Strength, Physical Activity, and Age Predict Fatigue in Older Breast Cancer Survivors

Kerri M. Winters-Stone, PhD, Jill A. Bennett, RN, PhD,
Lillian Nail, RN, FAAN, PhD, and Anna Schwartz, RN, FNP, PhD

Purpose/Objectives: To determine whether clinical characteristics, physical fitness, or physical activity predict fatigue in older, long-term breast cancer survivors.

Design: Cross sectional.

Setting: National Cancer Institute–designated cancer center in Portland, OR.

Sample: 47 women ($\bar{X}$ age = 69 years) who were at least one year beyond treatment completion, including surgery, radiation, chemotherapy, or hormone therapy, for early-stage breast cancer.

Methods: Participants completed one two-hour testing session to determine fatigue ratings, clinical information, submaximal aerobic fitness, lower-extremity muscle strength, body composition, and physical activity levels.

Main Research Variables: Self-reported fatigue assessed by the Schwartz Cancer Fatigue Scale, cancer and treatment history obtained by self-report, submaximal aerobic fitness assessed by 12-minute walk distance, lower-extremity muscle strength assessed by number of chair stands completed in 30 seconds, body composition assessed as percentage of body fat, and physical activity levels assessed by self-reported hours per week.

Findings: Fatigue was significantly correlated with all independent variables, with the exception of aerobic fitness. Fatigue was higher with lower age, greater percentage of body fat, fewer years after diagnosis, more adjuvant treatments, poorer lower-extremity muscle strength, and less physical activity. In regression analyses, lower-extremity muscular strength, physical activity levels, and age each were significant independent predictors of fatigue. Lower-extremity muscle strength, physical activity, and age all were inversely related to fatigue and accounted for 15%, 7%, and 15% of the variance in fatigue scores, respectively.

Conclusions: In this sample of older breast cancer survivors, fatigue was linked to physical activity and muscle strength; women with better lower-extremity muscle strength, higher physical activity levels, and advanced age reported less fatigue.

Implications for Nursing: A physical activity program aimed at improving lower body strength could mitigate persistent fatigue in older, long-term breast cancer survivors.

Key Points . . .

- The prevalence of and contributors to persistent fatigue symptoms in older breast cancer survivors are understudied.
- A low level of fatigue may persist among older breast cancer survivors.
- Fatigue appears to be related to physical inactivity and lower-extremity muscle weakness, yet whether fatigue affects activity and strength or whether inactivity and weakness contribute to fatigue remains unclear.
- Physical activity holds promise as a remedy to the persistent fatigue experienced by older breast cancer survivors.

Fatigue is the most common symptom reported by cancer survivors and can persist after treatment completion (Jacobsen & Stein, 1999; Smets, Garssen, Schuster-Uitterhoeve, & de Haes, 1993). Breast cancer survivors report a higher prevalence of fatigue than their peers with no cancer history (Broeckel, Jacobsen, Horton, Balducci, & Lyman, 1998; Jacobsen et al., 1999; Servaes, Verhagen, & Bleijenberg, 2002b; Stone, Richards, A'Hern, & Hardy, 2000), which persist well after the immediate period following treatment. Estimates of fatigue from a limited number of studies report that about 33% of women 5–15 years after diagnosis still list fatigue as a bothersome symptom (Bower et al., 2006; Broeckel et al.); however, these studies were in breast cancer survivors across a wide age range.

Women older than age 60 constitute the largest group of U.S. breast cancer survivors (American Cancer Society, 2008), yet the prevalence of fatigue in older breast cancer survivors has not yet been well described. To date, two studies have assessed symptoms in older breast cancer survivors specifically by comparing breast cancer survivors to age-matched peers with no history of cancer. Results of these studies conflict, with one study reporting no difference in symptoms between groups (Heidrich, Egan, Hengudomsub, & Randolph, 2006) and the other reporting that older breast cancer survivors had more days affected by fatigue than a comparison group (Robb et al., 2007). As the proportion of older adults in the United States rises dramatically in the coming decades, understanding the long-term health impact of cancer treatment in the older cancer survivor will be increasingly important.

Kerri M. Winters-Stone, PhD, is an associate professor and scientist, Jill A. Bennett, RN, PhD, is an associate professor and scientist, and Lillian Nail, RN, FAAN, PhD, is a Rawlinson distinguished professor of nursing and senior scientist, all in the School of Nursing at Oregon Health and Science University in Portland; and Anna Schwartz, RN, FNP, PhD, is an affiliate research professor in the School of Nursing at the University of Washington in Seattle. *This article was supported, in part, by a U.S. Public Health Service grant (P20 NR07807) subproject award. No financial relationships to disclose. (Submitted September 2007. Accepted for publication February 6, 2008.)*

Digital Object Identifier: 10.1188/08.ONF.815-821