

WHAT EFFECTS DO PHYSICAL ACTIVITY INTERVENTIONS HAVE ON WOMEN WITH BREAST CANCER WHO HAVE COMPLETED CANCER TREATMENT?

Dr. Ian Lahart
Exercise Physiology,
BSc Sport and Exercise Course,
University of Wolverhampton.
Email: i.lahart@wlv.ac.uk

Worldwide, breast cancer is the most frequently diagnosed cancer among women, accounting for one in four of all new female cancer cases¹. Although incidence rates vary markedly across the world regions, breast cancer is the most common cancer in women in both more developed and less developed regions (794,000 and 883,000 cases, respectively)¹. Breast cancer is now also the most common cause of cancer death in women in less developed regions (324,000 deaths) and the second highest in more developed regions (198,000 deaths)¹.

Breast cancer is the most prevalent cancer worldwide with approximately 6.3 million women living who had been diagnosed with breast cancer in the previous five years^{1,2}. Due to rising prevalence, there has been increased attention to tertiary prevention among women with breast cancer. In addition to the risk of cancer recurrence and breast cancer mortality, women with breast cancer often experience numerous short- and long-term disease or treatment-related adverse physiological and psychosocial outcomes, such as cardiotoxicity, neurotoxicity, secondary leukaemia, lymphoedema, premature menopause, sexual dysfunction, infertility, weight gain, difficulty sleeping, and fatigue^{3,4,5,6}. These adverse effects would be expected to result in a negative impact on health-related quality of life (HRQoL) and physical function. In addition, these unwanted effects can be prolonged after the completion of active treatment and hinder the patient's return to normal life⁷.

Encouraging breast cancer survivors to adopt a healthy lifestyle, such as low alcohol consumption, greater fruit and vegetable consumption, and higher physical activity, post-treatment may be important for improving health and quality of life of survivors, and in turn, reduce the healthcare burden⁸. In particular, physical activity represents a modifiable health behaviour that could alleviate the sequelae related to breast cancer and assist women in returning to the health status they had prior to treatment⁷. Current recommendations for breast cancer survivors are to avoid inactivity, return to normal daily activities as quickly as possible after surgery, and to continue these activities during and after nonsurgical treatments

and to engage in 150 minutes per week of moderate-intensity or 75 minutes per week of vigorous-intensity aerobic activity, or a combination of the two⁹.

Evidence from observational data suggests that higher levels of physical activity in breast cancer survivors or post-diagnosis are associated with a reduced risk of dying from breast cancer or all causes^{10,11,12}. Mechanisms proposed to explain the associated risk reductions observed with physical activity include reduced exposure to oestrogen and androgens and increased concentrations of sex hormone binding globulin, improved insulin sensitivity and decreased concentrations of insulin-like growth factor 1, adipokines, and inflammatory markers, with the exception of a beneficial elevation in adiponectin concentrations¹³. However, it is difficult to determine whether physical activity may influence mechanisms either independently or via decreases in adiposity and endocrine activity. Furthermore, a lack of physical activity has been associated with weight gain post-breast cancer diagnosis, which in turn has been linked to poorer survival^{4,15}. More active women have been found to possess a lower body mass index (BMI) and be less likely to gain weight after diagnosis, thus potentially improving their survival chances^{16,17}.

There is evidence to suggest that physical activity can facilitate positive physiological and psychological benefits in cancer survivors after treatment^{7,18,19}. In a recent meta-analysis, physical activity was associated with important positive effects on physical functions, body weight and BMI, and quality of life, which included physical and social functioning domains, in patients who had completed their treatment for cancer⁷. A previous Cochrane review indicated that post-treatment physical activity may have beneficial effects on overall HRQoL and certain HRQoL domains including cancer-specific concerns, body image and self-esteem, emotional well-being, sexuality, sleep disturbance, social functioning, anxiety, fatigue and pain at varying follow-up periods²⁰.

Despite the potential benefits of physical activity, there is a lack of consensus regarding the most effective delivery mode and prescription of physical activity in breast cancer survivors. Previous systematic reviews and meta-analyses have included studies that combined cancers types, patients with cancer receiving adjuvant therapy; focused only on one particular physical activity mode, (e.g. walking, yoga, resistance exercise); or have investigated a particular outcome (e.g., quality of life, upper-limb dysfunction). Therefore, there is a need for a systematic review and meta-analysis investigating the effects of physical

activity on the large range of outcomes reported in trials including women who have completed adjuvant therapy for breast cancer.

In my talk I will present findings of our Cochrane Collaboration systematic review and meta-analysis on 'Physical activity for women with breast cancer after adjuvant therapy'. In our review, we included only studies that compared physical activity interventions with a usual care or no physical activity comparison. We included only studies consisting of women with breast cancer who had completed active cancer treatment. Participants must have been put in a group at random or somewhat random (for example, participants were placed into a group based on the order in which they were recruited). The evidence is current to September 2015. I will present the results of our meta-analysis on the effects of physical activity on HRQoL, HRQoL-related subscales (e.g., perceived physical function, emotional wellbeing), psychological outcomes (e.g., fatigue, depression), cardiorespiratory fitness, physical activity levels, body composition, muscular strength, and bone health, in women with breast cancer post-adjuvant therapy. From our findings I will draw conclusions about the practical usefulness of physical activity interventions for women post-adjuvant therapy for breast cancer. In light of the quality of evidence, I will make recommendations regarding the optimal mode, intensity, duration, format and setting of physical activity interventions. An improved understanding of optimal exercise prescription can help health and fitness practitioners design effective, safe, and individually tailored exercise programmes for women with breast cancer who are post-adjuvant therapy.

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