recent findings of an association between body image and quality of life in men with prostate cancer who underwent radical prostatectomy (Perez, et al., 2002), where 12% of the variance in mood symptoms (as assessed by the POMS) was explained by a combination of body image and sexual functioning variables after controlling for medical variables and physical functioning (i.e., activities of daily living) (Perez, et al., 2002).

Furthermore, the present findings demonstrate an association between body image and quality of life for men with and without cancer. Others have similarly observed relationships between perceived weight and quality of life in disease-free, middle-aged men. In a large sample of middle-aged Dutch men, those who described themselves as "too thin" reported lower mental health and general health scores on the RAND-36, whereas, men describing themselves as "just right" reported significantly higher mental health scores (Burns, Tijhuis, & Seidell, 2001). In a sample of younger men and women, with a mean age

of 31, those who described themselves as overweight endorsed significantly lower life satisfaction, and men who described themselves as a normal weight reported significantly higher levels of perceived general health (single-item outcome score) (McCreary & Sadava, 2001).

The present findings are also consistent with the growing literature on the impact of body image dissatisfaction in young men, and suggest that older men are also bothered by how they feel about their bodies. Tager and colleagues (2006) reported low-to-moderate correlations, similar to those reported in the present study, between standardized measures of body image and scores on a measure of psychological well-being developed by Ryff (1989) in college-aged men. They further found that feelings of general attractiveness (AE subscale of the MBSRQ) explained 20% of the variance in scores on a measure of self-acceptance (Tager, Good, & Morrison, 2006). Bergeron & Tylka (2007) found that measures of drive for muscularity, and dissatisfaction with muscularity, height, and body fat (assessed using the Male Body Attitudes Scale, Tylka, Bergeron, & Schwartz, 2005), was predictive of approximately 9% of the variance in each of the following variables: depressive symptoms (using the CES-D), proactive coping, and of general psychological distress, and 13% of the variance in self-esteem.

There are many possible explanations for the observed relationship between body image concerns and quality of life. Men in the present sample were on average overweight, yet indicated a preference for a lean shape. These results suggest men experience some dysphoria, or frustration as a result of age-related changes to their bodies, such as decreased mobility, reduced muscularity, and an increase in body fat, which are inconsistent with their preferred lean ideal. As indicated earlier, men who are more invested in appearance in terms of their self-worth may be particularly affected by a discrepancy between their actual and

ideal shape. Men may be bothered by not having a lean shape because this discrepancy may signal poorer health. Alternatively, men may be bothered by their physique because failure to look this way means that they are no longer associated with certain qualities associated with this shape, such as dominance, power, energy, or masculinity. It is possible that the loss associated with not being able to fulfill previous masculine roles or simply the loss of prior functioning may result in mood symptoms among men in this sample. For example, Perez and colleagues (2002) showed that difficulty performing activities of daily living was associated with worse mood in men receiving surgery for prostate cancer, which they explained could be due to an increased sense of dependence on others, or via reduced occupational or social contacts.

According to a cognitive-behavioural conceptualization, body dissatisfaction may indirectly influence quality of life as a result of the impact of such concerns on behaviour. Among samples of younger men and women, body dissatisfaction is linked with avoidance behaviours such as avoidance of social contact, intimacy, and behaviours that may actually improve body esteem such as physical activity (Anton, Perri, & Riley, 2000). In a sample of older men and women who report body dissatisfaction, many described feeling deterred by the effort they felt would be necessary to successfully modify their size (Ziebland et al., 2001). Considering the known positive associations between social contact, physical activity and quality of life, failure to engage in these behaviours would have a negative impact on mood. Thus, these behaviours could mediate the relationship between body image concerns and quality of life or mood outcomes. Additionally, failure to engage in these behaviours could serve to maintain, or result in worse body image, with a concomitant impact on quality of life or mood.

### **3.0 Hypothesis 3: Predictors of Body Image Concerns**

Results revealed that investment in appearance, a cognitive factor amenable to psychosocial intervention, predicted body image concerns above and beyond that accounted for by demographic and medical variables, as well as aspects of bodily functioning. Results are unique in that they contraindicate previous suggestions (Ogden, 1992) that men's body image is related more strongly to function rather than aesthetics. In the current sample, men's body image was affected by both. Examination of unique predictors showed that being married, higher perceived physical functioning, both associated with hormone symptoms, and investment in appearance were predictive of body image concerns in men with prostate cancer.

Investment in appearance is an important construct in the body image literature. Cognitive-behavioural theory predicts that individuals are likely to be distressed about their appearance to the extent that appearance is of importance to one's sense of self, or self-worth (Cash, 2002). The present findings provide support for White's (2000) extension of this hypothesis, in which men with prostate cancer are proposed to express concerns about changes in their appearance resulting from cancer or its treatment to the extent that they are invested in these aspects of appearance. In addition to highlighting the role of investment in appearance, or concern about aesthetics, which uniquely accounted for 4% of the variance in body image concerns, findings are also meaningful in that they provide some insight into the direction of the relationship between investment in appearance and body image distress. Some researchers have suggested that investment in appearance may not always be problematic among cancer patients (e.g., Carver et al., 1998). For example, being invested in one's appearance may be a necessary motivational factor, perhaps specifically among middle-aged and older individuals, to engage in health behaviours (e.g., exercise). There is

likely an optimal level of investment in appearance, one that is conducive to engaging in behaviours with social benefits (e.g., good hygiene, grooming), and/or health benefits (e.g., exercise, minimizing consumption of fatty foods). However, findings from the current study suggest that for those men who do endorse body image concerns, higher levels of investment in appearance was associated with worse body image.

This is the first study to demonstrate a role, albeit small, for investment in appearance, or concerns about aesthetics in men's body image concerns, and specifically among older men with cancer. Overall, results would support counselling interventions aimed at reducing investment in appearance, or expanding the sources from which men derive their self-worth, as a means of reducing body image concerns.

Although the aim of the present study was to investigate the role of cognition in these patients' body image concerns, marital status emerged as an important predictor that uniquely accounted for 12% of the variance in body image concerns. Being married or living in a common-law relationship appeared to buffer men from experiencing body image concerns in this sample. The relationship between marital status and the availability of social support, and better adjustment to illness or quality of life has been consistently demonstrated in health research (Cutrona & Russell, 1990; Revenson, Schiaffino, & Majerovitz., 1991, Thompson & Pitts, 1992). Having a partner is proposed to provide general support against illness, and/or to provide a buffer against stress produced specifically by the illness (Burman & Margolis, 1992). In keeping with this literature, it is possible that men who are single experience higher levels of body dissatisfaction because they lack the emotional support offered by a partner. Men who are single also face the challenge of negotiating their diagnosis and the side-effects of their treatment with a new partner. Some men may experience bother or appearance-related distress to the extent that their body is identified as

a reason for potential rejection by a partner. These men may fear a new partner's response to their deficits in sexual functioning, which, may result in some men becoming negatively focused on their body.

In general, it is possible that how men view their body relates, in part, to their partner's reactions to their body or bodily changes – for better or worse. Men are likely to have better body image if their partner views their body favourably, and vice-versa. The present findings would suggest that the responses of the participants' partners in this study were generally positive. The diagnosis of prostate cancer itself has been described as an event that can lead to the renegotiation of the marital relationship, and a renewed sense of connection with one's partner (Gray et al., 1999). Thus, the process of being diagnosed and treated for cancer can lead to a strengthening of the marital bond that has many positive benefits for men. Given the proportion of variance accounted for by this variable, the present findings suggest this to be an important variable, and one that warrants further investigation.

Current findings also support previous suggestions that aspects of bodily functioning are relevant in the relationship between older age and body image (e.g., Drummond, 2003, Halliwell & Dittmar, 2003). Perceived physical functioning (SF-36) uniquely accounted for 3% of the variance in body image concerns. This supports previous findings from a focus group in which older men described the importance that they place on what the body can no longer do as a result of aging (Drummond, 2003). Earlier work on differences between young and older individuals' perceptions regarding their body, showed that elderly adults expressed less positive attitudes than young adults toward body items associated with body functioning (physical coordination, agility, sex drive, health) (Franzoi & Koehler, 1998). However, it was unclear whether such attitudes corresponded to scores on overall body

image. Findings again demonstrate that older men, similarly to younger men, pull in aspects of both functioning and aesthetics into their body image.

The lack of influence of exercise behaviour (at least frequency) on body image concerns is an interesting finding. In general, there is support for a positive association between level of exercising and body satisfaction in men (Tiggemann & Williamson, 2000). A recent meta-analysis found improvements in body dissatisfaction as a result of participating in structured exercise interventions, although smaller effect sizes were found among older adults (Hausenblas & Fallon, 2006). Men in the current sample reported on their own frequency of activity, but did not specify whether they were involved in such structured programs. Others have failed to find a relationship between exercise frequency and social physique anxiety in older men (McAuley, et al., 2002). In a review of the literature, Martin and Lichtenberger (2002) report on the inconsistent support for a dose-response relationship between amount of exercise and extent of changes in psychological outcomes. In the present findings, it appears that it is not the frequency of exercise per se, but the perceptions of overall physical functioning that is more important for men's body image. In the qualitative study mentioned above (Drummond, 2003), men described feeling happy simply to be moving, however limited that movement was, and that any amount of movement was equated with better health, which in turn, led to more positive feelings about the body. Thus, even low-impact activities such as gardening, or walking were considered important to one's body esteem. A structured program (a walking program in this particular study) was also considered a way that men could introduce some aspects such as competition, tracking improvements over time, and camaraderie with other men, that they previously enjoyed in more strenuous sports (Drummond, 2003).

Sexual functioning accounted for an incremental 7% of the variance in body image concerns, such that deficits in sexual functioning were associated with worse body image concerns. This is consistent with findings from focus groups that suggest sexual functioning is relevant to men's body image, in general (Wiederman, 2002), and supports findings from a sample of younger men with testicular cancer (Incrocci et al., 2002). However, in the current sample, sexual functioning was not a unique predictor of variance in body image scores. These findings parallel a study conducted by Perez and colleagues (2002), in which a multi-dimensional assessment of sexual functioning (i.e., including sexual function, interest, satisfaction, concerns) did not contribute any unique variance to quality of life and mood outcomes as expected.

The relationship between sexual functioning and body image appears to be complex. It may be that men's overall assessment of their body is affected by deficits in this area, in keeping with the proposed relationship between male body image and body functioning (Ogden, 1992). It is possible that deficits in sexual functioning may be considered a loss that affects men globally in terms of their overall self-concept. Others may become focused on their bodies as a diversion from more anxiety-provoking concerns. These concerns could range from uncertainty about survival to concerns about the impact of their sexual functioning on their relationship. There is some suggestion from a qualitative study of men's experiences with prostate cancer, that men may develop several negative assumptions about the impact of their sexual functioning deficits on their relationship, or marriage. For example, some men described feeling concerned that others, even their friends, may approach their partners, in light of the known deficits in sexual functioning associated with their illness (Gray, Fitch, Phillips, Labrecque, & Fergus, 2000). It is also possible that the influence of sexual functioning on one's body image is dependent on the situation, in that, it

body image concerns, both associated with hormone symptoms uniquely accounted for 4% of the variance in body image concerns. This finding parallels the above finding regarding physical functioning, in that it suggests again that it is men's perceptions rather than actual frequency of symptoms (e.g., perceptions of physical functioning rather than exercise frequency), that are important to men's body image. There are many possible reasons why men may be bothered by the side-effects of ADT: they are uncomfortable; they may signify lack of control over one's body; they may be associated with female qualities (e.g., hot flashes). Men who are particularly bothered by hot flashes and fatigue may develop negative evaluations of their bodies, resulting in worse body image. Since certain symptoms such as hot flashes, do not subside with time 5 or 8 years later (Karling, et.al., 1994, Thompson, et. al., 2003), these symptoms may continue to adversely affect body image post treatment. It would be important to re-assess the influence of such symptoms on body image post-treatment in future research.

Overall, findings provide important clues as to what may contribute to worse body image in men who do endorse such concerns. Results suggest that clinicians consider over-concern about aesthetics, or investment in appearance, as well as concerns about functioning and disruptive hormonal symptoms. In particular, men may wish to make several practical changes regarding their physical shape (evidence points to the benefits of structured exercise interventions in particular), as well as take steps to reduce the impact of hormonal symptoms (e.g., reduce duration of drug if possible). Since marital status emerged as an important influence on body image distress, including spouses when addressing this aspect of men's well-being is suggested. On the other hand, a significant proportion of the variance in body image concerns was not captured in the present model. Possible reasons for this will be

addressed in the section on implications for theory, and suggestions for future research below.

#### **4.0 Hypothesis 4: Test of a Cognitive-Behavioural Model of Body Image Concerns in Cancer Patients**

White (2000) proposed that investment in appearance moderates the relationship between evaluation of appearance and appearance-related distress. Results do show significant positive associations between investment in appearance and appearance-related situational distress, and between appearance-related changes due to cancer and appearance-related distress, consistent with a cognitive-behavioural conceptualization of body image. However, although investment in appearance emerged as predictive of body image concerns and distress in the current sample, results did not support the moderation relationship proposed by White (2002).

The proposed moderation relationship may not have been found for several reasons. Prostate cancer is a specific form of cancer with perhaps fewer overt physical changes in comparison with other cancers. Thus it is possible that this moderation hypothesis would emerge in other cancer populations with more visible effects such as scarring or removal of body tissue (i.e., melanoma, mastectomy). In this sample, a low overall mean on the SIBID-S, and a restricted range was observed in participants' scores. It is possible that this measure was not the most appropriate measure of appearance-related distress for this population, which may account for the lack of findings. Similarly, there may have been too few men in this sample who endorsed a significant level of investment in appearance, whereas, this may not be the case in other cancer or health populations with younger men. Given the sample size ( $n=96$ ), it is possible that there was insufficient power to detect the interaction term, the effect size for which are typically small (Chaplin, 1991).

In this sample, men were not asked which aspects of their body they felt were altered by treatment. White (2000) suggests examining perceived discrepancies in these specific areas (affected by treatment), and examining the moderating role of investment in these specific areas on appearance-related distress. Although the body “areas” believed to be affected by treatment may differ among patients, this may have been a more targeted way of testing the proposed moderation relationship in this sample.

The context of dealing with a diagnosis and treatment of cancer may have also introduced other variables that could diminish the moderation hypothesis proposed by White (2000). The results from the present study suggest that several factors (marital status, aspects of physical functioning, hormone symptoms) are important in the understanding of body image concerns, at least within this sample of men. Thus, other aspects of men’s lives play a role in their body image. In addition, men in the current sample were in their mid-60s. Although some men may still be somewhat concerned about their appearance, they may have had sufficient time to adjust to changes in their appearance. This level of adjustment or self-acceptance may account for the reduced role of investment in appearance in the present sample. Overall, it is possible that there are several disease-specific factors as well as methodological limitations to the current study that may have precluded demonstrating this moderation analysis.

### **5.0 Additional Analysis: Predictors of Body Image Satisfaction**

It is important to consider both predictors of resilience to illness in addition to negative psychosocial outcomes associated with cancer. Thus far, findings suggest that to reduce body image concerns, it is important to target investment in appearance, as well as aspects of marital functioning, body functioning and hormone treatment. However, addressing these areas may or may not be sufficient to encourage bodily esteem or

satisfaction in this population. Interestingly, BMI was not a significant correlate of body image concerns in the present sample; however, body mass did contribute to variance in body satisfaction, as assessed by ratings of satisfaction with individual body areas. Thus, to increase body satisfaction, findings also suggest that it would be important to reduce weight.

Although perceived physical functioning did not contribute any incremental variance in the prediction of body satisfaction scores after accounting for BMI, this variable uniquely accounted for a small portion of variance in body satisfaction (i.e., 4%). Specifically, better perceived physical functioning was associated with increased body satisfaction. This would suggest that perceived physical functioning is a shared protective and risk factor associated with body image for men in this sample. Interestingly, investment in appearance did not uniquely account for variance in body satisfaction scores. This is consistent with exercise intervention research in middle-aged men, where satisfaction with body function appears to be more strongly related with subjective measures of well being than a measure of satisfaction with appearance (Reboussin, Rejeski, Martin, Callahan, Dunn, King, & Sallis, 2000).

Taken together, these findings suggest that body image concerns may arise from a number of diverse factors, whereas, improving body satisfaction in men with prostate cancer requires a more specific focus, specifically weight status and perceived physical competence. These findings have implications for psychosocial programming, and this will be discussed below.

## **6.0 Implications of Findings for Theory**

### **6.1 Cognitive-Behavioural Conceptualization of Body Image Concerns**

The present study represents the first attempt to evaluate the role of appearance-related cognitions, in comparison with other potential contributing factors, in predicting

body image concerns in men treated for prostate cancer. Findings support using a cognitive-behavioural theoretical framework to conceptualize and assess body image disturbance; a framework, which can be applied across diverse medical populations.

Although intuitive that body image distress would be linked with measures of mood symptoms, whether high levels of investment in appearance is beneficial or harmful has been less clear. In the present study, higher levels of investment in appearance were associated with worse body image concerns as hypothesized. However, several contextual factors related to the illness and the aging process also contributed to men's body image concerns in this sample. In addition, investment in appearance did not moderate the relationship between body dissatisfaction and distress, as suggested in White's (2000) cognitive-behavioural model of body image disturbance in cancer patients. Taken together, findings support a role for investment in appearance as having a moderately negative influence on body image.

In the present study, the researchers did not inquire about weight reduction behaviours, and this would be a further test of the cognitive-behavioural conceptualization of body image concerns in older men. A positive association is expected between measures of body image distress and compensatory behaviours. However, results from qualitative work suggests a disconnect, where men may desire a different shape, but may not be sufficiently concerned to engage in any compensatory practices aimed at weight reduction, such as exercise or dieting (Fawkner & McMurray, 2002).

