Health & Fitness Journal
of Canada



**Volume 2** **May 31, 2009** **Number 1**

# Physical Activity during Breast Cancer Treatment

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## ABSTRACT

The increased breast cancer survival rate has directed cancer care toward developing interventions to improve quality of life. Physical activity has been identified as a valuable intervention that can help to manage symptoms and restore optimal functioning. Aerobic exercise programs can preserve or improve cardiorespiratory fitness and when combined with resistance training, conjointly improve muscular strength. Following certain treatment modalities, shoulder range of motion may be compromised and physical activity can help restore joint mobility. Exercise programs consisting of aerobic and resistance training result in improvements in various quality of life indices; patients experience reduced distress, enhanced well-being and improved self esteem. Cancer-related fatigue is one of the most common side effects associated with cancer treatment. It is not alleviated by rest or sleep, yet has been shown to be ameliorated by aerobic exercise. Weight gain often occurs in women receiving chemotherapy for breast cancer which is not only a source of distress but also additional risk for development of chronic illnesses. Combined aerobic and resistance training exercise programs have been successful in preventing weight gain when receiving chemotherapy. However, exercise prescription should be highly individualized to the patient and be recommended by a qualified exercise professional. **Health & Fitness Journal of Canada 2009;1(1):5-8.**

*Keywords*: Exercise, physical function, cardiorespiratory, fatigue, quality of life

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## INTRODUCTION

Breast cancer is the most prevalent cancer among women in Canada, with more than 22,000 new cases reported in 2008 alone (Canadian Cancer Statistics 2008). Fortunately, breast cancer survival rates continue to rise, largely due to advances in the treatments available. Treatment usually involves sequential combinations of surgery, radiation therapy, chemotherapy and hormonal therapy. Though essential and beneficial, these treatments can cause severe adverse side effects including fatigue, weight gain, and reductions in cardiorepsiratory fitness, range of motion, physical functioning and quality of life (Salmon & Swank 2002).

## THE ROLE OF PHYSICAL ACTIVITY

The resultant increase in survival rate has created a new concern for addressing the cancer patient's quality of life (QOL) that focuses on managing symptoms and restoring optimal functioning (Campbell et al 2005). Physical inactivity is a modifiable risk factor associated with the development of breast cancer, with an inverse relationship between physical activity and risk of breast cancer development (Monninkhof et al 2007). As well, cancer survivors who engage in routine physical activity have a significantly lower risk of further development of the disease or dying compared to those who are physically inactive (Holmes et al 2005; Jones and Demark-Wahnefried 2006). Exercise is consistently identified as a central element of rehabilitation for many chronic diseases (Schneider et al 2003). Increasing evidence supports the contention that physical activity is a valuable intervention that can be utilized in conjunction with conventional therapies

during breast cancer treatment to help improve cardiorespiratory fitness, physical functioning, symptoms of fatigue and quality of life in breast cancer patients (McNeely et al 2006).

## CARDIORESPIRATORY FITNESS AND PHYSICAL FUNCTION

The medical treatment of breast cancer, commonly induces sequelae that can chronically impair one's health status. It has been demonstrated that current chemotherapy protocols for breast cancer predispose women to cardiotoxicity, myotoxicity and/or neurotoxicity (Visovsky 2006). These metabolic alterations ultimately reduce muscle force-generating capacity, leading to muscle weakness and functional decline. This forces patients closer to the threshold of independence; the cardiorespiratory and musculoskeletal fitness levels required to be able to take care of oneself. It is very important to counteract these adverse effects in order to remain functionally independent and also to have enough energy to continue participating in leisure pursuits. Aerobic exercise programs can preserve or improve the patient's cardiorespiratory fitness during treatment (Campbell et al 2005; Courneya et al 2000; Mock et al 1994; Pinto et al 2005; Segal et al 2001).

Resistance training is also well-established as a safe and beneficial exercise modality for breast cancer patients of all ages and fitness levels (Cheema et al 2008). Although resistance exercise alone results in superior improvements in upper and lower body strength (Courneya et al 2007), combining aerobic and resistance exercise programs improves both cardiorespiratory fitness (Campbell et al 2005; Kolden et al 2002; Mutrie et al 2007) and muscular strength (Kolden et al 2002) in breast cancer patients. Following surgery and radiation therapy, flexibility may be compromised. Therefore, restoring shoulder range of motion after breast cancer treatment is essential. Stretching, accompanied by a gentle resistance training program, improves shoulder flexibility in cancer patients (Mutrie et al 2007). These benefits of physical activity reduce the amount of disruption to the cancer patients' activities of daily living during cancer treatment.

