

# Effects of Acute Exercise on State Anxiety in Breast Cancer Survivors

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**Purpose/Objectives:** To examine the effects of an acute bout of exercise on state anxiety in breast cancer survivors.

**Design:** A two-group (high and low state anxiety) by two-time (pre- and postexercise) mixed factorial design.

**Setting:** Exercise physiology lab at the University of Alberta.

**Sample:** 34 stage I or II breast cancer survivors ranging in age from 39–65 ( $\bar{X}$  = 50.50; SD = 6.62).

**Methods:** Participants completed the State Anxiety Inventory prior to and five minutes following an acute bout of exercise.

**Main Research Variables:** State anxiety.

**Findings:** A main effect resulted for group ( $p < 0.01$ ) and time showing that state anxiety significantly decreased from pre- to postexercise ( $p < 0.03$ ). Group by time interaction showed that state anxiety for the low state anxiety group did not change from pre- to postexercise ( $p > 0.05$ ); however, state anxiety significantly decreased in the high state anxiety group ( $p < 0.03$ ).

**Conclusion:** Acute exercise may be an effective intervention in reducing state anxiety in breast cancer survivors, especially those with high state anxiety.

**Implications for Nursing Practice:** Oncology nurses should be aware that in addition to other traditional anxiolytic therapies (e.g., relaxation therapy) commonly prescribed, acute exercise is an effective method for reducing state anxiety in breast cancer survivors.

## Key Points . . .

- Anxiety is a prevalent issue in breast cancer survivors.
- Acute exercise is an effective nonpharmacological anxiolytic intervention.
- No information exists on the potential anxiolytic effects of acute exercise in breast cancer survivors.

many still have levels of anxiety that are higher than “healthy” women (Ruiz, Bermudez, Olivares, & Garde, 1999; Weitzner, Meyers, Stuebing, & Saleeba, 1997). Common interventions frequently used to help cancer survivors cope with anxiety include cognitive-behavioral therapies (e.g., relaxation training), informational and educational strategies (e.g., procedural, medical), individual counseling (e.g., psychotherapy), and social support by nonprofessionals (e.g., other patients). A recent meta-analysis by Meyer and Mark (1995) found these interventions to have a consistent but modest effect on emotional adjustment, which includes reducing anxiety. Consequently, additional intervention strategies to reduce anxiety are desirable (Courneya & Friedenreich, 1999a).

## Exercise, Cancer, and Anxiety

Exercise is one intervention strategy that may assist in reducing anxiety in survivors of cancer (Courneya & Friedenreich, 1999b; Courneya, Mackey, & Jones, 2000). To date, researchers have only examined the effects of chronic exercise (e.g., 12-week exercise programs) on anxiety (Courneya, Keats, & Turner, 2000; Mock et al., 1997; Segar et al., 1998). Whether breast cancer survivors must engage in exercise over a long time period to obtain anxiolytic effects associated with exercise or if a single bout may be useful is unclear. In the general population, researchers have shown that acute exercise (i.e., a single bout of exercise) is associated

An estimated 192,200 American women will be diagnosed with breast cancer in 2001. Furthermore, one in eight women will develop breast cancer at some point during her lifetime. Fortunately, early detection and improved treatments have resulted in increased survival rates over the last few decades. More specifically, the most recent estimate of the five-year survival rate for breast cancer is 85% (American Cancer Society, 2001). As a result of these increased incidence and survival rates, an emphasis has been placed on addressing quality-of-life (QOL) issues within this population. Reducing anxiety in breast cancer survivors is one important QOL component that has received significant attention (Fulton, 1999).

## Cancer and Anxiety

Cancer diagnosis and its treatments (e.g., surgery, chemotherapy, radiotherapy) often are associated with negative side effects, such as increased anxiety (Bottomley, 1998; Fulton, 1999; Newell, Sanson-Fisher, Girgis, & Ackland, 1999; Payne, Hoffman, Theodoulou, Dosik, & Massie, 1999). Furthermore, once cancer survivors complete treatment,

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