According to cognitive-behavioural theory, those who endorse more appearance-related schemas, or a higher level of investment in appearance, prior to treatment, would be expected to demonstrate higher levels of body image concerns, or appearance-related situational distress at subsequent time points (e.g., post treatment). Results from prospective studies would help to elucidate whether cognitive investment is a proximal or maintaining

factor relevant to body image concerns. This would be an important area for further research. Furthermore, any possible mediation relationships between investment in appearance, negative evaluation of one's body, associated distress, and compensatory behaviours would be possible to investigate in a longitudinal design. This research would help to elucidate the importance of this theoretical framework in understanding body image in men with cancer.

### 6.2. Attachment and Interpersonal Conceptualization of Body Image Concerns

There is growing interest in an interpersonal conceptualization of body image concerns (Cash & Fleming, 2002). In the present study, marital status was an important covariate, predicting 12% of the variance in body image concerns. We did not include measures of marital satisfaction, attachment, or marital functioning/dyadic adjustment, in the investigation of body image concerns in men with prostate cancer. The current results support previous suggestions that these factors would be important to consider when examining body image concerns in men (McKinley & Randa, 2005), and this and other quality of life outcomes in men with prostate cancer (Baider et al., 1998; Perez et al., 2002).

The threat of loss from a disease such as cancer is a strain on important attachments (e.g., spouse, siblings, friends, children) in one's life. According to attachment theory, the quality of one's attachment determines how a dyad would react to, and negotiate such a threat. Those with a secure attachment style, who exhibit low levels of attachment anxiety (characterized by monitoring of the relationship and sensitivity to rejection or threats to the attachment) and low levels of avoidance (avoiding closeness with attachment figures), typically have better relationship quality with their partners (Brennan & Shaver, 1995). These individuals are better able to communicate and to support each other in times of crisis, and are more likely to ask for and receive help from others. A recent randomized controlled trial of a family-based counselling intervention for men with prostate cancer showed

improved psychological outcomes for men over control subjects (i.e., better communication with spouse, less uncertainty), although women within the dyad reported more psychological benefits from the intervention than the men over a longer period of time (Northouse, Mood, Schafenacker, Montie, Sandler, Forman, Hussain, Pienta, Smith & Kershaw, 2007). In this study, women receiving the intervention reported better communication with spouses, less uncertainty, and fewer negative appraisals about their care-giving role. Since women are typically the primary care givers, addressing their needs and adjustment to their partner's illness is very important. Improved couples functioning would likely result in increased emotional support for men, which in turn, would facilitate better adjustment to illness, such as improved body image, or sexual satisfaction (Garos, Kluck & Aronoff, 2007).

From a theoretical perspective, attachment style may impact on body image directly. Research supports the relationship between attachment indices (i.e., anxiety and avoidant attachment styles) and investment in appearance among college-aged men (Cash, Theriault, & Annis, 2003) and between insecure attachment and disordered eating in women (Ward, Ramsay, & Treasure, 2000). Those who are higher on measures of anxious attachment have reported worse body image concerns (Cash et al., 2003), whereas a relationship has not been observed between avoidance and body dissatisfaction (Brennan & Shaver, 1995). McKinley and Randa (2005) explain that individuals with an anxious attachment style are more likely to attend to socially relevant cues such as appearance (than those people who are avoidant), and thus be more likely to be concerned about their appearance. These relationships have not been studied in this patient population. However, this framework may have utility in the understanding of body image concerns in older populations and in men with a life-threatening illness in particular. Specifically, it is possible that attachment style may directly

influence body image in this population, or have an indirect influence via the availability of social support within a couple - known to have a positive affect on quality of life outcomes.

### 6.3 Socio-cultural Theory and Body Image Concerns

According to social-cultural theory, individuals compare themselves to others in their environment, and this information is used to determine the extent to which one is discrepant from ideals. One possible explanation for relatively low levels of body dissatisfaction among the majority of men in this sample, is that men compare themselves to men of similar age (who tend to be overweight), and do not consider themselves discrepant. Given the low likelihood of a discrepancy, most men are therefore not likely to be distressed about their shape or weight. However, the majority of men in the present study reported an ideal shape that was not in the overweight range, which suggests that they are not influenced primarily by the size of men in their immediate environment. From the perspective of this theoretical framework, older men may be attuning more to media ideals when making comparisons with others, than other men they may encounter in daily life (e.g., friends, work, fellow members of a gym or club).

Stigmatizing messages in the environment, and in the media specifically, regarding illness, cancer, and aging may also be internalized and contribute to worse body image in men. Thus far, measures of internalization of media ideals, such as the Socio-cultural Attitudes Towards Appearance Questionnaire (SATAQ; Thompson, van den Berg, Roehrig, Guarda, 2004) have been validated in a sample of college-aged males or younger (Karazsia & Crowther, 2008). Although body dissatisfaction is expected to remit with age, the increasing importance of youth in the current socio-cultural landscape may begin to adversely affect older men. An expansion of such a measure (SATAQ), to include environmental messages regarding the aging body and illness may be useful in determining

the role of socio-cultural factors in predicting body image concerns in older men in general, and among men with cancer specifically.

#### 6.4 Identity Process Theory and Body Image

Given that many men have experienced some change in their appearance or bodily functioning due to age or illness, yet not all were adversely affected by these changes, it seems relevant to examine the role of adaptation to bodily changes as a factor influencing quality of life outcomes. How the individual assimilates or accommodates to the frequency of symptoms, or their perceived deficits in functioning, may determine the emergence of body image concerns. Use of identity process theory variables may help to explain such relationships.

Identity process theory proposes that individuals who are able to maintain a stable sense of self over time, while making behavioural and psychological adjustments to the aging process, are most likely to engage in compensatory and preventative health behaviours (Whitbourne & Collins, 1998). Two processes are highlighted: identity assimilation (where an attempt is made to maintain a consistent view of the self while interpreting age-related changes), and identity accommodation (age-related changes prompt a re-examination or redefinition of the sense of self). The ability to maintain a stable sense of self in the context of aging is related to a more favourable view of the self (Whitbourne & Collins, 1998). An over-reliance on either of the above mentioned processes is proposed to relate to poorer outcomes, including body image (Whitbourne & Skultety, 2002). These authors note that men who integrate their bodily changes fully into their identity (e.g., old, sick person) are less likely to take the steps (exercise, healthy eating, socializing) that ensure well-being. Instead, the ability to minimize the importance of body changes due to aging to a certain

extent, may allow individuals to maintain their sense of identity and preserve their body image.

Essentially, the meaning attributed to body changes due illness or aging may determine in part, men's adaptation to such changes, and the extent to which such changes affect their body image. This theoretical perspective may help to explain the wide range of responses to illness within health psychology and rehabilitation settings. In addition, this perspective would allow for a framework that assesses both resilience and positive outcomes, and negative adjustment simultaneously in health populations.

### **7.0 Implications of Findings for Measurement of Body Image Concerns in Men**

The current paper reports on internal consistency of various body image measures in a sample of older men, with and without illness. This study is the first to report on internal consistency of the BIS in prostate cancer patients, which is a measure of body image disturbance was developed on cancer patients, but has not yet been validated on a sample of patients with prostate cancer (Hopwood, et al., 2001). Findings from the current study provide preliminary support for the use of several standardized measures used previously on female or younger male subjects. However, it would be important to examine other measures of reliability (e.g., test-retest reliability) of the measures used in the current study in a pre-post- design.

One important caveat regarding measurement of body dissatisfaction among men in this age group relates to other aspects of these measures, such as range of variability, and minimal responding. For example, in the current sample, there was a very restricted range of variability on SIBID-S, a measure of body image distress. This may have made it difficult to capture differences between groups. Previous work on scale development for men suggests that men are more likely to respond less positively to positively phrased descriptions of

themselves, than to strongly endorse negative traits (Andersen, Cyranowski, & Espindle, 1999). A measure of body image distress may need to consider the valence of the wording, and thus include more positively phrased items (to be reverse-scored) relating to body image concerns. Given cultural pressures to minimize body image concerns, as these are typically associated with feminine qualities (Adams et al., 2005, Grogan & Richards, 2002), the wording of such a measure may also need to be more subtle.

Although the majority of men evaluated themselves as larger than their desired shape as assessed by figure rating scales, a minority endorsed body image concerns to a significant degree on standardized measures of body image concerns. This is an important consideration regarding the assessment of bodily dissatisfaction in older men. It suggests that while men may evaluate their silhouette as less than ideal, this (self-ideal-self) discrepancy is not necessarily accompanied by concomitant negative emotions and behaviours (e.g., as assessed on the SIBID-S). Thus, it would not be advisable to rely on figure rating scales for the assessment of male body image in future studies.

### **8.0 Clinical Implications**

Findings from the current study suggest that body image concerns are relevant in a minority of men with prostate cancer (e.g., 13 – 30%), and that these concerns, in turn, are negatively associated with quality of life. There are many interventions currently being developed that are tailored to the needs of cancer survivors, as well as cancer patients undergoing treatment (Northouse et al., 2007; Garos, & Aronoff, 2007). The present findings suggest that health care providers should be aware that a minority of men with prostate cancer do endorse these concerns. Assessment of body image in medical setting requires use of measures specific to the disease (Pruzinsky, & Cash, 2002). The current study supports the use of the BIS (Hopwood et al., 2001) in such settings.

For men who may present for treatment of body image concerns, current findings suggest the use of cognitive techniques (i.e., examination of cognitive distortion, thought records) to target schemas regarding investment in appearance. Therapists would be advised to inquire about disruptive hormone symptoms, sexual functioning, and perceived physical competence. Several behavioural strategies could be employed to reduce the impact of these aspects in men's lives. In particular, psychoeducation regarding the physiology of hormone symptoms, perhaps particularly hot flashes, may help to reduce any shame around these symptoms. It would also be important to inquire about the meaning men attribute to their physical symptoms. Results from the present findings suggest that bother associated with all aspects of physical functioning (sexual, physical, hormone symptoms) appears to be more important to men's body image than the frequency of these symptoms. This suggests that how men interpret these symptoms is more relevant than the "assault" to the body per se as a result of cancer treatment. Helping men to make meaning of these changes in a way that does not detract from their self-worth would likely help men overcome these challenges to their body image.

Findings from the present study also hint at possible protective factors regarding men's body image. In the present study, men with prostate cancer who were married reported fewer body image concerns. While it is not clear what accounts for this relationship, findings support health care provider's inquiry into the support received by the patient's partner regarding any bodily changes resulting from treatment. Several authors have suggested that, in addition to examining men's beliefs regarding sexual outcomes, targeting communication between couples and marital functioning may be advantageous in improving sexual outcomes (Schrover et al., 2002, Perez et al., 2002, Garos et al., 2007). Similarly,

men experiencing body image concerns may benefit from including one's partner in counselling.

Findings support a need to increase men's perceived sense of physical competence in order to improve body image. These findings support the need for individual or group-based programs that provide weight training and exercise programs for men being treated for prostate cancer. Such programs have already been shown to improve physical functioning and overall quality of life (Segal, et al., 2003). The other benefit of such a program is that it provides a means of "working on one's appearance" in a way that is socially acceptable. For example, men may feel more comfortable admitting to behaviours aimed toward benefiting health and fitness, than improving one's appearance. Recent qualitative work suggests that men would benefit from even small changes in their routine when it comes to perceived physical functioning, and social programming that includes this goal may be particularly advantageous for older men in general (Drummond, 2003). A recent survey of interest in services among prostate cancer patients, the majority of men (70%) indicated interest in informational services, while a minority (22%) expressed interest in psychosocial interventions (Shapiro, Coyne, Kruus, Palmer, Vaughn, & Malkowicz, 2004). It is possible then that men with prostate cancer would benefit overall in terms of their adjustment (and perhaps specifically, their body image) from attending a structured physical activity program where they could discuss aspects of their treatment and exchange information with other men going through a similar ordeal. For example, this information-exchange may provide a means of social support that would also benefit these men.

Certain behaviours thought to be associated with poor body image (e.g., frequent weighing) may be important for weight management in older age. There is growing interest in the health choices and behaviours of cancer survivors (Bellizzi, Rowland, Jeffery, &

McNeel, 2005). Some concern about appearance may be a motivating factor for exercise behaviour, which, in turn, may result in improvements in health, or reductions in risk factors for various illnesses, such as cardiovascular disease, and/ or recurrence of cancer. However, given the potential negative impact on quality of life, it would be important to inquire about the extent of such concerns in programs designed for the improvement of health in cancer survivors.

### **9.0 Limitations and Future Research**

The present study had several limitations. First, findings are correlational and therefore, do not imply causation. Second, the sample consisted of predominantly Caucasian men, limiting the overall generalizability of the findings. Within the quality of life literature, African-American men demonstrated higher levels of concerns about sexual functioning difficulties following prostate cancer (Schrover et al., 2002). Thus it is possible that sampling from an ethnically diverse group of men with prostate cancer would have yielded different results. Similarly, men in the control group were self-selected, Caucasian, and highly educated, therefore the generalizability of these findings to other groups is unknown.

Another limitation involved measurement and power. Although several of the measures used in the present study demonstrated adequate reliability, a restricted range was observed on some dependent variables (e.g., SIBID-S). Without sufficient variability, it is possible to have missed findings. The present study relied on self-report data, which are open to several forms of biased responding, such as denying or inflating reported behaviour or responding in order to present oneself in a positive light. However, in previous work Cash (1994; 2002) reported that the associations between the measures that were used in this study to assess body image (e.g. SIBID and ASIR) and with psychosocial adjustment were negligibly affected by shared variation due to socially desirable responding. Although results

provide preliminary support for the use of the BIS, a disease-specific measure of body image concerns in cancer patients, it would be important to examine other psychometric properties (e.g., test-retest reliability) of the body image measures used in the present study in a pre-post-design. The current study did not include measures of environmental influences on men's body image, although certainly, it is possible that men may internalize negative messages regarding old age and illness from the media. This, along with the limited range of variability in some of the measures used in the present study, suggests there is a need to develop measures of body image that may be more specific to men in older age groups, and among men with illness. The present study was likely underpowered for the regression analyses involving an interaction term (Hypothesis 2 and Hypothesis 4), the effect size of which are typically small (Chaplin, 1991). Thus, it is not possible to determine whether there was no real effect, or whether there was insufficient power to detect such an effect.

In addition, the present research focused on men receiving radiation for localized prostate cancer. White (2002) suggests that the influence of disease on body image may be related to the extent that bodily changes from disease or treatment are temporary and reversible with time, permanent, and/or, abrupt. Because men pursuing surgery tend to be younger and can experience a more abrupt, permanent loss of sexual functioning, it is possible that they may be at greater risk of body image concerns than men receiving radiation. It would be important to replicate these findings in other treatment groups (e.g., brachytherapy, prostatectomy). Although such research may reveal differences in body image across treatments, results from the current study showed that means on body image measures did not differ between men undergoing salvage radiation (after prostatectomy) and men receiving radiation alone.

In the present study, men completed measures of body image mid-way, or toward the end of their radiation treatment. This was done to examine the influence of treatment on one's sense of body integrity, since results from previous research on quality of life demonstrate that many specific deficits in quality of life related to urinary, bowel, hormone functioning subside with the cessation of treatment. However, in other cancer groups, at least among women with breast cancer, body image concerns have been observed to become more salient over time (Hopwood et al., 2001). Despite having received a diagnosis of localized cancer, and given the high survival rates, men going through treatment may be more concerned about the efficacy of treatment and their survival at this stage in the process, than their bodily functioning or body image. Therefore, it would be important to investigate these concerns six months to one year post-treatment, when such concerns may be more likely to surface.

Due to the cross-sectional nature of the study, it was not possible to determine whether the body image concerns endorsed by men in the current sample were evident prior to the diagnosis and treatment of prostate cancer. An exception was the BIS which assesses changes following treatment. It would be important for future research to examine body image concerns longitudinally, in order to determine whether there is a particular period during which men with prostate cancer exhibit these concerns to a significant degree. To date, no research has examined differences between patients with prostate cancer and controls at later stages in the recovery process. A longitudinal study would also allow for a more stringent test of the cognitive-behavioural conceptualization of body image concerns. For example, such research would elucidate whether investment in appearance is a proximal or maintaining factor in men's body image concerns.

A significant proportion of the variance in body image concerns and satisfaction was not explained by the current models. Future research may build on the present findings by assessment of the functioning of important relationships, as well as possibly including other informants of men's functioning, such as those of spouses, siblings, or even friends. The inclusion of relationship measures in a longitudinal design would allow for the exploration of the possible mediating role of marital functioning (or aspects of dyadic functioning such as communication, availability of emotional support) in the relationship between body dissatisfaction and distress. Ideally, marital status would not be used as a covariate. Rather it would be considered more prudent to consider this variable in the design of the study as covariates should preferably be independent of the outcome variable (Tabachnick & Fidell, 2001).

Since it was specifically bother associated with symptoms and perceptions of functioning rather than actual frequency of symptoms that was important to men's body image, future research should examine the specific meaning men attribute to their bodily changes. This may help to explain further the relationship between disease-specific symptoms and body image. For example, some men may view hot flashes as a feminine quality, which might engender disgust, as has been shown in men with advanced prostate cancer on more prolonged ADT (Navon & Morag, 2003). Some of the deficits in energy level, and physical strength might be inconsistent with previous roles, or aspects of one's identity. Men who have difficulty assimilating and accommodating to the age- or disease-related bodily changes may be at greater risk of body image concerns. The inclusion of identity process measures in future research may be useful in this regard.

### Conclusion

This thesis demonstrates that body image is not an immediate concern for men with localized prostate cancer undergoing treatment (toward the end of RT, minimum of 3 months of ADT). However, a minority of men do endorse these concerns above published norms. Since some of the side-effects of treatment are likely to persist or worsen over time, the present findings indicate that the investigation of body image concerns in these men at a later date is warranted. To reduce body image concerns in men in treatment for localized prostate cancer, findings suggest targeting several factors amenable to counselling or behavioural interventions, such as partner support, cognitive investment in appearance, and bother associated with disease-specific symptoms and aspects of physical functioning.

