

# Physical Activity and Fatigue During Radiation Therapy: A Pilot Study Using Actigraph Monitors

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**Purpose/Objectives:** To describe the relationship of patterns of physical activity and fatigue during radiation therapy.

**Design:** Prospective, descriptive, repeated measures, pilot study.

**Setting:** Outpatient radiation oncology clinic at a large medical center.

**Sample:** Seven adult subjects with cancer who received a six-week course of external beam radiation therapy to the trunk (including breast, chest, or abdomen).

**Methods:** Wrist actigraphs were used to measure physical activity for 72 hours during the second and fifth weeks of therapy. The Fatigue-Inertia and Vigor-Activity subscales of the Profile of Mood States (POMS) and the Linear Analogue Scale-Fatigue (LAS-F) were used to measure perceptions of fatigue at the beginning and the end of the week of the two collection periods. The Symptom Distress Scale (SDS) assessed symptom severity. Subjects recorded their physical activities in a five-day diary.

**Main Research Variables:** Physical activity, fatigue, and six-week course of external beam radiation therapy.

**Findings:** Physical activity levels were highest at the end of the week at both week two and week five. As measured by POMS and LAS-F, perception of fatigue decreased at the end of the week. SDS showed minimal change in symptom distress.

**Conclusions:** Contrary to expectations, activity increased during treatment and fatigue decreased. This agrees with current work supporting the benefits of exercise during cancer treatment.

**Implications for Nursing Practice:** Physical activity during treatment, as compared to inactivity, may help to reduce fatigue.

## Key Points . . .

- Fatigue is a common and distressing symptom associated with radiation therapy, but the relationship of perceptions of fatigue to physical activity has not been reported.
- Physical activity during a course of radiation therapy may be measured objectively using an activity monitor.
- Physical activity increased during treatment and perceptions of fatigue decreased.
- Further study is needed regarding the impact of exercise and increased physical activity during a course of radiation therapy on perceptions of fatigue.

1992; Irvine et al.; Kobashi-Schoot, Hanewald, Van Dam, & Bruning, 1985; Lovely, Miaskowski, & Dodd, 1999). Fatigue is a significant predictor of changes in functional activities among patients receiving radiation therapy (Irvine et al.).

Fatigue is a subjective experience, and, although it often is described in terms of the reduction in capacity or desire to perform expected levels of activity, it is difficult to quantify. Fatigue has been described as a multidimensional phenomenon with behavioral and physical dimensions, among others (Piper et al., 1998). Physical activity can be measured, but researchers do not know how activity patterns change during the course of cancer treatment or if a relationship exists with perceptions of fatigue. Limited numbers of studies have evaluated the relationship of physical activity and fatigue during cancer treatment and most have shown an inverse relationship between physical activity and fatigue. Berger (1998) consistently found that fatigue was inversely related to activity among 72 women with breast cancer receiving adjuvant chemotherapy, but only 17 women wore a wrist actigraph (activity monitor) for the entire three cycles. Berger and Farr (1999) noted that higher levels of fatigue were seen in patients who

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Fatigue is one of the most distressing and prevalent symptoms experienced by patients with cancer (Ferrell, Grant, & Dean, 1996; Winningham et al., 1994), particularly those undergoing radiation therapy (Irvine, Vincent, Graydon, Bubela, & Thompson, 1994; Mock et al., 1997). An estimated 40%–90% of patients receiving radiation therapy experience fatigue during the course of their treatment (Fieler, 1997; King, Nail, Kreamer, Strohl, & Johnson, 1985). Although many patients are able to perform activities of daily living and travel daily for their radiation therapy, prospective studies consistently have shown that fatigue increases as the course of therapy progresses (Greenberg, Sawicka, Eisenthal, & Ross,