

# Timing and Sustainability of an Exercise Intervention in Women With Breast Cancer During and After Cancer Treatment

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**E**xercise intervention programs in women with breast cancer have been associated with several positive health outcomes (McNeely et al., 2006), such as functional capacity (Griffith et al., 2009), cardiorespiratory fitness (Griffith et al., 2009; Hsieh et al., 2008; Schneider, Hsieh, Sprod, Carter, & Hayward, 2007), insulin level (Ligibel et al., 2008), body composition and weight (Irwin et al., 2009; Morey et al., 2009; Rogers et al., 2009), bone mass (Irwin et al., 2009; Winters-Stone, Schwartz, & Nail, 2010), muscle strength and balance (Twiss et al., 2009), fatigue (Hsieh et al., 2008; Mock, 1994; Schneider et al., 2007), nausea (Lee, Dodd, Dibble, & Abrams, 2008), sleep (Payne, Held, Thorpe, & Shaw, 2008), and social well-being (Rogers et al., 2009). Exercise interventions employed in studies of women with breast cancer include a home-based walking program, aerobic and resistance programs, yoga, or a supervised individual program for either women with breast cancer receiving active treatment or breast cancer survivors. In addition, Sprod, Hsieh, Hayward, and Schneider (2010) reported that breast cancer survivors in a longer duration (six-month) exercise intervention had greater improvements in pulmonary function and muscular endurance than those in a shorter duration (three-month) intervention.

For patients with cancer receiving active treatment such as chemotherapy, the goal of exercise is to maintain endurance, strength, and level of function (Schwartz, 2003). However, what effect the timing of initiating an exercise-training program may have in relation to how participants sustain the exercise regimen during chemotherapy and beyond is not known. The purpose of this study was to compare changes in frequency, duration, and intensity of exercise behaviors over time between women with breast cancer who were prescribed an exercise intervention (a) at the beginning of cancer treatment or (b) at the completion of cancer treatment.

**Purpose/Objectives:** To compare changes in frequency, duration, and intensity of exercise behaviors over time in women with breast cancer between those who started their exercise intervention at the beginning of chemotherapy (EE) and those who started at the completion of chemotherapy (CE).

**Design:** A secondary data analysis of a randomized, controlled trial for exercise intervention.

**Setting:** Five cancer centers in the San Francisco Bay Area in California.

**Sample:** 66 outpatient women with breast cancer who were receiving chemotherapy.

**Methods:** Piecewise linear mixed models analysis was used to study changes in exercise behaviors over time in the EE group during and after treatment. In addition, linear mixed models analysis was used to examine changes between the EE and CE groups after treatment. Participants were in the trial for various length of time (EE group: 19–86 weeks; CE group: 6–43 weeks).

**Main Research Variables:** Exercise frequency, intensity, and duration.

**Findings:** In the EE group, weekly exercise duration increased significantly during treatment ( $p = 0.02$ ). In addition, weekly exercise intensity increased significantly during treatment ( $p = 0.02$ ) and decreased significantly after treatment ( $p = 0.003$ ). After treatment, initial weekly exercise duration was significantly lower in the CE group than in the EE group ( $p = 0.01$ ). No significant differences existed in frequency and intensity over time between the EE and CE groups.

**Conclusions:** Women with breast cancer can sustain exercise behaviors when they start an exercise intervention in the beginning of chemotherapy treatment.

**Implications for Nursing:** Strategies to support patients in maintaining their exercise habit may be needed during the post-treatment period.

## Methods

The data used in this analysis were part of a single-blind, randomized clinical trial (Dodd et al., 2010) to test the effectiveness of an exercise intervention, the