Despite increased attention toward quality of life outcomes associated with ADT, men receiving a minimum of 3 months of ADT were not at increased risk of body concerns. With the exception of bother associated with hormone symptoms (as opposed to actual frequency), medical variables (e.g., time since diagnosis, type of treatment received) were not predictive of body image concerns.

Finally, several factors relevant to body-image concerns were not predictive of body satisfaction. Whereas diverse factors were relevant to body image concerns, findings showed that a specific focus on increasing men's perceived physical functioning, and losing weight would likely improve body satisfaction in men undergoing treatment for localized prostate cancer.

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**Appendix A**



The Ottawa Hospital | L'Hôpital  
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Research Ethics Board  
Conseil d'éthique en recherches  
798-5555 ext 14146, 14902 or 15072  
Fax No. ~ 761-4311  
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Friday, February 24, 2006

Dr. Roanne Segal-Nadler  
The Ottawa Hospital Regional Cancer Centre  
Division of Medical Oncology  
503 Smyth Road, Box 122  
Ottawa, ON  
K1H 8L6

FEB 28 2006

Dear Dr. Segal-Nadler:

**Re: Protocol # 2005711-01H Body Image Concerns in Men with Localized Prostate Cancer (Local ER 05-12, OHREB #2005711-01H)**

**Protocol approval valid until - Friday, February 23, 2007**

I am pleased to inform you that your study (listed above) was given expedited review by the Ottawa Hospital Research Ethics Board (OHREB) and is approved. Approval is for the Protocol dated July 22, 2005, the English and French Health Status Questionnaire SF-36, the English and French Prostate Cancer Surveys, the English and French Refusal Questionnaires, the English and French Patient Information and Consent Forms, and the English and French Patient Information and Consent Forms for the Refusal Questionnaire. No changes, amendments or addenda may be made in the protocol without the OHREB review and approval.

The validation dated should be indicated on the bottom of all consent forms and information sheets (see copy attached). Approximately two months prior to the expiration date listed above, a single renewal form should be sent to the OHREB office.

The Tri-Council Policy Statement requires a greater involvement of the OHREB in studies over the course of their execution. The OHREB will review the new information to determine if the protocol should be modified, discontinued, or should continue as originally approved.

Yours sincerely,

Raphael Saginur, M.D.  
Chairman  
Ottawa Hospital Research Ethics Board

Encl.

/cb



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d'Ottawa

Research Ethics Board  
Conseil d'éthique en recherches  
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Wednesday, February 21, 2007

Dr. Roanne Segal-Nadler  
The Ottawa Hospital Regional Cancer Centre  
Division of Medical Oncology  
503 Smyth Road, Box 122  
Ottawa, ON  
K1H 8L6

Dear Dr. Segal-Nadler:


**RE: Protocol# - 2005711-01H Assessing Quality of Life and Body Image in Men With Prostate Cancer  
(Local ER 05-12, OHREB #2005711-01H)**

**Renewal Expiry Date - Sunday, February 24, 2008**

I am pleased to inform you that your Annual Renewal Request (listed above), the revised English and French Patient Information and Consent Forms and the revised English and French Patient Information and Consent Forms for the Refusal Questionnaire all dated January 17, 2007 were reviewed by the Ottawa Hospital Research Ethics Board (OHREB) and are approved. No changes, amendments or addenda may be made in the protocol or the consent form without the OHREB's review and approval.

Renewal is valid for a period of one year. The validation date should be indicated on the bottom of all consent forms and information sheets (see attached copy). Approximately one month prior to that time, a single renewal form should be sent to the OHREB office.

The Tri-Council Policy Statement requires a greater involvement of the OHREB in studies over the course of their execution. As well, you must inform the Board of adverse events encountered during the study, here or elsewhere, or of significant new information which becomes available after the Board review, either of which may impinge on the ethics of continuing the study. The OHREB will review the new information to determine if the protocol should be modified, discontinued, or should continue as originally approved.

Yours sincerely, 

Raphael Saginur, M.D.  
Chairman  
Ottawa Hospital Research Ethics Board

Encl.

c.c. Clinical Trials Office, The Ottawa Hospital Regional Cancer Centre, General Campus

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**QUEEN'S UNIVERSITY HEALTH SCIENCES & AFFILIATED TEACHING  
HOSPITALS RESEARCH ETHICS BOARD**



Queen's University, in accordance with the "Tri-Council Policy Statement, 1998" prepared by the Medical Research Council, Natural Sciences and Engineering Research Council of Canada and Social Sciences and Humanities Research Council of Canada requires that research projects involving human subjects be reviewed annually to determine their acceptability on ethical grounds.

**A Research Ethics Board composed of:**

<b>Dr. A.F. Clark</b>	<b>Emeritus Professor, Department of Biochemistry, Faculty of Health Sciences, Queen's University (Chair)</b>
<b>Dr. S. Burke</b>	<b>Emeritus Professor, School of Nursing, Queen's University</b>
<b>Rev. T. Deline</b>	<b>Community Member</b>
<b>Dr. M. Evans</b>	<b>Community Member</b>
<b>Dr. M. Green</b>	<b>Assistant Professor, Department of Family Medicine, Queen's University</b>
<b>Mr. C. Kenny</b>	<b>Community Member</b>
<b>Ms. T.C. Knott</b>	<b>Research &amp; Evaluation, Southeastern Regional Geriatric Program, Providence Continuing Care Centre – St. Mary's of the Lake Hospital Site</b>
<b>Dr. J. Low</b>	<b>Emeritus Professor, Department of Obstetrics and Gynaecology, Queen's University and Kingston General Hospital</b>
<b>Dr. H. Murray</b>	<b>Assistant Professor, Department of Emergency Medicine, Queen's University</b>
<b>Dr. W. Racz</b>	<b>Emeritus Professor, Department of Pharmacology &amp; Toxicology, Queen's</b>
<b>Dr. H. Richardson</b>	<b>Assistant Professor, Department of Community Health &amp; Epidemiology Project Coordinator, NCIC CTG, Queen's University</b>
<b>Dr. B. Simchison</b>	<b>Assistant Professor, Department of Anesthesiology, Queen's University</b>
<b>Dr. A.N. Singh</b>	<b>WHO Professor in Psychosomatic Medicine and Psychopharmacology Professor of Psychiatry and Pharmacology Chair and Head, Division of Psychopharmacology, Queen's University</b>
<b>Dr. S. Taylor</b>	<b>Director, Office of Bioethics, Queen's University and Kingston General Hospital; Associate Professor, Department of Medicine, Queen's University</b>
<b>Ms. K. Weisbaum</b>	<b>LL.B. and Adjunct Instructor, Department of Family Medicine (Bioethics)</b>

has examined the protocol and consent form for the project entitled "Body Image Concerns in Men with Localized Prostate Cancer" as proposed by Dr. J. Wilson of the Department of Urology at Queen's University and Dr. Roanne Segal and Ms. Corien Peeters of the Ottawa Hospital Regional Cancer Centre and considers it to be ethically acceptable. This approval is valid for one year. If there are any amendments or changes to the protocol affecting the subjects in this study, it is the responsibility of the principal investigator to notify the Research Ethics Board. Any unexpected serious adverse event occurring locally must be reported within 2 working days or earlier if required by the study sponsor. All other serious adverse events must be reported within 15 days after becoming aware of the information."

Chair, Research Ethics Board

March 31, 2006  
Date

ORIGINAL TO INVESTIGATOR - COPY TO DEPARTMENT HEAD - COPY TO HOSPITAL(S) - P&T - FILE COPY

UROL-161-06

EX



OFFICE OF RESEARCH SERVICES

Fleming Hall, Jemmett Wing  
Queen's University  
Kingston, Ontario, Canada K7L 3N6  
Tel 613 533-6081  
Fax 613 533-6806  
ors@post.queensu.ca  
www.queensu.ca/vpr/

May 18, 2006

Dr. J.W.L. Wilson  
Department of Urology  
Queen's University

**Re: "Body Image Concerns in Men with Localized Prostate Cancer"  
UROL-161-06**

Dear Dr. Wilson,

I am writing to acknowledge receipt of a letter dated May 10, 2006 which requested approval for an amendment to the above-named study. I have reviewed this amendment - the recruitment procedure - an on-line and magazine print advertisement in the classified section. I have reviewed this amendment, the information/consent form, and the sample advertisement and hereby give my approval. Receipt of these materials will be reported to the Research Ethics Board.

Yours sincerely,

Albert Clark, Ph.D.  
Chair  
Research Ethics Board

AFC/kr

c.c.: Dr. Roanne Segal, Ottawa Hospital Cancer Centre  
Ms. Corien Peeters, Ottawa Hospital Cancer Centre  
Mr. Joe Downey, Department of Urology

*think* Research  
*think* Queen's

**Appendix B**



The Ottawa Hospital | L'Hôpital d'Ottawa



## Patient Information and Consent Form

Revised January 17, 2007

### Assessing Quality of Life and Body Image in Men with Prostate Cancer

(Local ER 05-12, OHREB#2005711-01H)

#### PURPOSE OF STUDY

In this study, we will be asking you for your opinion about how your cancer treatment has affected your quality of life and how you feel about your body. This research is being done because we do not know whether experiencing changes in the body affects quality of life after treatment for prostate cancer.

#### INVESTIGATIONS

You are being asked to participate in this study because you have been diagnosed with prostate cancer and have received treatment for cancer at The Ottawa Hospital Regional Cancer Centre. This study only includes patients who choose to take part. If you choose to participate you will be asked to complete one survey at your convenience. The survey will be mailed to you so that participating is as easy as possible for you. The survey will take approximately 30 minutes to complete. You do not have to answer any questions you are uncomfortable with. In addition to this we will ask you to allow us to check your chart for medical information about your prostate cancer and its treatment.

In the survey, we will ask you for your opinion about how the medical treatment you have received has affected your body image and quality of life. For example, some of the questions ask about physical changes, such as weight gain and sexual functioning changes. The information you provide is for research purposes only and will remain confidential. The individuals (e.g. doctors, nurses, etc.) directly involved in your care will not see your responses to these questions.

#### RISKS & BENEFITS

There are no particular risks associated with filling out this survey. If you choose to participate and complete this questionnaire, you will receive no personal benefit. We hope that the information learned from this study will benefit other cancer patients in the future.

#### PAYMENTS

You will not be paid for your participation in this study.

#### CONFIDENTIALITY

If you choose to participate in this study, your doctor will ask you to sign this informed consent form. This means that you agree to participate in this study, involving completing a questionnaire about quality of life, and that you have no objection to information from this study being disclosed to The Ottawa Hospital Research Ethics Board for the purpose of verification of clinical trial procedures or data. The information collected from you, as part of this study, will be held in confidence. Your survey will be coded with a number, so that your name does not appear on it. Your name will not be disclosed in any report or publication resulting from the study or in any documents leaving The Ottawa Hospital Regional Cancer Centre, unless required by law.

#### VOLUNTARY PARTICIPATION

You are under no obligation to participate in the study. Participation in this quality of life study is voluntary and you may choose not to participate or to withdraw from the study at any time without giving a reason. This will not affect the standard of treatment you receive now or in the future.

*Civic Campus Civic*  
1053 av. Carling Avenue  
Ottawa, Ontario K1Y 4E9

*General Campus Général*  
501 chemin Smyth Road  
Ottawa, Ontario K1H 8L6

*Riverside Campus Riverside*  
1967 prom. Riverside Drive  
Ottawa, Ontario K1H 7W9

## FURTHER QUESTIONS

If you have any questions or concerns about this research, or should you desire further explanation about the study, you are encouraged to contact the doctoral student conducting the study, Corien Peeters,

This protocol has been approved by The Ottawa Hospital Research Ethics Board. This Board considers the ethical aspects of all hospital research projects using human subjects. If you have any questions concerning this study or your rights as a research subject, you may contact any of the following people:

- The Vice-President, The Ottawa Hospital Regional Cancer Centre, 613-737-7700, Ext. 70269
  - The Chairperson of The Ottawa Hospital Research Ethics Board, 613-798-5555, Ext. 14902
- 

I agree that Corien Peeters, a PhD Research Student from the University of Ottawa, may contact me by phone to explain the study further, and I agree to complete a survey that asks my opinion about my quality of life and the impact of my treatment on my body.

**If you agree, please provide your mailing address below:**

Mailing Address:

Name: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_

Postal Code: \_\_\_\_\_

Phone Number: (      ) \_\_\_\_\_

OR

I request that I not be contacted to participate in this study.

**SIGNATURES**

My signature below means I have read this 3-page patient information and consent form, (or it has been read to me), I have had the opportunity to review any questions with my doctor and I agree to participate in this study. A copy of this patient information and consent form will be given to me. I understand that even though I have signed this consent form I can decide to withdraw from this study at any time.

\_\_\_\_\_  
Patient's Name (Please Print)

\_\_\_\_\_  
Patient's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Investigator/Person Conducting the  
Informed Consent Discussion (Please Print)

\_\_\_\_\_  
Signature of Investigator/Person Conducting the  
Informed Consent Discussion

\_\_\_\_\_  
Date

(Valid until February 23, 2008)



The Ottawa Hospital | L'Hôpital  
d'Ottawa



**Renseignements à l'intention des patients  
et formulaire de consentement**

Révisé 17 janvier 2007

**Évaluation de la qualité de vie et de l'image corporelle des hommes ayant un  
cancer de la prostate**

(Local ER 05-12, OHREB n° 2005711-01H)

**OBJET DE L'ÉTUDE**

Dans cette étude, nous vous demanderons votre avis sur l'influence que le traitement du cancer a eu sur votre qualité de vie et l'image que vous avez de votre corps. Nous menons cette étude parce que nous ne savons pas si les changements qui se produisent dans le corps influencent la qualité de vie après le traitement du cancer de la prostate.

**RECHERCHE**

On vous demande de participer à cette étude parce qu'on a diagnostiqué un cancer de la prostate et que vous avez reçu des traitements au Centre régional de cancérologie de L'Hôpital d'Ottawa. Cette étude inclut uniquement des patients qui ont accepté d'y participer. Si vous choisissez d'y participer aussi, on vous demandera de répondre à un questionnaire au moment qui vous conviendra. Il vous sera envoyé par la poste afin que la participation à cette étude vous dérange le moins possible. Il faudra environ 40 minutes pour y répondre. Vous n'êtes pas obligé de répondre aux questions que vous jugez gênantes. En outre, nous vous demanderons l'autorisation de consulter votre dossier médical afin d'avoir des renseignements sur votre cancer de la prostate et son traitement.

Dans le questionnaire, nous vous demanderons comment votre traitement médical a influencé votre opinion sur votre corps et votre qualité de vie. Par exemple, certaines questions portent sur les changements physiques, tels qu'un gain de poids, et le fonctionnement sexuel. Les renseignements que vous nous fournirez serviront uniquement pour cette étude et demeureront confidentiels. Les personnes (c'est-à-dire les médecins, infirmières, etc.) qui participent directement à vos soins ne verront pas les réponses à ces questions.

**AVANTAGES ET INCONVÉNIENTS**

La réponse à ce questionnaire ne présente pas de risque particulier. Si vous choisissez de participer à l'étude et de répondre au questionnaire, vous n'aurez aucun avantage personnel, mais nous espérons que les renseignements qui en découleront profiteront à de futurs patients atteints de cancer.

**RÉMUNÉRATION**

Vous ne serez pas rémunéré pour participer à cette étude.

**CONFIDENTIALITÉ**

Si vous choisissez de participer à cette étude, votre médecin vous demandera de signer ce formulaire de consentement. Cela signifie que vous acceptez de participer à l'étude, qui consiste à remplir un questionnaire sur la qualité de vie, et que vous ne vous opposez pas à ce que les renseignements ainsi recueillis soient transmis au Conseil d'éthique en recherches de L'Hôpital d'Ottawa qui est chargé de vérifier les procédés ou données des essais cliniques.

*Civic Campus Civic*  
1053 av. Carling Avenue  
Ottawa, Ontario K1Y 4E9

*General Campus Général*  
501 chemin Smyth Road  
Ottawa, Ontario K1H 8L6

*Riverside Campus Riverside*  
1967 prom. Riverside Drive  
Ottawa, Ontario K1H 7W9

Les renseignements que vous nous fournirez dans le cadre de cette étude demeureront confidentiels. Votre questionnaire sera codé avec un chiffre afin que votre nom n'y figure pas. Votre nom ne figurera pas non plus dans aucun rapport ou aucune publication découlant de l'étude, ni dans aucun document qui sortira du Centre régional de cancérologie de L'Hôpital d'Ottawa, à moins que la loi ne l'exige.

### **PARTICIPATION VOLONTAIRE**

Vous n'êtes pas obligé de participer à l'étude. La participation à cette étude sur la qualité de vie est volontaire et vous pouvez refuser d'y participer ou vous désister en tout temps sans donner de raison. Votre décision n'aura aucun effet sur le traitement que vous recevez ou recevrez.

### **AUTRES QUESTIONS**

Si vous avez des questions ou préoccupations concernant cette étude, ou si vous désirez avoir d'autres explications, nous vous invitons à communiquer avec l'étudiant au doctorat responsable de l'étude, Corien Peeters, au t

Le Conseil d'éthique en recherches de L'Hôpital d'Ottawa a approuvé ce protocole. Ce comité examine les aspects éthiques de tous les projets de recherche faisant appel à des sujets humains menés à l'hôpital. Si vous avez des questions concernant cette étude ou vos droits en tant que sujet de recherche, vous pouvez communiquer avec les personnes suivantes :

- Le vice-président, Centre régional de cancérologie de L'Hôpital d'Ottawa, 613-737-7700, poste 70269
- Le président du Conseil d'éthique en recherches de L'Hôpital d'Ottawa, 613-798-5555, poste 14902

---

J'accepte que Corien Peeters, candidat au doctorat de l'Université d'Ottawa, me téléphone pour m'expliquer l'étude, et j'accepte de répondre à un questionnaire visant à recueillir mon avis sur la qualité de ma vie et les conséquences de mon traitement sur mon corps.

