

# Rationale for Promoting Physical Activity Among Cancer Survivors: Literature Review and Epidemiologic Examination

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**R**egular participation in physical activity is gaining wide acceptance as a health-promoting behavior that can help prevent and treat many chronic diseases (Warburton, Charlesworth, Ivey, Nettlefold, & Bredin, 2010), including cancer (Loprinzi, Cardinal, Smit, & Winters-Stone, 2012). For example, research indicates that regular participation in physical activity is inversely associated with breast cancer risk (Loprinzi, Cardinal, Smit, et al., 2012), with physical activity also having a protective effect against cancer recurrence and cancer-related mortality (Loprinzi, Cardinal, Winters-Stone, Smit, & Loprinzi, 2012). Although limited and showing mixed findings (Ballard-Barbash et al., 2012; Löf, Bergström, & Weiderpass, 2012), epidemiologic research among cancer survivors demonstrated that physical activity can improve other health parameters (e.g., systemic inflammation) (Loprinzi et al., 2013) that may influence cancer recurrence (Allin, Bojesen, & Nordestgaard, 2009) and quality of life (McClellan, 2013).

The current article includes two components. The first part provides an overview of the extant physical activity-related literature among cancer survivors to provide up-to-date evidence of the specific effects of physical activity and how best to promote physical activity among this population. The second part includes an epidemiologic examination from the National Health and Nutrition Examination Survey (NHANES), which will be used to address gaps identified in the literature review.

## Literature Review

The authors performed searches in PubMed and Google Scholar up to July 2013 using the following key words interchangeably: *physical activity, cancer, exercise, cancer survivors, and health*.

After reviewing the literature related to physical activity among cancer survivors, the authors identified several areas of research that could aid in the promo-

**Purpose/Objectives:** To review the extant literature on the link between physical activity and health outcomes among cancer survivors; identify evidence-based strategies to promote physical activity among this population; and conduct an epidemiologic study based on gaps from the literature review, examining the association between physical activity and various biologic markers.

**Data Sources:** The authors used PubMed and Google Scholar up to July 2013, as well as data from the 2003–2006 National Health and Nutrition Examination Survey for the empirical study.

**Data Synthesis:** Studies were examined through a systematic review process. In the epidemiologic study, 227 adult cancer survivors wore an accelerometer for four days or longer, with biologic markers (e.g., cholesterol) assessed from a blood sample.

**Conclusions:** The review study demonstrated that cancer survivors are relatively inactive, but physical activity may help to reduce the risk of cancer recurrence and cancer-related mortality, increase cancer treatment rates, reduce pain and other side effects associated with cancer treatment, and improve physical and mental health. The epidemiologic study showed that physical activity was associated with several understudied biomarkers (e.g., neutrophils, white blood cells) that are linked with cancer recurrence, cancer-related mortality, and other chronic diseases.

**Implications for Nursing:** Nurses are encouraged to promote physical activity in cancer survivors.

**Key Words:** physical activity; exercise; accelerometry; cancer; biomarkers; epidemiology

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tion of physical activity among this population. Where appropriate, findings were summarized from review studies, as opposed to single empirical studies.

## Physical Activity Before and During Cancer Treatment

Loprinzi & Cardinal (2012a) reviewed the extant literature related to the effects of physical activity on side effects associated with cancer treatment. Their review