## QUALITY OF LIFE (QOL)

Since QOL can be negatively impacted by the cancer experience and cancer treatment, it has been measured extensively in individuals with cancer. There is growing evidence that exercise programmes can improve various QOL indices. Women in breast cancer studies represent the largest cohort of patients who have participated in such exercise investigations (Campbell et al 2005; Courneya et al 2007; Kolden et al 2002; Mutrie et al 2007; Segal et al 2001). Aerobic exercise programs have brought about improvements in general QOL (Campbell et al 2005) and exercise interventions that combined aerobic and resistance exercise have resulted in significant improvements in QOL indices including decreased distress, enhanced well-being (Kolden et al 2002) and improved self esteem (Courneya et al 2007).

## CANCER RELATED FATIQUE

One of the most common side effects associated with cancer treatment is cancer-related fatigue (CRF) (Mock et al 2005). The National Comprehensive Cancer Network (NCCN) (2003) defines CRF as an 'unusual, persistent, subjective sense of tiredness related to cancer or cancer treatment that interferes with usual functioning'. In addition, unlike the fatigue related to exertion or lack of sleep, the fatigue associated with low CRF is not alleviated by sleep or rest. Previously, the preferred recommendation for treatment of CRF was rest - it was believed that by restricting energy-requiring activities, one would be able to conserve energy for activities of higher priority (Visovsky and Schneider 2003). However, physical inactivity leads to muscle wasting and loss of cardiorespiratory fitness, such that physical activity levels that were previously well tolerated are perceived as being fatiguing,

ultimately resulting in even further fatigue (Stone and Minton 2008).

Aerobic exercise training interventions significantly reduce fatigue in breast cancer patients (Mock et al 2005, 2001, 1997; Schwartz et al 2000). The reduction in fatigue is also evident in women with late stage (IV) breast cancer, in whom aerobic activity attenuates both the increase in fatigue and the decrease in QOL (Headley et al 2004). Concurrent with the reduction in fatigue, cancer patients feel more energized, which facilitates the completion of daily activities while maintaining or improving fitness so that a smaller percentage of total energy reserve is needed.

## WEIGHT CONTROL

Weight gain is a problem for the general population and particularly among women receiving chemotherapy for breast cancer. Most weight is gained during treatment and it is generally maintained after treatment is completed. Weight gain is not only a source of distress but also an additional risk for the development of chronic illnesses such as cardiovascular disease, diabetes, hypertension, and orthopaedic disorders. Exercise is a very effective intervention to help control body weight in the general population and the same is true for individuals undergoing cancer treatment (Schneider et al 2003). Both aerobic exercise and resistance training are successful at preventing weight gain (Buttaglini et al 2007; Kolden et al 2002; Schwartz 2000; Segal et al 2001) and can even result in weight loss during radiation therapy (Segal et al 2001). The objective is not necessarily a reduction in body fat percentage but the maintenance of pre-treatment weight.

## COMMUNITY PROGRAMS AND FITNESS PROFESSIONALS

The aims of an exercise intervention are to achieve a positive relationship between exercise and the cancer treatment-related symptoms, while ameliorating possible negative side effects (Schneider et al 2003). Exercise prescription must be highly individualized to the patient due to the extreme variability in the effects of cancer treatment regimens on functional capacity (Salmon and Swank 2002). It is also important to consider the fitness level of the patient, the presence of co-morbidities and treatment interactions. High intensity training should be avoided in order to prevent potential immunosuppressive effects (Salmon and Swank 2002). Exercise prescription should focus on large muscle groups, at a low to moderate intensity (< 6 METs/75 % maxHR or an RPE of 11-14), for at least 20 to 30 minutes, 3 to 5 times/week (Courneya et al 2000).

Exercise during cancer treatment provides both functional and psychological benefits and, as with any exercise program, it is important that the exercise is enjoyable for the patient. Supervised group exercise programs enable patients to exercise safely and also provide support from other individuals going through the same experiences. If a group training program is not available, working individually with a qualified exercise professional such as a CSEP Certified Exercise Physiologist ™ provides motivation and guidance while ensuring the safety of the patient.

## ACKNOWLEDGEMENTS

There are no acknowledgements.

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The authors' qualification are as follows: Madeleine Noble, MSc, CSEP CEP; V. Roni Jamnik, PhD, CSEP CEP

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