**Si vous acceptez, veuillez fournir vos coordonnées ci-dessous :**

Adresse postale

Nom : \_\_\_\_\_

Rue : \_\_\_\_\_

Ville : \_\_\_\_\_

Code postal : \_\_\_\_\_

Numéro de téléphone : ( \_\_\_\_\_ ) \_\_\_\_\_

OU

Je demande qu'on ne m'appelle pas pour participer à cette étude.

## **SIGNATURES**

Ma signature ci-dessous signifie que j'ai lu les renseignements 3-page à l'intention des patients et le formulaire de consentement (ou qu'on me l'a lu), que j'ai eu l'occasion de revoir n'importe quels points avec mon médecin et que j'accepte de participer à cette étude. Je recevrai une copie de ce formulaire. Je comprends que même si j'ai signé ce formulaire de consentement, je peux me désister en tout temps.

\_\_\_\_\_  
Nom du patient (en caractères d'imprimerie)

\_\_\_\_\_  
Signature du patient

\_\_\_\_\_  
Date

\_\_\_\_\_  
Nom du chercheur ou de la personne qui a  
obtenu le consentement éclairé (en caractères d'imprimerie)

\_\_\_\_\_  
Signature du chercheur ou de la personne qui a  
obtenu le consentement éclairé (en caractères d'imprimerie)

\_\_\_\_\_  
Date

(Valide jusqu'au 23 février, 2008)



The Ottawa Hospital | L'Hôpital  
d'Ottawa



**Patient Information and Consent Form  
for the Refusal Questionnaire**

Revised January 17, 2007

**Assessing Quality of Life and Body Image in Men with Prostate Cancer**  
(Local ER 05-12, OHREB#2005711-01H)

**INTRODUCTION**

You were asked to participate in the survey for the study named above. You have decided not to choose to take part. We appreciate the consideration you gave to this study and thank you for your time and effort.

**REASON FOR THIS SECOND REQUEST**

In designing studies like this, it is important for us to understand why people choose to participate or not, so we can possibly develop different approaches in future studies. We are asking for your help in understanding this process. To do this we are asking you to complete a questionnaire about your height, weight, age, and education/occupation status. The questionnaire will take 5-10 minutes to complete. In addition to this we will ask you to allow us to check your chart for medical information about your prostate cancer and its treatment.

**RISKS & BENEFITS**

There are no risks involved with completing this questionnaire. If you choose to complete this questionnaire, you will receive no personal benefit. We hope that the information learned from this study will benefit other cancer patients in the future.

**COSTS AND REIMBURSEMENTS**

You will not be paid to complete this questionnaire.

**CONFIDENTIALITY**

If you choose to participate in this study, your doctor will ask you to sign this informed consent form. This means that you agree to participate in this study, involving completing a questionnaire about quality of life, and that you have no objection to information from this study being disclosed to The Ottawa Hospital Research Ethics Board for the purpose of verification of clinical trial procedures or data. The information collected from you, as part of this study, will be held in confidence. Your survey will be coded with a number, so that your name does not appear on it. Your name will not be disclosed in any report or publication resulting from the study or in any documents leaving The Ottawa Hospital Regional Cancer Centre, unless required by law.

**VOLUNTARY PARTICIPATION**

You are under no obligation to participate in the study. Participation in this quality of life study is voluntary and you may choose to withdraw from the study at any time without giving a reason. This will not affect the standard of treatment you receive now or in the future.

*Civic Campus Civic*  
1053 av. Carling Avenue  
Ottawa, Ontario K1Y 4E9

*General Campus Général*  
501 chemin Smyth Road  
Ottawa, Ontario K1H 8L6

*Riverside Campus Riverside*  
1967 prom. Riverside Drive  
Ottawa, Ontario K1H 7W9

**FURTHER QUESTIONS**

If you have any questions or concerns about this research, or should you desire further explanation about the study, you are encouraged to contact the doctoral student conducting the study, Corien Peeters,

This protocol has been approved by The Ottawa Hospital Research Ethics Board. This Board considers the ethical aspects of all hospital research projects using human subjects. If you have any questions concerning this study or your rights as a research subject, you may contact any of the following people:

- The Vice-President, The Ottawa Hospital Regional Cancer Centre, 613-737-7700, Ext. 70269
- The Chairperson of The Ottawa Hospital Research Ethics Board, 613-798-5555, Ext. 14902

---

**SIGNATURES**

My signature below means I have read this 2-page patient information and consent form, (or it has been read to me), I have had the opportunity to review any questions with my doctor and I agree to participate in this study. A copy of this patient information and consent form will be given to me.

\_\_\_\_\_  
Patient's Name (Please Print)

\_\_\_\_\_  
Patient's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Investigator/Person Conducting the  
Informed Consent Discussion (Please Print)

\_\_\_\_\_  
Signature of Investigator/Person Conducting the  
Informed Consent Discussion

\_\_\_\_\_  
Date

(Valid until February 23, 2008)



**Renseignements à l'intention des patients  
et formulaire de consentement pour le  
questionnaire administré lors du refus**

Révisé 17 janvier 2007

**Évaluation de la qualité de vie et de l'image corporelle des hommes  
ayant un cancer de la prostate (Local ER 05-12, OHREB #2005711-01H)**

**INTRODUCTION**

Vous avez décidé de ne pas répondre au questionnaire lié à l'étude indiquée ci-dessus à laquelle nous vous avons demandé de participer. Nous vous remercions d'avoir pris le temps d'y penser.

**RAISON DE CETTE DEUXIÈME DEMANDE**

Lors de la conception d'études comme celles-ci, il est important de comprendre pourquoi des personnes choisissent ou refusent d'y participer afin de pouvoir adopter d'autres approches pour de futures études. Nous sollicitons votre aide pour comprendre ce processus et vous demandons pour ce faire de remplir un questionnaire où il suffit d'indiquer votre poids, votre âge, votre degré de scolarisation et votre situation professionnelle. Il faudra entre 5 et 10 minutes pour répondre au questionnaire. En outre, nous vous demanderons l'autorisation de consulter votre dossier médical afin d'avoir des renseignements sur votre cancer de la prostate et sur votre traitement.

**AVANTAGES ET INCONVÉNIENTS**

La réponse à ce questionnaire ne présente pas de risque particulier. Si vous choisissez d'y répondre, vous n'aurez aucun avantage personnel, mais nous espérons que les renseignements découlant de l'étude profiteront à de futurs patients atteints de cancer.

**RÉMUNÉRATION**

Vous ne serez pas rémunéré pour participer à cette étude.

**CONFIDENTIALITÉ**

Si vous choisissez de participer à cette étude, votre médecin vous demandera de signer ce formulaire de consentement. Cela signifie que vous acceptez de participer à l'étude, qui consiste à remplir un questionnaire sur la qualité de vie, et que vous ne vous opposez pas à ce que les renseignements ainsi recueillis soient transmis au Comité d'éthique de la recherche de L'Hôpital d'Ottawa qui est chargé de vérifier les procédés ou données des essais cliniques. Les renseignements que vous nous fournirez dans le cadre de cette étude demeureront confidentiels. Votre questionnaire sera codé avec un chiffre afin que votre nom n'y figure pas. Votre nom ne figurera pas non plus dans aucun rapport ou aucune publication découlant de l'étude, ni dans aucun document qui sortira du Centre régional de cancérologie de L'Hôpital d'Ottawa, à moins que la loi ne l'exige.

**PARTICIPATION VOLONTAIRE**

Vous n'êtes pas obligé de participer à l'étude. La participation à cette étude sur la qualité de vie est volontaire et vous pouvez refuser d'y participer ou vous désister en tout temps sans donner de raison. Votre décision n'aura aucun effet sur le traitement que vous recevez ou recevrez.

## AUTRES QUESTIONS

Si vous avez des questions ou préoccupations concernant cette étude, ou si vous désirez avoir d'autres explications, nous vous invitons à communiquer avec l'étudiant au doctorat responsable de l'étude, Corien Peeters, au

Le Comité d'éthique de la recherche de L'Hôpital d'Ottawa a approuvé ce protocole. Ce comité examine les aspects éthiques de tous les projets de recherche faisant appel à des êtres humains menés à l'hôpital. Si vous avez des questions concernant cette étude ou vos droits en tant que sujet de recherche, vous pouvez communiquer avec les personnes suivantes :

- Le vice-président, Centre régional de cancérologie de L'Hôpital d'Ottawa, 613-737-7700, poste 70269
- Le président du Comité d'éthique de la recherche de L'Hôpital d'Ottawa, 613-798-5555, poste 14902

---

## SIGNATURES

Ma signature ci-dessous signifie que j'ai lu les renseignements 2-page à l'intention des patients et le formulaire de consentement (ou qu'on me l'a lu), que j'ai eu l'occasion de revoir n'importe quels points avec mon médecin et que j'accepte de participer à cette étude. Je recevrai une copie de ce formulaire.

---

Nom du patient (en caractères d'imprimerie)

---

Signature du patient

---

Date

---

Nom du chercheur ou de la personne qui a obtenu le consentement éclairé (en caractères d'imprimerie)

---

Signature du chercheur ou de la personne qui a obtenu le consentement éclairé (en caractères d'imprimerie)

---

Date

(Valide jusqu'au 23 fevrier, 2008)

QUEEN'S UNIVERSITY  
DEPARTMENT OF UROLOGY  
KINGSTON GENERAL HOSPITAL  
KINGSTON, ONTARIO  
CANADA  
K7L 2V7



Centre for  
Advanced  
Urological  
Research



Dr. James W.L. Wilson	613 548-2493
Dr. Alvaro Morales	613 548-2424
Dr. J. Curtis Nickel	613 548-2497
Dr. D. Robert Siemens	613 548-2411
Dr. Darren T. Beiko	613 548-2498
Dr. Jun Kawakami	613 548-2492
Dr. Stephen S. Steele	613 548-6090
Department Assistant	613 549-6666
	Ext. 3743
Department Fax	613 545-1970
Out Patient Appointments	613 548-2342

## Letter of Information and Patient Consent Form Body Image Concerns and Quality of Life in Men with Prostate Cancer

### Purpose of Study

This is a one time questionnaire study that asks you for your opinion about how your cancer treatment has affected your quality of life and how you feel about your body. This research study is being done because it is not known whether changes in the body after treatment for prostate cancer affect quality of life.

### Investigation

You are being asked to participate in this study because you have been diagnosed with prostate cancer and have received treatment for your cancer. If you choose to participate in this research study you will be contacted by a research coordinator from the Ottawa Hospital Regional Cancer Centre to complete the survey at your convenience. The coordinator will discuss the study in detail with you and if you agree to participate will mail the survey to you. The survey will take approximately 30 minutes to complete and you do not have to answer any questions you are uncomfortable with. In addition, the research coordinator will ask your permission to check your medical chart for information about your prostate cancer and its treatment. This information will be provided to the Ottawa coordinator **only with your permission.**

### Contact Persons for Study

If at anytime you have questions, concerns or comments about this study please contact Corien Peeters at \_\_\_\_\_ or Dr. Roanne Segal (Medical Oncologist) at 613-737-7700 ext. 70185 at the Ottawa Hospital Regional Cancer Centre.

This study has been reviewed for ethical compliance by the Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board. If you have concerns about your rights as a research subject you may contact Dr. Albert Clark, Chair of the Research Ethics Board at 613-533-6081.

### Voluntary Participation

The information you provide is for research purposes only and will remain confidential within the study personnel. By signing this form you agree to have your contact information faxed to the research coordinator in Ottawa. The coordinator will contact you upon receipt of this information to request your voluntary participation in this study. We will photocopy this signed form for our records.

My signature below means I have read this patient information and consent form and voluntarily agree to have my contact information faxed to the Ottawa coordinator for

the purpose of contacting me to request my participation in this study. I understand that this form is not a consent form for my participation in the study and only gives permission to be contacted by the Ottawa coordinator.

\_\_\_\_\_  
Patient's Name (Please Print)

\_\_\_\_\_  
Patient's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Person Conducting  
Discussion

\_\_\_\_\_  
Signature of Person Conducting  
Discussion

\_\_\_\_\_  
Date



**The Ottawa Hospital**  
**L'Hôpital d'Ottawa**



**Letter of Information and Participant Consent Form**  
**Body Image Concerns and Quality of Life in Men with Localized Prostate Cancer**  
 (UROL-161-06)

**Purpose of Study**

This study will examine quality of life and body image changes experienced by men diagnosed with prostate cancer and in healthy men with no history of cancer. This research is being done because we do not know whether experiencing changes in the body as a result of age, good health or illness affects quality of life.

**Investigation**

If you choose to participate in this research study you will be asked to complete one survey at your convenience. The survey will take approximately 30 minutes to complete and questions are focused on the subject of physical and sexual functioning changes due to age. You do not have to answer any questions you are uncomfortable with. The information you provide is for research purposes only and will remain confidential.

**Contact Persons for Study**

This study is being done at the Ottawa Regional Cancer Centre and in collaboration with the Kingston General Hospital in Ontario. If at anytime you have questions, concerns or comments about this study please contact Corien Peeters, Research Coordinator, at \_\_\_\_\_ or Dr. Roanne Segal (Medical Oncologist) at 613-737-7700 ext. 70185 at the Ottawa Hospital Regional Cancer Centre.

This study has been reviewed for ethical compliance by the Ottawa Hospital and Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board. If you have concerns about your rights as a research subject you may contact Dr. Albert Clark, Chair of the Research Ethics Board at 613-533-6081.

**Voluntary Participation**

The information you provide is for research purposes only and will remain confidential within the study personnel. My signature below means I have read this patient information and consent form and voluntarily agree to participate in the study by completing a one-time questionnaire on body image and quality of life.

\_\_\_\_\_  
 Participant Name (Please Print)

\_\_\_\_\_  
 Participant's Signature

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Name of Person Conducting  
 Discussion

\_\_\_\_\_  
 Signature of Person Conducting  
 Discussion

\_\_\_\_\_  
 Date

**Appendix C**

**FOR OFFICE USE ONLY:**

ID # \_\_\_\_\_

SITE \_\_\_\_\_

## ***PROSTATE CANCER SURVEY***

**Please:**

Complete this survey alone  
Then mail the completed survey package and  
the signed consent form to the return address.  
A stamped envelope with a return address is  
provided.

**Thank you** for your participation in this  
research project.

**A. DEMOGRAPHICS**

1.) Age: \_\_\_\_\_ yrs

Date: \_\_\_\_\_

2.) Education:

(Check off the highest level of education completed:)

Some High School \_\_\_\_\_  
Some College \_\_\_\_\_  
Some University \_\_\_\_\_  
Some Graduate School \_\_\_\_\_

Completed High School: \_\_\_\_\_  
Completed College: \_\_\_\_\_  
Completed University: \_\_\_\_\_  
Completed Graduate School: \_\_\_\_\_

3.) Race/Ethnicity: (Check your answer)

a. White \_\_\_\_\_  
b. Black \_\_\_\_\_  
c. Asian/Pacific Islander \_\_\_\_\_  
d. Hispanic \_\_\_\_\_  
e. Aboriginal \_\_\_\_\_  
f. Arab \_\_\_\_\_  
g. Other \_\_\_\_\_

4.) Employment: (Check your answer)

a. Full Time \_\_\_\_\_  
b. Part Time \_\_\_\_\_  
c. Temporarily Unemployed \_\_\_\_\_  
d. Disability \_\_\_\_\_  
e. Retired \_\_\_\_\_

What is your present or most recent occupation?

\_\_\_\_\_

5.) Marital Status: (Check your answer)

a. Never Married \_\_\_\_\_  
b. Separated \_\_\_\_\_  
c. Divorced \_\_\_\_\_  
d. Married \_\_\_\_\_  
e. Widowed \_\_\_\_\_  
f. Common-law \_\_\_\_\_

6.) How many years have you lived with your current spouse or partner? \_\_\_\_\_ yrs

7.) Age of current spouse or partner: \_\_\_\_\_ yrs

8.) What is your height: \_\_\_\_\_ (in feet and inches)

9.) What is your current weight: \_\_\_\_\_ lbs ( in pounds)

**B. YOUR HEALTH HISTORY**

1.) Date of original biopsy \_\_\_\_\_ (Day / Month / Year)

2.) Please check any treatment(s) you have received for prostate cancer:

A.)  Radiation Treatment

B.)  Surgery (Prostate)

C.)  Other: \_\_\_\_\_

3.) Are you currently taking Hormone Therapy (e.g. Androgen-Deprivation Therapy)?

Check either:  YES  NO

4.) Please check any other medical conditions that you have currently: (Check your answer)

hypertension (increased blood pressure)

osteoporosis (weakening of the bones)

diabetes

cardiac illness

other: (Please describe) \_\_\_\_\_

5.) Do you have a current diagnosis of any other type of cancer other than prostate cancer?

Check either:  YES  NO



If Yes, please describe: \_\_\_\_\_

6.) Have you been previously diagnosed with a mental health condition (such as depression, an anxiety disorder, dementia, substance abuse)?

