

# Postdiagnosis Physical Activity

## Association with long-term fatigue and sleep disturbance in older adult breast cancer survivors

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**BACKGROUND:** Physical activity is frequently proposed as an intervention to reduce fatigue and sleep disturbance in cancer survivors; however, the long-term effects of physical activity are often not reported, and older adults are typically excluded from these intervention studies.

**OBJECTIVES:** This article aimed to examine if postdiagnosis physical activity is associated with lower long-term fatigue and sleep disturbance in older adult breast cancer survivors.

**METHODS:** Data were analyzed of a prospective cohort of 440 breast cancer survivors aged 65 years or older from the Women's Health Initiative study. Multiple linear and logistic regression models were used to examine associations of physical activity with fatigue and sleep disturbance.

**FINDINGS:** Higher postdiagnosis physical activity was associated with lower long-term fatigue but was not associated with lower sleep disturbance after adjusting for demographics, cancer characteristics, and baseline measures.

### KEYWORDS

physical activity; cancer survivor; fatigue; sleep disturbance; breast neoplasm; exercise

### DIGITAL OBJECT IDENTIFIER

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**ALTHOUGH CANCER SURVIVAL RATES ARE IMPROVING**, cancer treatments are not without substantial symptom burden. Fatigue and sleep disturbance are two commonly reported long-term symptoms, persisting in about 33% of adult cancer survivors as many as 10 years after treatment has ended (Jones et al., 2016; Slade et al., 2019). Fatigue is thought to be closely associated with sleep disturbance, and these symptoms tend to occur together in symptom clusters (Fox et al., 2020; Lee et al., 2020). Long-term fatigue and sleep disturbance, often defined as lasting longer than six months after treatment, are associated with reduced quality of life in breast cancer survivors (Jones et al., 2016; Oh & Cho, 2020). Most literature on these symptoms has focused on middle-aged adults, despite older adults making up the largest proportion of cancer survivors (Bluethmann et al., 2016). Consequently, relatively little is known about long-term fatigue and sleep disturbance or strategies for managing these symptoms in older adult cancer survivors.

Prior research, including large meta-analyses, has demonstrated that physical activity interventions are associated with reduced fatigue levels in the short term and are often proposed as interventions to reduce long-term fatigue and symptom burden in cancer survivors (Brown et al., 2012; Speck et al., 2010; Tomlinson et al., 2014). Limited research has also shown that physical activity interventions may benefit perceived sleep disturbance in cancer survivors; however, the results of randomized controlled trials on sleep disturbance have been mixed (Medysky et al., 2017; Rogers et al., 2017; Zhu et al., 2016).

Evidence exists to support the benefits of physical activity to reduce fatigue and sleep disturbance during and shortly after treatment. However, few studies have evaluated the effects of physical activity on long-term fatigue or sleep disturbance in cancer survivors. In studies that have examined these symptoms, there is strong support showing that elevated physical activity levels prior to and after a cancer diagnosis are associated with reduced long-term fatigue in adult cancer survivors as many as five years after diagnosis (Matias et al., 2019; Nilsson et al., 2020; Penttinen et al., 2019; Witlox et al., 2018).

There has been a paucity of research focused on older adult survivors (Penttinen et al., 2019; Witlox et al., 2018). Although evidence exists to show