

# Effects of a Supervised Exercise Intervention on Recovery From Treatment Regimens in Breast Cancer Survivors

City C. Hsieh, PhD, Lisa K. Sprod, MS, David S. Hydock, PhD, Susan D. Carter, MD, Reid Hayward, PhD, and Carole M. Schneider, PhD

**Purpose/Objectives:** To investigate the effects of supervised exercise training on cardiopulmonary function and fatigue in cancer survivors undergoing various clinical treatments.

**Design:** Pretest and post-test quasiexperimental.

**Setting:** Outpatient oncology rehabilitation center.

**Sample:** 96 breast cancer survivors undergoing various clinical treatments.

**Methods:** Subjects were divided into four groups based on the specific type of clinical treatment: surgery alone ( $n = 22$ ); surgery and chemotherapy ( $n = 30$ ); surgery and radiation ( $n = 17$ ); and surgery, chemotherapy, and radiation ( $n = 27$ ). Following a comprehensive screening and medical examination, cardiovascular endurance, pulmonary function, and fatigue were assessed, leading to the development of an individualized exercise prescription and a six-month exercise intervention. Repeated-measures analysis of variance and covariance were used to compare the effectiveness of the intervention and differences among treatment groups.

**Main Research Variables:** Systolic and diastolic blood pressure, resting heart rate, forced vital capacity, forced expiratory volume, predicted oxygen consumption, time on treadmill, and fatigue.

**Findings:** Cardiopulmonary function (predicted maximal oxygen consumption and time on treadmill) significantly increased in all groups after exercise training. In addition, resting heart rate and forced vital capacity significantly improved in those receiving surgery, chemotherapy, and radiation. Psychologically, the exercise intervention resulted in significant reductions in behavioral, affective, sensory, cognitive and mood, and total fatigue scale scores in all three groups who received treatment with surgery. The breast cancer survivors in the surgery-alone group showed significant reductions in behavioral, affective, and total fatigue scale scores but not in sensory and cognitive and mood fatigue scale scores.

**Conclusions:** The results suggest that moderate intensity, individualized, prescriptive exercise maintains or improves cardiopulmonary function with concomitant reductions in fatigue regardless of treatment type. Moreover, cancer survivors receiving combination chemotherapy and radiotherapy following surgery appear to benefit to a greater extent as a result of an individualized exercise intervention.

**Implications for Nursing:** Clinicians need to be aware of adjuvant therapies such as moderate exercise that attenuate negative side effects of cancer treatments. Symptom management recommendations should be given to cancer survivors concerning the effectiveness of exercise throughout the cancer continuum and the importance of participating in a cancer rehabilitation exercise program.

## Key Points . . .

- ▶ Cancer therapy not only impacts tumors and mutant cells but also can cause deleterious side effects on healthy tissue, resulting in acute and chronic physiologic and psychological negative symptoms.
- ▶ Research indicates that the severity of cancer treatment-related symptoms may depend on the type of treatment.
- ▶ Exercise training results in many positive physiologic and psychological benefits.

merous therapeutic modalities such as surgery, chemotherapy, and radiotherapy. The type and technique of therapy used, alone or in combination with another treatment, are selected based on factors such as response rate, drug sensitivity, and side effects (Schneider, Dennehy, & Carter, 2003).

However, the impact of surgery, chemotherapy, or radiation is not limited to tumors or mutant cells; these treatments also cause deleterious effects on healthy tissues, resulting in acute and chronic physiologic and psychological negative symptoms in cancer survivors (Chabner & Longo, 2001; Gianni et al., 2001). Surgery has been correlated with fatigue in breast cancer survivors (Cimprich, 1993), whereas chemotherapy often

*City C. Hsieh, PhD, is a professor in the Department of Physical Education at the National HsinChu University of Education in Taiwan; Lisa K. Sprod, MS, is a doctoral candidate and David S. Hydock, PhD, is a lecturer, both in the School of Sport and Exercise Science at the University of Northern Colorado in Greeley; Susan D. Carter, MD, is the medical director at the Rocky Mountain Cancer Rehabilitation Institute at the University of Northern Colorado and director of the Regional Breast Center of Northern Colorado in Greeley; Reid Hayward, PhD, is an associate professor in the School of Sport and Exercise Science and a director at the Rocky Mountain Cancer Rehabilitation Institute; and Carole M. Schneider, PhD, is a director at the Rocky Mountain Cancer Rehabilitation Institute and professor in the School of Sport and Exercise Science. No financial relationships to disclose. Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Oncology Nursing Forum or the Oncology Nursing Society. (Submitted August 2007. Accepted for publication February 10, 2008.)*

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The American Cancer Society ([ACS], 2008) estimated that 1,437,180 people will be diagnosed with new cases of cancer in 2008. Advances in technology and the effectiveness of cancer treatments have helped to significantly increase cancer survival rates. Cancer treatments include nu-