Check either:  YES  NO



If Yes, please describe: \_\_\_\_\_

**Godin Leisure-Time Exercise Questionnaire :**

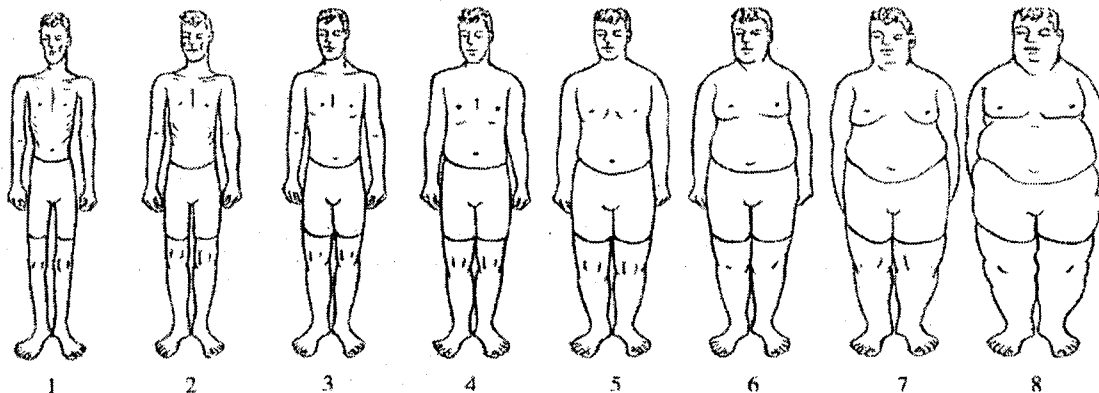
The next set of questions asks about physical activities.

Write on each line the appropriate number. If you do not currently do any activity, please write zero.

7.)	During a typical 7-Day period (a week), how many times on the average do you do the following kinds of exercise for <b>more than 15 minutes</b> during your free time	<b>Number of Times Per Week</b>
	<b>a) STRENUOUS EXERCISE (HEART BEATS RAPIDLY)</b>  (e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)	
	<b>b) MODERATE EXERCISE (NOT EXHAUSTING)</b>  (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)	
	<b>c) MILD EXERCISE (MINIMAL EFFORT)</b>  (e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)	
8.)	During a typical 7-Day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?  OFTEN                      SOMETIMES                      NEVER/RARELY 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/>	

**C. YOUR BELIEFS**

Please look at the pictures below:



1.) Write the number belonging to the figure that best describes your current shape:

Number \_\_\_\_\_

2.) Which figure best describes the shape you want to have?

Number \_\_\_\_\_

Please continue on the next page...

## BIS

In this questionnaire you will be asked how you feel about your appearance, and about any changes that may have resulted from your disease or treatment.

Please read each item carefully and place a checkmark on the line alongside the reply which comes closest to the way you have been feeling about yourself, during the past week.

	Not at all	A little	Quite a bit	Very Much
1.) Have you been feeling self-conscious about your appearance?				
2.) Have you felt <u>less</u> physically attractive as a result of your disease or treatment?				
3.) Have you been <u>dissatisfied</u> with your appearance when dressed?				
4.) Have you been feeling <u>less</u> masculine as a result of your disease or treatment?				
5.) Did you find it difficult to look at yourself naked?				
6.) Have you been feeling less sexually attractive as a result of your disease or treatment?				
7.) Did you avoid people because of the way you felt about your appearance?				
8.) Have you been feeling the treatment has left your body less of a whole?				
9.) Have you felt <u>dissatisfied</u> with your body?				
10.) Have you been <u>dissatisfied</u> with the appearance of your scar?				

### ASI-R

The statements below are beliefs that people may or may not have about their physical appearance and its influence on life. Decide on the extent to which you personally disagree or agree with each statement and enter a number from 1 to 5 in the space on the left. There are no right or wrong answers. Just be truthful about your personal beliefs.

	Strongly Disagree	Mostly Disagree	Neither Agree or Disagree	Mostly Agree	Strongly Agree
1. I spend little time on my physical appearance	1	2	3	4	5
2. When I see good-looking people, I wonder about how my own looks measure up	1	2	3	4	5
3. I try to be as physically attractive as I can be.	1	2	3	4	5
4. I have never paid much attention to what I look like	1	2	3	4	5
5. I seldom compare my appearance to that of other people I see	1	2	3	4	5
6. I often check my appearance in a mirror just to make sure I look okay	1	2	3	4	5
7. When something makes me feel good or bad about my looks, I tend to dwell on it	1	2	3	4	5
8. If I like how I look on a given day, it's easy to feel happy about other things.	1	2	3	4	5
9. If somebody had a negative reaction to what I look like, it wouldn't bother me	1	2	3	4	5

	Strongly Disagree	Mostly Disagree	Neither Agree or Disagree	Mostly Agree	Strongly Agree
10. When it comes to my physical appearance, I have high standards.	1	2	3	4	5
11. My physical appearance has had little influence on my life	1	2	3	4	5
12. Dressing well is not a priority for me	1	2	3	4	5
13. When I meet people for the first time, I wonder what they think about how I look	1	2	3	4	5
14. In my everyday life, lots of things happen that make me think about what I look like	1	2	3	4	5
15. If I dislike how I look on a given day, it's hard to feel happy about other things	1	2	3	4	5
16. I fantasize about what it would be like to be better looking than I am	1	2	3	4	5
17. Before going out, I make sure that I look as good as I possibly can	1	2	3	4	5
18. What I look like is an important part of who I am	1	2	3	4	5
19. By controlling my appearance, I can control many of the social and emotional events in my life	1	2	3	4	5
20. My appearance is responsible for much of what's happened to me in my life.	1	2	3	4	5

For the following questions, please indicate whether you disagree or agree. Circle your response:

	Strongly Disagree	Disagree	Neither agree or disagree	Mostly Agree	Strongly Agree
C.3.) Being muscular is important to me	(1)	(2)	(3)	(4)	(5)
C.4.) While I may gain weight, it is important to me that I maintain a masculine shape	(1)	(2)	(3)	(4)	(5)
C.5.) It is important for a man to be energetic	(1)	(2)	(3)	(4)	(5)

How *important* are each the following body attributes to you? Please circle your response:

	Not Important	Somewhat Important	Important	Very Important
C6.) Body proportions	(-1)	(1)	(2)	(3)
C7.) Weight	(-1)	(1)	(2)	(3)
C8.) Chest size	(-1)	(1)	(2)	(3)
C9.) Physical strength	(-1)	(1)	(2)	(3)
C10.) Physical coordination	(-1)	(1)	(2)	(3)
C11.) Overall appearance	(-1)	(1)	(2)	(3)

C12.) Breast growth (gynecomastia) is a common finding in men due to age or weight gain.

Before treatment for prostate cancer, had you noticed any increase in your breast tissue (e.g. since age of 40)?

\_\_\_ Yes: If so, please indicate: \_\_\_ < less than 4 cm in diameter

\_\_\_ No: \_\_\_ > greater than 5 cm in diameter

C13.) Since starting treatment for prostate cancer, have you noticed any increase in breast tissue?

- less than 4 cm in diameter
- greater than 5 cm in diameter
- no increase
- not applicable

C14.) How big a problem since starting treatment for prostate cancer, if any, has the increase in breast tissue been for you?

- |               |                       |                  |                     |                |
|---------------|-----------------------|------------------|---------------------|----------------|
| No<br>Problem | Very Small<br>Problem | Small<br>Problem | Moderate<br>Problem | Big<br>Problem |
| 1             | 2                     | 3                | 4                   | 5              |

**D. SEXUAL HISTORY**

**Past:** The next three questions (only) ask about the 6 months before your diagnosis:

1.)	In the 6 months <u>before</u> your current diagnosis, how frequently did you have sexual intercourse?  _____ times per month										
2.)	In the 6 months <u>before</u> your current diagnosis, how often did you desire sex? Please circle your response:  <table border="0" style="width: 100%; text-align: center;"> <tr> <td>(0)</td> <td>(1)</td> <td>(2)</td> <td>(3)</td> <td>(4)</td> </tr> <tr> <td>Never</td> <td>Hardly Ever</td> <td>Occasionally</td> <td>Usually</td> <td>Always</td> </tr> </table>	(0)	(1)	(2)	(3)	(4)	Never	Hardly Ever	Occasionally	Usually	Always
(0)	(1)	(2)	(3)	(4)							
Never	Hardly Ever	Occasionally	Usually	Always							
3.)	Overall, how big a problem has your sexual function or lack of sexual function been for you in the <u>6 months before your current diagnosis</u> ?  <table border="0" style="width: 100%; text-align: center;"> <tr> <td>No Problem</td> <td>Very Small Problem</td> <td>Small Problem</td> <td>Moderate Problem</td> <td>Big Problem</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	No Problem	Very Small Problem	Small Problem	Moderate Problem	Big Problem	1	2	3	4	5
No Problem	Very Small Problem	Small Problem	Moderate Problem	Big Problem							
1	2	3	4	5							

## EXPANDED PROSTATE CANCER INDEX COMPOSITE Questionnaire

Please circle your response below keeping in mind the last 4 weeks...

How would you rate each of the following during the last 4 weeks?	Very Poor to None	Poor	Fair	Good	Very Good
1.) Your level of sexual desire	1	2	3	4	5
2.) Your ability to have an erection	1	2	3	4	5
3.) Your ability to reach orgasm (climax)	1	2	3	4	5

4.) How would you describe the usual QUALITY of your erections during the last 4 weeks?

- None at all
- Not firm enough for any sexual activity
- Firm enough for masturbation and foreplay only
- Firm enough for intercourse

5.) How would you describe the FREQUENCY of your erections during the last 4 weeks?

- Never had an erection when I wanted one
- I had an erection LESS THAN HALF the time I wanted one
- I had an erection ABOUT HALF the time I wanted one
- I had an erection MORE THAN HALF the time I wanted one
- I had an erection WHENEVER I wanted one

6.) How often have you awakened in the morning or night with an erection during the last 4 weeks?

- |       |                          |                      |                         |       |
|-------|--------------------------|----------------------|-------------------------|-------|
| Never | Less than<br>once a week | About once<br>a week | Several times<br>a week | Daily |
| 1     | 2                        | 3                    | 4                       | 5     |

7.) During the last 4 weeks, how often did you have any sexually activity?

- |               |                          |                      |                         |       |
|---------------|--------------------------|----------------------|-------------------------|-------|
| Not at<br>all | Less than<br>once a week | About once<br>a week | Several times<br>a week | Daily |
| 1             | 2                        | 3                    | 4                       | 5     |

8.) During the last 4 weeks, how often did you have sexual intercourse?

Not at all 1	Less than once a week 2	About once a week 3	Several times a week 4	Daily 5
--------------------	-------------------------------	---------------------------	------------------------------	------------

9.) Overall how would you rate your ability to function sexually during the last 4 weeks?

Very Poor 1	Poor 2	Fair 3	Good 4	Very Good 5
-------------------	-----------	-----------	-----------	-------------------

How big a problem during the last 4 weeks, if any, has each of the following been for you?

No Problem	Very Small Problem	Small Problem	Moderate Problem	Big Problem
---------------	--------------------------	------------------	---------------------	----------------

10.) Your level of sexual desire

1	2	3	4	5
---	---	---	---	---

11.) Your ability to have an erection

1	2	3	4	5
---	---	---	---	---

12.) Your ability to reach orgasm (climax)

1	2	3	4	5
---	---	---	---	---

13.) Overall, how big a problem has your sexual function or lack of sexual function been for you during the last 4 weeks?

No Problem 1	Very Small Problem 2	Small Problem 3	Moderate Problem 4	Big Problem 5
--------------------	----------------------------	-----------------------	--------------------------	---------------------

14.) Over the last 4 weeks, how often have you experienced hot flashes?

More than once a day 1	About once a day 2	More than once a week 3	About once a week 4	Rarely or Never 5
------------------------------	--------------------------	-------------------------------	---------------------------	-------------------------

15.) How often have you had breast tenderness during the last 4 weeks?

More than once a day 1	About once a day 2	More than once a week 3	About once a week 4	Rarely or Never 5
------------------------------	--------------------------	-------------------------------	---------------------------	-------------------------

16.) During the last 4 weeks, how often have you felt depressed?

More than once a day 1	About once a day 2	More than once a week 3	About once a week 4	Rarely or Never 5
------------------------------	--------------------------	-------------------------------	---------------------------	-------------------------

17.) During the last 4 weeks, how often have you felt a lack of energy?

More than once a day	About once a day	More than once a week	About once a week	Rarely or Never
1	2	3	4	5

18.) How much change in your weight have you experienced during the last 4 weeks if any?  
Check your response:

- Gained 10 pounds or more
- Gained less than 10 pounds
- No change in weight
- Lost less than 10 pounds
- Lost 10 pounds or more

How big a problem during the last 4 weeks, if any, has each of the following been for you?	No Problem	Very Small Problem	Small Problem	Moderate Problem	Big Problem
19.) Hot flashes	1	2	3	4	5
20.) Breast tenderness/enlargement	1	2	3	4	5
21.) Loss of body hair	1	2	3	4	5
22.) Feeling depressed	1	2	3	4	5
23.) Lack of energy	1	2	3	4	5
24.) Change in body weight	1	2	3	4	5





### ESS Questionnaire

Everybody at times can feel embarrassed, self-conscious, or ashamed. These questions are about such feelings if they have occurred at any time **in the past year**. There are no 'right' or 'wrong' answers. Please indicate the response which applies to you with a tick, or checkmark.

	Not at all	A little	Moderately	Very Much
1.) Have you felt ashamed of any of your personal habits?				
2.) Have you worried about what other people think of any of your personal habits?				
3.) Have you tried to cover up or conceal any of your personal habits?				
4.) Have you felt ashamed of your manner with others?				
5.) Have you worried about what other people think of your manner with others?				
6.) Have you avoided people because of your manner?				
7.) Have you felt ashamed of the sort of person you are?				
8.) Have you worried about what other people think of the sort of person you are?				
9.) Have you tried to conceal from others the sort of person you are?				
10.) Have you felt ashamed of your ability to do things?				
11.) Have you worried about what other people think of your ability to do things?				

	Not at all	A little	Moderately	Very Much
12.) Have you avoided people because of your inability to do things?				
13.) Do you feel ashamed when you do something wrong?				
14.) Have you worried about what other people think of you when you do something wrong?				
15.) Have you tried to cover up or conceal things you felt ashamed of having done?				
16.) Have you felt ashamed when you said something stupid?				
17.) Have you worried about what other people think of you when you said something stupid?				
18.) Have you avoided contact with anyone who knew you said something stupid?				
19.) Have you felt ashamed when you failed at something which was important to you?				
20.) Have you worried about what other people think of you when you fail?				
21.) Have you avoided people who have seen you fail?				
22.) Have you felt ashamed of your body or any part of it?				
23.) Have you worried about what other people think of your appearance?				
24.) Have you avoided looking at yourself in the mirror?				
25.) Have you wanted to hide or conceal your body or any part of it?				

**F. YOUR FEELINGS**

**SIBID-S Questionnaire**

**INSTRUCTIONS:** At various times and in various situations, people may experience negative feelings about their own physical appearance. Such feelings include feelings of unattractiveness, physical self-consciousness, distress, or dissatisfaction with one or more aspects of one's appearance. This questionnaire lists a number of situations and asks how often you have uncomfortable feels about your physical appearance in each of these situations. Think about times when you have been in each situation and indicate how often you've had negative feelings about your physical appearance in that situation. Use the 0 to 4 scale below to indicate **HOW OFTEN** you have such negative emotional experiences: For situations that you have not been in, simply indicate how often you believe that you would experience negative emotions about your appearance if you were in the situation. Please answer accurately and honestly by entering a number from 0 to 4 in each space to describe your experiences. There are no right or wrong answers.

HOW OFTEN?	Never	Sometimes	Moderately Often	Often	Always or Almost Always
1. At social gatherings where I know few people	0	1	2	3	4
2. When I look at myself in the mirror	0	1	2	3	4
3. When people see me before I've "fixed up"	0	1	2	3	4
4. When I am with attractive persons of my sex	0	1	2	3	4
5. When I am with attractive persons of the other sex	0	1	2	3	4
6. When someone looks at parts of my appearance that I dislike	0	1	2	3	4
7. When I look at my nude body in the mirror	0	1	2	3	4

<b>HOW OFTEN do you have negative feelings about your appearance?</b>	<b>Never</b>	<b>Sometimes</b>	<b>Moderately Often</b>	<b>Often</b>	<b>Always or Almost Always</b>
8. When I am trying on new clothes at the store	0	1	2	3	4
9. After I have eaten a full meal	0	1	2	3	4
10. When I see attractive people on television or in magazines	0	1	2	3	4
11. When I get on the scale to weigh	0	1	2	3	4
12. When anticipating or having sexual relations	0	1	2	3	4
13. When I'm already in a bad mood about something else	0	1	2	3	4
14. When the topic of conversation pertains to physical appearance	0	1	2	3	4
15. When someone comments unfavourably on my appearance	0	1	2	3	4
16. When I see myself in a photograph or videotape	0	1	2	3	4
17. When I think about what I wish I looked like	0	1	2	3	4

**HOW OFTEN do you have negative feelings about your appearance?**

**Never**

**Sometimes**

**Moderately Often**

**Often**

**Always or Almost Always**

18. When I think about how I may look in the future

0

1

2

3

4

19. When I am with a certain person

0

1

2

3

4

20. During recreational activities

0

1

2

3

4

## THE MBSRQ

### INSTRUCTIONS--PLEASE READ CAREFULLY

The following pages contain a series of statements about how people might think, feel, or behave. You are asked to indicate the extent to which each statement pertains to you personally.

Your answers to the items in the questionnaire are anonymous, so please do not write your name on any of the materials. In order to complete the questionnaire, read each statement carefully and decide how much it pertains to you personally. Using a scale like the one below, indicate your answer by entering it to the left of the number of the statement.

#### **EXAMPLE:**

\_\_\_\_\_ I am usually in a good mood.

In the blank space, enter a **1** if you **definitely disagree** with the statement;

enter a **2** if you **mostly disagree**;

enter a **3** if you **neither agree nor disagree**;

enter a **4** if you **mostly agree**;

or enter a **5** if you **definitely agree** with the statement.

There are no right or wrong answers. Just give the answer that is most accurate for you. Remember, your responses are confidential, so please be completely honest and answer all items.

*(Duplication and use of the MBSRQ only by permission of  
Thomas F. Cash, Ph.D., Department of Psychology,  
Old Dominion University, Norfolk, VA 23529)*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 1. Before going out in public, I always notice how I look.
- \_\_\_\_\_ 2. I am careful to buy clothes that will make me look my best.
- \_\_\_\_\_ 3. I would pass most physical-fitness tests.
- \_\_\_\_\_ 4. It is important that I have superior physical strength.
- \_\_\_\_\_ 5. My body is sexually appealing.
- \_\_\_\_\_ 6. I am not involved in a regular exercise program.
- \_\_\_\_\_ 7. I am in control of my health.
- \_\_\_\_\_ 8. I know a lot about things that affect my physical health.
- \_\_\_\_\_ 9. I have deliberately developed a healthy lifestyle.
- \_\_\_\_\_ 10. I constantly worry about being or becoming fat.
- \_\_\_\_\_ 11. I like my looks just the way they are.
- \_\_\_\_\_ 12. I check my appearance in a mirror whenever I can.
- \_\_\_\_\_ 13. Before going out, I usually spend a lot of time getting ready.
- \_\_\_\_\_ 14. My physical endurance is good.
- \_\_\_\_\_ 15. Participating in sports is unimportant to me.
- \_\_\_\_\_ 16. I do not actively do things to keep physically fit.
- \_\_\_\_\_ 17. My health is a matter of unexpected ups and downs.
- \_\_\_\_\_ 18. Good health is one of the most important things in my life.
- \_\_\_\_\_ 19. I don't do anything that I know might threaten my health.

*continued on the next page*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 20. I am very conscious of even small changes in my weight.
- \_\_\_\_\_ 21. Most people would consider me good-looking.
- \_\_\_\_\_ 22. It is important that I always look good.
- \_\_\_\_\_ 23. I use very few grooming products.
- \_\_\_\_\_ 24. I easily learn physical skills.
- \_\_\_\_\_ 25. Being physically fit is not a strong priority in my life.
- \_\_\_\_\_ 26. I do things to increase my physical strength.
- \_\_\_\_\_ 27. I am seldom physically ill.
- \_\_\_\_\_ 28. I take my health for granted.
- \_\_\_\_\_ 29. I often read books and magazines that pertain to health.
- \_\_\_\_\_ 30. I like the way I look without my clothes on.
- \_\_\_\_\_ 31. I am self-conscious if my grooming isn't right.
- \_\_\_\_\_ 32. I usually wear whatever is handy without caring how it looks.
- \_\_\_\_\_ 33. I do poorly in physical sports or games.
- \_\_\_\_\_ 34. I seldom think about my athletic skills.
- \_\_\_\_\_ 35. I work to improve my physical stamina.
- \_\_\_\_\_ 36. From day to day, I never know how my body will feel.
- \_\_\_\_\_ 37. If I am sick, I don't pay much attention to my symptoms.
- \_\_\_\_\_ 38. I make no special effort to eat a balanced and nutritious diet.

*continued on the next page*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 39. I like the way my clothes fit me.
- \_\_\_\_\_ 40. I don't care what people think about my appearance.
- \_\_\_\_\_ 41. I take special care with my hair grooming.
- \_\_\_\_\_ 42. I dislike my physique.
- \_\_\_\_\_ 43. I don't care to improve my abilities in physical activities.
- \_\_\_\_\_ 44. I try to be physically active.
- \_\_\_\_\_ 45. I often feel vulnerable to sickness.
- \_\_\_\_\_ 46. I pay close attention to my body for any signs of illness.
- \_\_\_\_\_ 47. If I'm coming down with a cold or flu, I just ignore it and go on as usual.
- \_\_\_\_\_ 48. I am physically unattractive.
- \_\_\_\_\_ 49. I never think about my appearance.
- \_\_\_\_\_ 50. I am always trying to improve my physical appearance.
- \_\_\_\_\_ 51. I am very well coordinated.
- \_\_\_\_\_ 52. I know a lot about physical fitness.
- \_\_\_\_\_ 53. I play a sport regularly throughout the year.
- \_\_\_\_\_ 54. I am a physically healthy person.
- \_\_\_\_\_ 55. I am very aware of small changes in my physical health.
- \_\_\_\_\_ 56. At the first sign of illness, I seek medical advice.
- \_\_\_\_\_ 57. I am on a weight-loss diet.

*continued on the next page*

**For the remainder of the items use the response scale given with the item,  
and enter your answer in the space beside the item.**

\_\_\_\_\_ 58. I have tried to lose weight by fasting or going on crash diets.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Very Often

\_\_\_\_\_ 59. I think I am:

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

\_\_\_\_\_ 60. From looking at me, most other people would think I am:

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

*continued on the next page*

61-69. Use this 1 to 5 scale to indicate how dissatisfied or satisfied you are  
with each of the following areas or aspects of your body:

1	2	3	4	5
Very Dissatisfied	Mostly Dissatisfied	Neither Satisfied Nor Dissatisfied	Mostly Satisfied	Very Satisfied

---

- \_\_\_\_\_ 61. Face (facial features, complexion)
  - \_\_\_\_\_ 62. Hair (color, thickness, texture)
  - \_\_\_\_\_ 63. Lower torso (buttocks, hips, thighs, legs)
  - \_\_\_\_\_ 64. Mid torso (waist, stomach)
  - \_\_\_\_\_ 65. Upper torso (chest or breasts, shoulders, arms)
  - \_\_\_\_\_ 66. Muscle tone
  - \_\_\_\_\_ 67. Weight
  - \_\_\_\_\_ 68. Height
  - \_\_\_\_\_ 69. Overall appearance
- 

MBSRQ © Thomas F. Cash, Ph.D.

## SF36 Health Survey

**INSTRUCTIONS:** This set of questions asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Answer every question by marking the answer as indicated. If you are unsure about how to answer a question please give the best answer you can.

1. In general, would you say your health is: (Please tick **one** box.)

Excellent   
 Very Good   
 Good   
 Fair   
 Poor

2. Compared to one year ago, how would you rate your health in general now? (Please tick **one** box.)

Much better than one year ago   
 Somewhat better now than one year ago   
 About the same as one year ago   
 Somewhat worse now than one year ago   
 Much worse now than one year ago

3. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? (Please circle **one** number on each line.)

	Yes, Limited A Lot	Yes, Limited A Little	Not Limited At All
3(a) <b>Vigorous activities</b> , such as running, lifting heavy objects, participating in strenuous sports	1	2	3
3(b) <b>Moderate activities</b> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
3(c) Lifting or carrying groceries	1	2	3
3(d) Climbing <b>several</b> flights of stairs	1	2	3
3(e) Climbing <b>one</b> flight of stairs	1	2	3
3(f) Bending, kneeling, or stooping	1	2	3
3(g) Walking <b>more than a mile</b>	1	2	3
3(h) Walking <b>several blocks</b>	1	2	3
3(i) Walking <b>one block</b>	1	2	3
3(j) Bathing or dressing yourself	1	2	3

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? (Please circle **one** number on each line.)

	Yes	No
4(a) Cut down on the <b>amount of time</b> you spent on work or other activities	1	2
4(b) Accomplished <b>less than you would like</b>	1	2
4(c) Were <b>limited</b> in the <b>kind</b> of work or other activities	1	2
4(d) Had <b>difficulty</b> performing the work or other activities (for example, it took extra effort)	1	2

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (e.g. feeling depressed or anxious)? (Please circle **one** number on each line.)

	Yes	No
5(a) Cut down on the <b>amount of time</b> you spent on work or other activities	1	2
5(b) Accomplished <b>less than you would like</b>	1	2
5(c) Didn't do work or other activities as <b>carefully</b> as usual	1	2

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups? (Please tick **one** box.)

- Not at all
- Slightly
- Moderately
- Quite a bit
- Extremely

7. How much physical pain have you had during the past 4 weeks? (Please tick **one** box.)

- None
- Very mild
- Mild
- Moderate
- Severe
- Very Severe

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? (Please tick **one** box.)

- Not at all
- A little bit
- Moderately
- Quite a bit
- Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. Please give the one answer that is closest to the way you have been feeling for each item.

(Please circle one number on each line.)		All of the Time	Most of the Time	A Good Bit of the Time	Some of the Time	A Little of the Time	None of the Time
9(a)	Did you feel full of life?	1	2	3	4	5	6
9(b)	Have you been a very nervous person?	1	2	3	4	5	6
9(c)	Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
9(d)	Have you felt calm and peaceful?	1	2	3	4	5	6
9(e)	Did you have a lot of energy?	1	2	3	4	5	6
9(f)	Have you felt downhearted and blue?	1	2	3	4	5	6
9(g)	Did you feel worn out?	1	2	3	4	5	6
9(h)	Have you been a happy person?	1	2	3	4	5	6
9(i)	Did you feel tired?	1	2	3	4	5	6

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives etc.) (Please tick **one** box.)

- All of the time
- Most of the time
- Some of the time
- A little of the time
- None of the time

11. How TRUE or FALSE is each of the following statements for you?

(Please circle one number on each line.)		Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
11(a)	I seem to get sick a little easier than other people	1	2	3	4	5
11(b)	I am as healthy as anybody I know	1	2	3	4	5
11(c)	I expect my health to get worse	1	2	3	4	5
11(d)	My health is excellent	1	2	3	4	5

Thank You!

## THE MBSRQ

### INSTRUCTIONS--PLEASE READ CAREFULLY

The following pages contain a series of statements about how people might think, feel, or behave. You are asked to indicate the extent to which each statement pertains to you personally.

Your answers to the items in the questionnaire are anonymous, so please do not write your name on any of the materials. In order to complete the questionnaire, read each statement carefully and decide how much it pertains to you personally. Using a scale like the one below, indicate your answer by entering it to the left of the number of the statement.

#### **EXAMPLE:**

\_\_\_\_\_ I am usually in a good mood.

In the blank space, enter a 1 if you definitely disagree with the statement;

enter a 2 if you mostly disagree;

enter a 3 if you neither agree nor disagree;

enter a 4 if you mostly agree;

or enter a 5 if you definitely agree with the statement.

There are no right or wrong answers. Just give the answer that is most accurate for you. Remember, your responses are confidential, so please be completely honest and answer all items.

*(Duplication and use of the MBSRQ only by permission of  
Thomas F. Cash, Ph.D., Department of Psychology,  
Old Dominion University, Norfolk, VA 23529)*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 1. Before going out in public, I always notice how I look.
- \_\_\_\_\_ 2. I am careful to buy clothes that will make me look my best.
- \_\_\_\_\_ 3. I would pass most physical-fitness tests.
- \_\_\_\_\_ 4. It is important that I have superior physical strength.
- \_\_\_\_\_ 5. My body is sexually appealing.
- \_\_\_\_\_ 6. I am not involved in a regular exercise program.
- \_\_\_\_\_ 7. I am in control of my health.
- \_\_\_\_\_ 8. I know a lot about things that affect my physical health.
- \_\_\_\_\_ 9. I have deliberately developed a healthy lifestyle.
- \_\_\_\_\_ 10. I constantly worry about being or becoming fat.
- \_\_\_\_\_ 11. I like my looks just the way they are.
- \_\_\_\_\_ 12. I check my appearance in a mirror whenever I can.
- \_\_\_\_\_ 13. Before going out, I usually spend a lot of time getting ready.
- \_\_\_\_\_ 14. My physical endurance is good.
- \_\_\_\_\_ 15. Participating in sports is unimportant to me.
- \_\_\_\_\_ 16. I do not actively do things to keep physically fit.
- \_\_\_\_\_ 17. My health is a matter of unexpected ups and downs.
- \_\_\_\_\_ 18. Good health is one of the most important things in my life.
- \_\_\_\_\_ 19. I don't do anything that I know might threaten my health.

*continued on the next page*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 20. I am very conscious of even small changes in my weight.
- \_\_\_\_\_ 21. Most people would consider me good-looking.
- \_\_\_\_\_ 22. It is important that I always look good.
- \_\_\_\_\_ 23. I use very few grooming products.
- \_\_\_\_\_ 24. I easily learn physical skills.
- \_\_\_\_\_ 25. Being physically fit is not a strong priority in my life.
- \_\_\_\_\_ 26. I do things to increase my physical strength.
- \_\_\_\_\_ 27. I am seldom physically ill.
- \_\_\_\_\_ 28. I take my health for granted.
- \_\_\_\_\_ 29. I often read books and magazines that pertain to health.
- \_\_\_\_\_ 30. I like the way I look without my clothes on.
- \_\_\_\_\_ 31. I am self-conscious if my grooming isn't right.
- \_\_\_\_\_ 32. I usually wear whatever is handy without caring how it looks.
- \_\_\_\_\_ 33. I do poorly in physical sports or games.
- \_\_\_\_\_ 34. I seldom think about my athletic skills.
- \_\_\_\_\_ 35. I work to improve my physical stamina.
- \_\_\_\_\_ 36. From day to day, I never know how my body will feel.
- \_\_\_\_\_ 37. If I am sick, I don't pay much attention to my symptoms.
- \_\_\_\_\_ 38. I make no special effort to eat a balanced and nutritious diet.

*continued on the next page*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 39. I like the way my clothes fit me.
- \_\_\_\_\_ 40. I don't care what people think about my appearance.
- \_\_\_\_\_ 41. I take special care with my hair grooming.
- \_\_\_\_\_ 42. I dislike my physique.
- \_\_\_\_\_ 43. I don't care to improve my abilities in physical activities.
- \_\_\_\_\_ 44. I try to be physically active.
- \_\_\_\_\_ 45. I often feel vulnerable to sickness.
- \_\_\_\_\_ 46. I pay close attention to my body for any signs of illness.
- \_\_\_\_\_ 47. If I'm coming down with a cold or flu, I just ignore it and go on as usual.
- \_\_\_\_\_ 48. I am physically unattractive.
- \_\_\_\_\_ 49. I never think about my appearance.
- \_\_\_\_\_ 50. I am always trying to improve my physical appearance.
- \_\_\_\_\_ 51. I am very well coordinated.
- \_\_\_\_\_ 52. I know a lot about physical fitness.
- \_\_\_\_\_ 53. I play a sport regularly throughout the year.
- \_\_\_\_\_ 54. I am a physically healthy person.
- \_\_\_\_\_ 55. I am very aware of small changes in my physical health.
- \_\_\_\_\_ 56. At the first sign of illness, I seek medical advice.
- \_\_\_\_\_ 57. I am on a weight-loss diet.

*continued on the next page*

**For the remainder of the items use the response scale given with the item,  
and enter your answer in the space beside the item.**

\_\_\_\_\_ 58. I have tried to lose weight by fasting or going on crash diets.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Very Often

\_\_\_\_\_ 59. I think I am:

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

\_\_\_\_\_ 60. From looking at me, most other people would think I am:

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

***continued on the next page***

61-69. Use this 1 to 5 scale to indicate how dissatisfied or satisfied you are  
with each of the following areas or aspects of your body:

---

1	2	3	4	5
Very Dissatisfied	Mostly Dissatisfied	Neither Satisfied Nor Dissatisfied	Mostly Satisfied	Very Satisfied

---

- \_\_\_\_\_ 61. Face (facial features, complexion)
  - \_\_\_\_\_ 62. Hair (color, thickness, texture)
  - \_\_\_\_\_ 63. Lower torso (buttocks, hips, thighs, legs)
  - \_\_\_\_\_ 64. Mid torso (waist, stomach)
  - \_\_\_\_\_ 65. Upper torso (chest or breasts, shoulders, arms)
  - \_\_\_\_\_ 66. Muscle tone
  - \_\_\_\_\_ 67. Weight
  - \_\_\_\_\_ 68. Height
  - \_\_\_\_\_ 69. Overall appearance
- 

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**FOR OFFICE USE ONLY:**

ID # \_\_\_\_\_

SITE \_\_\_\_\_

## ***Body and Quality of Life Survey for Men***

Re: Body Image and Quality of Life in Men with Localized Prostate Cancer UROL-161-06

**Please:**

Complete this survey privately.  
Please return the completed survey package  
and the signed consent form in the stamped,  
addressed envelope provided.

**Thank you** for your participation in this  
research project.

Your contribution to this research project is  
greatly appreciated!

**A. DEMOGRAPHICS**

1.) Age: \_\_\_\_\_ yrs

Date: \_\_\_\_\_

2.) Education:

(Check off the highest level of education completed:)

Some High School	_____	Completed High School:	_____
Some College	_____	Completed College:	_____
Some University	_____	Completed University:	_____
Some Graduate School	_____	Completed Graduate School:	_____

3.) Race/Ethnicity: (Check your answer)

a. White \_\_\_\_\_  
b. Black \_\_\_\_\_  
c. Asian/Pacific Islander \_\_\_\_\_  
d. Hispanic \_\_\_\_\_  
e. Aboriginal \_\_\_\_\_  
f. Arab \_\_\_\_\_  
g. Other \_\_\_\_\_

4.) Employment: (Check your answer)

a. Full Time \_\_\_\_\_  
b. Part Time \_\_\_\_\_  
c. Temporarily Unemployed \_\_\_\_\_  
d. Disability \_\_\_\_\_  
e. Retired \_\_\_\_\_

What is your present or most recent occupation?

\_\_\_\_\_

5.) Marital Status: (Check your answer)

a. Never Married	_____	d. Married	_____
b. Separated	_____	e. Widowed	_____
c. Divorced	_____	f. Common-law	_____

6.) How many years have you lived with your current spouse or partner? \_\_\_\_\_ yrs

7.) Age of current spouse or partner: \_\_\_\_\_ yrs

8.) What is your height: \_\_\_\_\_ (in feet and inches)

9.) What is your current weight: \_\_\_\_\_ lbs ( in pounds)

**B. YOUR HEALTH HISTORY**

1.) Please check any other medical conditions that you have currently: (Check your answer)

- hypertension (increased blood pressure)
- osteoporosis (weakening of the bones)
- diabetes
- cardiac illness
- other: (Please describe) \_\_\_\_\_

2.) Do you have a current diagnosis of any type of cancer?

Check either:  YES  NO



If Yes, please describe: \_\_\_\_\_

4.) Have you previously been diagnosed with cancer?

Check either:  YES  NO



If Yes, please answer the following questions:

What diagnosis (e.g. type) of cancer did you receive: \_\_\_\_\_

Treatment (e.g. surgery, radiation, chemotherapy, hormone therapy)

\_\_\_\_\_

Date Completed Treatment: \_\_\_\_\_

5.) Have you been previously diagnosed with a mental health condition (such as depression, an anxiety disorder, dementia, substance abuse)?

Check either:  YES  NO



If Yes, please describe: \_\_\_\_\_

**Godin Leisure-Time Exercise Questionnaire :**

The next set of questions asks about physical activities.

Write on each line the appropriate number. If you do not currently do any activity, please write zero.

7.) During a typical 7-Day period (a week), how many times on the average do you do the following kinds of exercise for <b>more than 15 minutes</b> during your free time	Number of Times Per Week
a) <b>STRENUOUS EXERCISE</b> <b>(HEART BEATS RAPIDLY)</b> (e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)	
b) <b>MODERATE EXERCISE</b> <b>(NOT EXHAUSTING)</b> (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)	
c) <b>MILD EXERCISE</b> <b>(MINIMAL EFFORT)</b> (e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)	

8.) During a typical 7-Day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

OFTEN

SOMETIMES

NEVER/RARELY

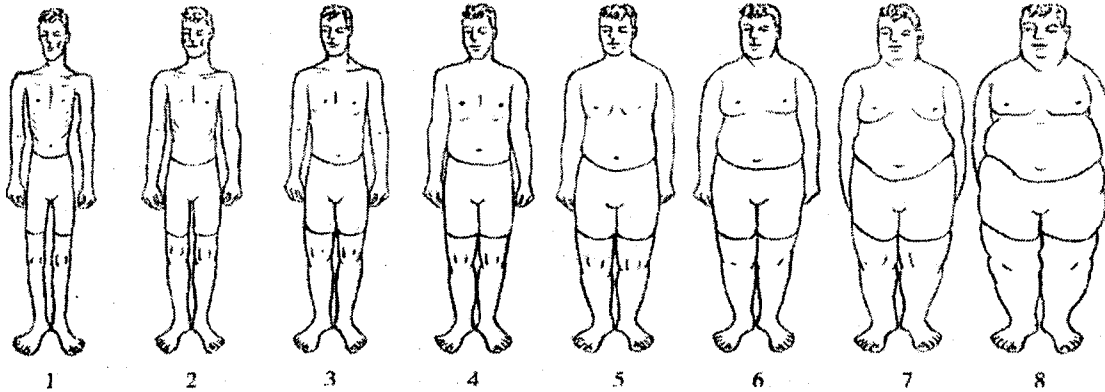
1.

2.

3.

**C. YOUR BELIEFS**

**Please look at the pictures below:**



1.) Write the number belonging to the figure that best describes your current shape:

Number \_\_\_\_\_

2.) Which figure best describes the shape you want to have?

Number \_\_\_\_\_

**Please continue on the next page...**

### ASI-R

The statements below are beliefs that people may or may not have about their physical appearance and its influence on life. Decide on the extent to which you personally disagree or agree with each statement and enter a number from 1 to 5 in the space on the left. There are no right or wrong answers. Just be truthful about your personal beliefs.

	Strongly Disagree	Mostly Disagree	Neither Agree or Disagree	Mostly Agree	Strongly Agree
1. I spend little time on my physical appearance	1	2	3	4	5
2. When I see good-looking people, I wonder about how my own looks measure up	1	2	3	4	5
3. I try to be as physically attractive as I can be.	1	2	3	4	5
4. I have never paid much attention to what I look like	1	2	3	4	5
5. I seldom compare my appearance to that of other people I see	1	2	3	4	5
6. I often check my appearance in a mirror just to make sure I look okay	1	2	3	4	5
7. When something makes me feel good or bad about my looks, I tend to dwell on it	1	2	3	4	5
8. If I like how I look on a given day, it's easy to feel happy about other things.	1	2	3	4	5
9. If somebody had a negative reaction to what I look like, it wouldn't bother me	1	2	3	4	5

	Strongly Disagree	Mostly Disagree	Neither Agree or Disagree	Mostly Agree	Strongly Agree
10. When it comes to my physical appearance, I have high standards	1	2	3	4	5
11. My physical appearance has had little influence on my life	1	2	3	4	5
12. Dressing well is not a priority for me	1	2	3	4	5
13. When I meet people for the first time, I wonder what they think about how I look	1	2	3	4	5
14. In my everyday life, lots of things happen that make me think about what I look like	1	2	3	4	5
15. If I dislike how I look on a given day, it's hard to feel happy about other things	1	2	3	4	5
16. I fantasize about what it would be like to be better looking than I am	1	2	3	4	5
17. Before going out, I make sure that I look as good as I possibly can	1	2	3	4	5
18. What I look like is an important part of who I am	1	2	3	4	5
19. By controlling my appearance, I can control many of the social and emotional events in my life	1	2	3	4	5
20. My appearance is responsible for much of what's happened to me in my life.	1	2	3	4	5

For the following questions, please indicate whether you disagree or agree. Circle your response:

	Strongly Disagree	Disagree	Neither agree or disagree	Mostly Agree	Strongly Agree
C.3.) Being muscular is important to me	(1)	(2)	(3)	(4)	(5)
C.4.) While I may gain weight, it is important to me that I maintain a masculine shape	(1)	(2)	(3)	(4)	(5)
C.5.) It is important for a man to be energetic	(1)	(2)	(3)	(4)	(5)

How *important* are each the following body attributes to you? Please circle your response:

	Not Important	Somewhat Important	Important	Very Important
C6.) Body proportions	(-1)	(1)	(2)	(3)
C7.) Weight	(-1)	(1)	(2)	(3)
C8.) Chest size	(-1)	(1)	(2)	(3)
C9.) Physical strength	(-1)	(1)	(2)	(3)
C10.) Physical coordination	(-1)	(1)	(2)	(3)
C11.) Overall appearance	(-1)	(1)	(2)	(3)

---

**D. SEXUAL HISTORY**

**Past:**

The next three questions (only) ask about the first half (e.g. 6 months) of this past year – If you are completing this survey in July 2006, then this past year would be July 2005-July2006:

1.)	On average, during the first 6 months of this past year, how frequently did you have sexual intercourse?  _____ times per month
2.)	On average, during the first 6 months of this past year, how often did you desire sex? Please circle your response:  (0)            (1)            (2)            (3)            (4) Never    Hardly Ever    Occasionally    Usually    Always
3.)	Overall, how big a problem has your sexual function or lack of sexual function been for you in the <u>first half (6 months) of this past year</u> ?  No            Very Small            Small            Moderate            Big Problem      Problem            Problem            Problem            Problem 1              2              3              4              5

Please continue on the next page...

---

## EPIC Questionnaire

Please circle your response below keeping in mind the last 4 weeks...

How would you rate each of the following during the last 4 weeks?	Very Poor to None	Poor	Fair	Good	Very Good															
1.) Your level of sexual desire	1	2	3	4	5															
2.) Your ability to have an erection	1	2	3	4	5															
3.) Your ability to reach orgasm (climax)	1	2	3	4	5															
<p>4.) How would you describe the usual <b>QUALITY</b> of your erections during the last 4 weeks?</p> <p><input type="checkbox"/> None at all</p> <p><input type="checkbox"/> Not firm enough for any sexual activity</p> <p><input type="checkbox"/> Firm enough for masturbation and foreplay only</p> <p><input type="checkbox"/> Firm enough for intercourse</p>																				
<p>5.) How would you describe the <b>FREQUENCY</b> of your erections during the last 4 weeks?</p> <p><input type="checkbox"/> Never had an erection when I wanted one</p> <p><input type="checkbox"/> I had an erection <b>LESS THAN HALF</b> the time I wanted one</p> <p><input type="checkbox"/> I had an erection <b>ABOUT HALF</b> the time I wanted one</p> <p><input type="checkbox"/> I had an erection <b>MORE THAN HALF</b> the time I wanted one</p> <p><input type="checkbox"/> I had an erection <b>WHENEVER</b> I wanted one</p>																				
<p>6.) How often have you awakened in the morning or night with an erection during the last 4 weeks?</p> <table style="width: 100%; text-align: center;"> <tr> <td></td> <td>Less than</td> <td>About once</td> <td>Several times</td> <td></td> </tr> <tr> <td>Never</td> <td>once a week</td> <td>a week</td> <td>a week</td> <td>Daily</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>							Less than	About once	Several times		Never	once a week	a week	a week	Daily	1	2	3	4	5
	Less than	About once	Several times																	
Never	once a week	a week	a week	Daily																
1	2	3	4	5																
<p>7.) During the last 4 weeks, how often did you have <u>any</u> sexually activity?</p> <table style="width: 100%; text-align: center;"> <tr> <td></td> <td>Less than</td> <td>About once</td> <td>Several times</td> <td></td> </tr> <tr> <td>Not at all</td> <td>once a week</td> <td>a week</td> <td>a week</td> <td>Daily</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>							Less than	About once	Several times		Not at all	once a week	a week	a week	Daily	1	2	3	4	5
	Less than	About once	Several times																	
Not at all	once a week	a week	a week	Daily																
1	2	3	4	5																

8.) During the last 4 weeks, how often did you have sexual intercourse?

Not at all 1	Less than once a week 2	About once a week 3	Several times a week 4	Daily 5
--------------------	-------------------------------	---------------------------	------------------------------	------------

9.) Overall how would you rate your ability to function sexually during the last 4 weeks?

Very Poor 1	Poor 2	Fair 3	Good 4	Very Good 5
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How big a problem during the last 4 weeks, if any, has each of the following been for you?

No Problem	Very Small Problem	Small Problem	Moderate Problem	Big Problem
---------------	--------------------------	------------------	---------------------	----------------

10.) Your level of sexual desire

1	2	3	4	5
---	---	---	---	---

11.) Your ability to have an erection

1	2	3	4	5
---	---	---	---	---

12.) Your ability to reach orgasm (climax)

1	2	3	4	5
---	---	---	---	---

13.) Overall, how big a problem has your sexual function or lack of sexual function been for you during the last 4 weeks?

No Problem 1	Very Small Problem 2	Small Problem 3	Moderate Problem 4	Big Problem 5
--------------------	----------------------------	-----------------------	--------------------------	---------------------

14.) Over the last 4 weeks, how often have you experienced hot flashes?

More than once a day 1	About once a day 2	More than once a week 3	About once a week 4	Rarely or Never 5
------------------------------	--------------------------	-------------------------------	---------------------------	-------------------------

15.) How often have you had breast tenderness during the last 4 weeks?

More than once a day 1	About once a day 2	More than once a week 3	About once a week 4	Rarely or Never 5
------------------------------	--------------------------	-------------------------------	---------------------------	-------------------------

16.) During the last 4 weeks, how often have you felt depressed?

More than once a day 1	About once a day 2	More than once a week 3	About once a week 4	Rarely or Never 5
------------------------------	--------------------------	-------------------------------	---------------------------	-------------------------

17.) During the last 4 weeks, how often have you felt a lack of energy?

More than once a day	About once a day	More than once a week	About once a week	Rarely or Never
1	2	3	4	5

18.) How much change in your weight have you experienced during the last 4 weeks if any?  
Check your response:

- Gained 10 pounds or more
- Gained less than 10 pounds
- No change in weight
- Lost less than 10 pounds
- Lost 10 pounds or more

How big a problem during the last 4 weeks, if any, has each of the following been for you?	No Problem	Very Small Problem	Small Problem	Moderate Problem	Big Problem
19.) Hot flashes	1	2	3	4	5
20.) Breast tenderness/enlargement	1	2	3	4	5
21.) Loss of body hair	1	2	3	4	5
22.) Feeling depressed	1	2	3	4	5
23.) Lack of energy	1	2	3	4	5
24.) Change in body weight	1	2	3	4	5





### ESS Questionnaire

Everybody at times can feel embarrassed, self-conscious, or ashamed. These questions are about such feelings if they have occurred at any time **in the past year**. There are no 'right' or 'wrong' answers. Please indicate the response which applies to you with a tick, or checkmark.

	Not at all	A little	Moderately	Very Much
1.) Have you felt ashamed of any of your personal habits?				
2.) Have you worried about what other people think of any of your personal habits?				
3.) Have you tried to cover up or conceal any of your personal habits?				
4.) Have you felt ashamed of your manner with others?				
5.) Have you worried about what other people think of your manner with others?				
6.) Have you avoided people because of your manner?				
7.) Have you felt ashamed of the sort of person you are?				
8.) Have you worried about what other people think of the sort of person you are?				
9.) Have you tried to conceal from others the sort of person you are?				
10.) Have you felt ashamed of your ability to do things?				
11.) Have you worried about what other people think of your ability to do things?				

	Not at all	A little	Moderately	Very Much
12.) Have you avoided people because of your inability to do things?				
13.) Do you feel ashamed when you do something wrong?				
14.) Have you worried about what other people think of you when you do something wrong?				
15.) Have you tried to cover up or conceal things you felt ashamed of having done?				
16.) Have you felt ashamed when you said something stupid?				
17.) Have you worried about what other people think of you when you said something stupid?				
18.) Have you avoided contact with anyone who knew you said something stupid?				
19.) Have you felt ashamed when you failed at something which was important to you?				
20.) Have you worried about what other people think of you when you fail?				
21.) Have you avoided people who have seen you fail?				
22.) Have you felt ashamed of your body or any part of it?				
23.) Have you worried about what other people think of your appearance?				
24.) Have you avoided looking at yourself in the mirror?				
25.) Have you wanted to hide or conceal your body or any part of it?				

**F. YOUR FEELINGS**

**SIBID-S Questionnaire**

**INSTRUCTIONS:** At various times and in various situations, people may experience negative feelings about their own physical appearance. Such feelings include feelings of unattractiveness, physical self-consciousness, distress, or dissatisfaction with one or more aspects of one's appearance. This questionnaire lists a number of situations and asks how often you have uncomfortable feels about your physical appearance in each of these situations. Think about times when you have been in each situation and indicate how often you've had negative feelings about your physical appearance in that situation. Use the 0 to 4 scale below to indicate **HOW OFTEN** you have such negative emotional experiences: For situations that you have not been in, simply indicate how often you believe that you would experience negative emotions about your appearance if you were in the situation. Please answer accurately and honestly by entering a number from 0 to 4 in each space to describe your experiences. There are no right or wrong answers.

<b>HOW OFTEN?</b>	<b>Never</b>	<b>Sometimes</b>	<b>Moderately Often</b>	<b>Often</b>	<b>Always or Almost Always</b>
1. At social gatherings where I know few people	0	1	2	3	4
2. When I look at myself in the mirror	0	1	2	3	4
3. When people see me before I've "fixed up"	0	1	2	3	4
4. When I am with attractive persons of my sex	0	1	2	3	4
5. When I am with attractive persons of the other sex	0	1	2	3	4
6. When someone looks at parts of my appearance that I dislike	0	1	2	3	4
7. When I look at my nude body in the mirror	0	1	2	3	4

**HOW OFTEN** do you have negative feelings about your appearance?

Never

Sometimes

Moderately  
Often

Often

Always  
or  
Almost  
Always

8. When I am trying on new clothes at the store

0

1

2

3

4

9. After I have eaten a full meal

0

1

2

3

4

10. When I see attractive people on television or in magazines

0

1

2

3

4

11. When I get on the scale to weigh

0

1

2

3

4

12. When anticipating or having sexual relations

0

1

2

3

4

13. When I'm already in a bad mood about something else

0

1

2

3

4

14. When the topic of conversation pertains to physical appearance

0

1

2

3

4

15. When someone comments unfavourably on my appearance

0

1

2

3

4

16. When I see myself in a photograph or videotape

0

1

2

3

4

17. When I think about what I wish I looked like

0

1

2

3

4

**HOW OFTEN** do you have negative feelings about your appearance?

	Never	Sometimes	Moderately Often	Often	Always or Almost Always
--	-------	-----------	------------------	-------	-------------------------

18. When I think about how I may look in the future	0	1	2	3	4
---	---	---	---	---	---

19. When I am with a certain person	0	1	2	3	4
-------------------------------------	---	---	---	---	---

20. During recreational activities	0	1	2	3	4
------------------------------------	---	---	---	---	---

---

**Thank you for your participation so far, please continue to the next page...**

## THE MBSRQ

### INSTRUCTIONS--PLEASE READ CAREFULLY

The following pages contain a series of statements about how people might think, feel, or behave. You are asked to indicate the extent to which each statement pertains to you personally.

Your answers to the items in the questionnaire are anonymous, so please do not write your name on any of the materials. In order to complete the questionnaire, read each statement carefully and decide how much it pertains to you personally. Using a scale like the one below, indicate your answer by entering it to the left of the number of the statement.

#### **EXAMPLE:**

\_\_\_\_\_ I am usually in a good mood.

In the blank space, enter a **1** if you definitely disagree with the statement;

enter a **2** if you mostly disagree;

enter a **3** if you neither agree nor disagree;

enter a **4** if you mostly agree;

or enter a **5** if you definitely agree with the statement.

There are no right or wrong answers. Just give the answer that is most accurate for you. Remember, your responses are confidential, so please be completely honest and answer all items.

*(Duplication and use of the MBSRQ only by permission of  
Thomas F. Cash, Ph.D., Department of Psychology,  
Old Dominion University, Norfolk, VA 23529)*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 1. Before going out in public, I always notice how I look.
- \_\_\_\_\_ 2. I am careful to buy clothes that will make me look my best.
- \_\_\_\_\_ 3. I would pass most physical-fitness tests.
- \_\_\_\_\_ 4. It is important that I have superior physical strength.
- \_\_\_\_\_ 5. My body is sexually appealing.
- \_\_\_\_\_ 6. I am not involved in a regular exercise program.
- \_\_\_\_\_ 7. I am in control of my health.
- \_\_\_\_\_ 8. I know a lot about things that affect my physical health.
- \_\_\_\_\_ 9. I have deliberately developed a healthy lifestyle.
- \_\_\_\_\_ 10. I constantly worry about being or becoming fat.
- \_\_\_\_\_ 11. I like my looks just the way they are.
- \_\_\_\_\_ 12. I check my appearance in a mirror whenever I can.
- \_\_\_\_\_ 13. Before going out, I usually spend a lot of time getting ready.
- \_\_\_\_\_ 14. My physical endurance is good.
- \_\_\_\_\_ 15. Participating in sports is unimportant to me.
- \_\_\_\_\_ 16. I do not actively do things to keep physically fit.
- \_\_\_\_\_ 17. My health is a matter of unexpected ups and downs.
- \_\_\_\_\_ 18. Good health is one of the most important things in my life.
- \_\_\_\_\_ 19. I don't do anything that I know might threaten my health.

*continued on the next page*

1	2	3	4	5
<b>Definitely Disagree</b>	<b>Mostly Disagree</b>	<b>Neither Agree Nor Disagree</b>	<b>Mostly Agree</b>	<b>Definitely Agree</b>

- \_\_\_\_\_ 20. I am very conscious of even small changes in my weight.
- \_\_\_\_\_ 21. Most people would consider me good-looking.
- \_\_\_\_\_ 22. It is important that I always look good.
- \_\_\_\_\_ 23. I use very few grooming products.
- \_\_\_\_\_ 24. I easily learn physical skills.
- \_\_\_\_\_ 25. Being physically fit is not a strong priority in my life.
- \_\_\_\_\_ 26. I do things to increase my physical strength.
- \_\_\_\_\_ 27. I am seldom physically ill.
- \_\_\_\_\_ 28. I take my health for granted.
- \_\_\_\_\_ 29. I often read books and magazines that pertain to health.
- \_\_\_\_\_ 30. I like the way I look without my clothes on.
- \_\_\_\_\_ 31. I am self-conscious if my grooming isn't right.
- \_\_\_\_\_ 32. I usually wear whatever is handy without caring how it looks.
- \_\_\_\_\_ 33. I do poorly in physical sports or games.
- \_\_\_\_\_ 34. I seldom think about my athletic skills.
- \_\_\_\_\_ 35. I work to improve my physical stamina.
- \_\_\_\_\_ 36. From day to day, I never know how my body will feel.
- \_\_\_\_\_ 37. If I am sick, I don't pay much attention to my symptoms.
- \_\_\_\_\_ 38. I make no special effort to eat a balanced and nutritious diet.

*continued on the next page*

1	2	3	4	5
Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree

- \_\_\_\_\_ 39. I like the way my clothes fit me.
- \_\_\_\_\_ 40. I don't care what people think about my appearance.
- \_\_\_\_\_ 41. I take special care with my hair grooming.
- \_\_\_\_\_ 42. I dislike my physique.
- \_\_\_\_\_ 43. I don't care to improve my abilities in physical activities.
- \_\_\_\_\_ 44. I try to be physically active.
- \_\_\_\_\_ 45. I often feel vulnerable to sickness.
- \_\_\_\_\_ 46. I pay close attention to my body for any signs of illness.
- \_\_\_\_\_ 47. If I'm coming down with a cold or flu, I just ignore it and go on as usual.
- \_\_\_\_\_ 48. I am physically unattractive.
- \_\_\_\_\_ 49. I never think about my appearance.
- \_\_\_\_\_ 50. I am always trying to improve my physical appearance.
- \_\_\_\_\_ 51. I am very well coordinated.
- \_\_\_\_\_ 52. I know a lot about physical fitness.
- \_\_\_\_\_ 53. I play a sport regularly throughout the year.
- \_\_\_\_\_ 54. I am a physically healthy person.
- \_\_\_\_\_ 55. I am very aware of small changes in my physical health.
- \_\_\_\_\_ 56. At the first sign of illness, I seek medical advice.
- \_\_\_\_\_ 57. I am on a weight-loss diet.

*continued on the next page*

**For the remainder of the items use the response scale given with the item,  
and enter your answer in the space beside the item.**

\_\_\_\_\_ 58. I have tried to lose weight by fasting or going on crash diets.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Very Often

\_\_\_\_\_ 59. I think I am:

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

\_\_\_\_\_ 60. From looking at me, most other people would think I am:

1. Very Underweight
2. Somewhat Underweight
3. Normal Weight
4. Somewhat Overweight
5. Very Overweight

*continued on the next page*

61-69. Use this 1 to 5 scale to indicate how dissatisfied or satisfied you are  
with each of the following areas or aspects of your body:

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Very Dissatisfied</b>	<b>Mostly Dissatisfied</b>	<b>Neither Satisfied Nor Dissatisfied</b>	<b>Mostly Satisfied</b>	<b>Very Satisfied</b>

- 
- \_\_\_\_\_ 61. Face (facial features, complexion)
- \_\_\_\_\_ 62. Hair (color, thickness, texture)
- \_\_\_\_\_ 63. Lower torso (buttocks, hips, thighs, legs)
- \_\_\_\_\_ 64. Mid torso (waist, stomach)
- \_\_\_\_\_ 65. Upper torso (chest or breasts, shoulders, arms)
- \_\_\_\_\_ 66. Muscle tone
- \_\_\_\_\_ 67. Weight
- \_\_\_\_\_ 68. Height
- \_\_\_\_\_ 69. Overall appearance
- 

MBSRQ © Thomas F. Cash, Ph.D.

## SF36 Health Survey

**INSTRUCTIONS:** This set of questions asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Answer every question by marking the answer as indicated. If you are unsure about how to answer a question please give the best answer you can.

1. In general, would you say your health is: (Please tick one box.)

- Excellent   
 Very Good   
 Good   
 Fair   
 Poor

2. Compared to one year ago, how would you rate your health in general now? (Please tick one box.)

- Much better than one year ago   
 Somewhat better now than one year ago   
 About the same as one year ago   
 Somewhat worse now than one year ago   
 Much worse now than one year ago

3. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? (Please circle one number on each line.)

<u>Activities</u>	Yes, Limited A Lot	Yes, Limited A Little	Not Limited At All
3(a) <b>Vigorous activities</b> , such as running, lifting heavy objects, participating in strenuous sports	1	2	3
3(b) <b>Moderate activities</b> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
3(c) <b>Lifting or carrying groceries</b>	1	2	3
3(d) <b>Climbing several flights of stairs</b>	1	2	3
3(e) <b>Climbing one flight of stairs</b>	1	2	3
3(f) <b>Bending, kneeling, or stooping</b>	1	2	3
3(g) <b>Waling more than a mile</b>	1	2	3
3(h) <b>Walking several blocks</b>	1	2	3
3(i) <b>Walking one block</b>	1	2	3
3(j) <b>Bathing or dressing yourself</b>	1	2	3

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? (Please circle one number on each line.)

	Yes	No
4(a) <b>Cut down on the amount of time</b> you spent on work or other activities	1	2
4(b) <b>Accomplished less than you would like</b>	1	2
4(c) <b>Were limited in the kind of work or other activities</b>	1	2
4(d) <b>Had difficulty performing the work or other activities</b> (for example, it took extra effort)	1	2

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (e.g. feeling depressed or anxious)? (Please circle one number on each line.)

	Yes	No
5(a) <b>Cut down on the amount of time</b> you spent on work or other activities	1	2
5(b) <b>Accomplished less than you would like</b>	1	2
5(c) <b>Didn't do work or other activities as carefully as usual</b>	1	2

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups? (Please tick one box.)

Not at all

Slightly

Moderately

Quite a bit

Extremely

7. How much physical pain have you had during the past 4 weeks? (Please tick one box.)

None

Very mild

Mild

Moderate

Severe

Very Severe

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? (Please tick one box.)

Not at all

A little bit

Moderately

Quite a bit

Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. Please give the one answer that is closest to the way you have been feeling for each item.

(Please circle one number on each line.)

	All of the Time	Most of the Time	A Good Bit of the Time	Some of the Time	A Little of the Time	None of the Time
9(a) Did you feel full of life?	1	2	3	4	5	6
9(b) Have you been a very nervous person?	1	2	3	4	5	6
9(c) Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
9(d) Have you felt calm and peaceful?	1	2	3	4	5	6
9(e) Did you have a lot of energy?	1	2	3	4	5	6
9(f) Have you felt downhearted and blue?	1	2	3	4	5	6
9(g) Did you feel worn out?	1	2	3	4	5	6
9(h) Have you been a happy person?	1	2	3	4	5	6
9(i) Did you feel tired?	1	2	3	4	5	6

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives etc.) (Please tick one box.)

All of the time

Most of the time

Some of the time

A little of the time

None of the time

11. How TRUE or FALSE is each of the following statements for you?

(Please circle one number on each line.)

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
11(a) I seem to get sick a little easier than other people	1	2	3	4	5
11(b) I am as healthy as anybody I know	1	2	3	4	5
11(c) I expect my health to get worse	1	2	3	4	5
11(d) My health is excellent	1	2	3	4	5

Thank You!

**REFUSAL QUESTIONNAIRE: Assessing Quality of Life and Body Image in Men  
with Prostate Cancer**

STUDY ID: \_\_\_\_\_

Patient Number: \_\_\_\_\_

**Reasons for Not Participating in the Study:**

- I am not interested in contributing to research.
- I lack the time to participate.
- There is too much effort required
- I am not willing to express my opinions about my quality of life, or body image.
- Other: \_\_\_\_\_

The following questions are needed to help understand the characteristics of people who are eligible to participate in this study. For this reason, it is very important information. All information is held in strict confidence and its presentation to the public will be group data only.

**A. DEMOGRAPHICS**

1.) Age: \_\_\_\_\_ yrs

2.) Education:

(Check off the highest level of education completed:)

Some High School	_____	Completed High School:	_____
Some College	_____	Completed College:	_____
Some University	_____	Completed University:	_____
Some Graduate School	_____	Completed Graduate School:	_____

3.) Ethnicity:

- a. White \_\_\_\_\_
- b. Black \_\_\_\_\_
- c. Asian/Pacific Islander \_\_\_\_\_
- d. Hispanic \_\_\_\_\_
- e. Aboriginal \_\_\_\_\_
- f. Arab \_\_\_\_\_
- g. Other \_\_\_\_\_

4.) Current Employment Status:

- a. Full Time \_\_\_\_\_
- b. Part Time \_\_\_\_\_

- c. Temporarily Unemployed \_\_\_\_\_
- d. Disability \_\_\_\_\_
- e. Retired \_\_\_\_\_

**5.) Marital Status:**

- a. Never Married \_\_\_\_\_
- b. Married \_\_\_\_\_
- c. Separated \_\_\_\_\_
- d. Common-law \_\_\_\_\_
- e. Divorced \_\_\_\_\_
- f. Widowed \_\_\_\_\_

6.) What is your height?: \_\_\_\_\_ (in feet and inches)

7.) What is your current weight?: \_\_\_\_\_ lbs ( in pounds)

8.) Please check any treatment(s) you have received for prostate cancer:

A.) \_\_\_\_\_ Radiation Treatment

B.) \_\_\_\_\_ Surgery

C.) \_\_\_\_\_ Hormonal therapy (androgen-deprivation therapy)

D.) Are you currently taking Androgen-Deprivation Therapy or Hormonal therapy?

Check either: \_\_\_ YES or \_\_\_ NO



**IF YES - How many months have you been taking hormone therapy? \_\_\_\_\_ months**

**Appendix D**

Correlation Matrix: Demographic and primary variables of interest for study sample (N=151)

N=151	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age	1	-.08	-.52**	-.26**	-.04	.08	.06	-.13	-.03	.07	-.29**	.21**	-.06	-.39**	.15	-.02	-.04
2. Marital status		1	.05	-.02	-.09	.01	-.02	-.09	.07	.11	.22**	-.00	-.05	.02	-.10	.07	-.10
3. Employed			1	.23**	-.06	-.03	-.06	.09	.08	-.05	.20*	-.08	.01	.37**	-.18*	.13	-.08
4. Education				1	-.15	.03	-.21**	-.04	.08	-.06	.19*	.05	.19*	.32**	-.32**	.33**	-.25**
5. BMI					1	-.39**	-.13	.10	-.54**	-.22**	-.37**	-.07	-.15	-.09	-.02	-.16*	.14
6. Appearance evaluation (MBSRQ)						1	.13	-.42**	.38**	.65**	.20*	.23**	-.01	.07	.02	.13	-.11
7. Investment in appearance (ASI-R)							1	.45**	-.01	-.05	-.09	-.24**	.01	.06	.23**	-.15	.26**
8. Distress (SIBID-S)								1	-.26**	-.45**	-.11	-.37**	.13	.18*	.13	-.22**	.31**
9. Ideal- current shape discrepancy									1	.31**	.19*	.02	.06	.05	-.01	.11	-.08
10. Satisfaction (BASS)										1	.22**	.24**	.04	.01	-.03	.21**	-.25**
11. Physical function (SF-36)											1	.27**	.21**	.26**	-.15	.36**	-.33**
12. Mental health (SF-36)												1	-.01	-.08	-.11	.43**	-.52**
13. Exercise (Godin)													1	.23**	-.13	.08	-.05
14. Sexual functioning (EPIC)														1	-.34**	.40**	-.26**

\* $p < .05$ ; \*\*  $p < .01$

MBSRQ Multidimensional Body-Self Relations Questionnaire; ASI-R: Appearance Schemas Inventory; SIBID-S Situational Inventory of Body Image Dysphoria; BASS: Body Satisfaction; SF-36: Medical Outcomes Study Short Form-36 items. EPIC: Expanded Prostate Cancer Index Composite

Correlation Matrix: Demographic and primary variables of interest (continued)

N=151	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
15. Sexual Bother (EPCIC)															1	-.21*	.29**
16. Hormone function (EPCIC)																1	-.79**
17. Hormone bother (EPCIC)																	1

\* $p < .05$ ; \*\*  $p < .01$

EPCIC: Expanded Prostate Cancer Index Composite

Correlation Matrix: Demographic and primary variables of interest for sample of men with prostate cancer (N=96)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Age	1	-.11	-.45**	-.16	-.14	.16	-.13	.21*	-.11	.17	.11	-.12	.11	.16	-.32**	-.01	.13	-.24*	.09	.01	-.07
2. Marital status		1	.05	-.07	-.11	-.05	-.03	.06	-.37**	.05	-.09	-.25*	.14	.17	.33**	-.01	.00	-.09	-.11	.03	-.11
3. Employ			1	.11	.07	.11	-.15	-.02	.04	-.05	-.08	.03	.05	-.08	.10	.05	-.18	.11	-.07	-.01	.05
4. Edu				1	-.10	-.02	-.08	.06	-.04	-.01	-.26*	-.09	.07	-.09	.06	.07	-.08	.13	-.23*	.24*	-.15
5. BMI					1	.03	.07	-.00	.08	-.49**	-.16	.20	-.58**	-.32**	-.35**	-.21*	-.09	.10	-.13	-.15	.11
6. Prev. surgery						1	-.39**	.03	.06	-.16	.09	.06	.05	-.12	-.12	.01	.01	-.01	-.18	-.09	.04
7. Yrs since biopsy (N=94)							1	-.15	.11	-.04	-.06	.05	-.04	-.08	.11	.02	-.06	.08	.05	.17	-.08
8. # of months on ADT								1	-.06	-.02	-.05	-.04	-.01	-.03	-.16	-.06	-.04	-.31**	-.20	-.22*	.14
9. BIS									1	-.30**	.40**	.66**	-.23*	-.32**	-.07	-.34**	.05	.03	.29**	-.33**	.47**
10. AE										1	.07	-.55**	.44**	.70**	.23*	.32**	-.03	-.06	.08	.17	-.12
11. ASI-R											1	.41**	-.06	-.04	-.08	-.18	.17	-.04	.31**	-.19	.31**
12. Distress SIBID-S												1	-.36**	-.49**	-.11	-.25*	.10	.05	.27**	-.27**	.29**
13. Discrep													1	.34**	.09	.11	-.03	-.13	.05	.14	-.11
14. BASS														1	.25*	.19	-.00	-.11	.02	.21*	-.21*

\*  $p > .05$ ; \*\*  $p < .01$

Employ: part-time or fully employed; Edu: complete or partial completion of university; BMI: body mass index, AE: Appearance Evaluation of MBSRQ Multidimensional Body-Self Relations Questionnaire; ASI-R: Appearance Schemas Inventory (i.e., investment in appearance); SIBID-S Situational Inventory of Body Image Dysphoria; Discrep: Ideal-Current Shape discrepancy; SF-36: Medical Outcomes Study Short Form-36 items; EPIC: Expanded Prostate Cancer Index Composite; BASS: Body Satisfaction.

Correlation Matrix: Demographic and primary variables of interest for sample of men with prostate cancer (continued)

N=96	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
15. Physical function (SF-36)															1	.32**	.17	.21*	-.10	.34**	-.31**
16. Mental health (SF-36)																1	.00	.10	-.13	.42**	-.53**
17. Exercise (Godin)																	1	.07	-.08	.06	-.03
18. Sexual functioning (EPIC)																		1	-.18	.31**	-.19
19. Sexual Bother (EPCIC)																			1	-.17	.26*
20. Hormone function (EPCIC)																				1	-.78**
21. Hormone bother (EPCIC)																					1

\*  $p > .05$ ; \*\*  $p < .01$

SF-36: Medical Outcomes Study Short Form-36 items; EPIC: Expanded Prostate Cancer Index Composite