

Systematic Review

Effects of Exercise on Cancer-Related Fatigue in Breast Cancer Patients: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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Abstract: The primary objective of this study was to assess the influence of exercise interventions on cancer-related fatigue (CRF), specifically in breast cancer patients, with the ultimate goal of establishing an optimal exercise prescription for breast cancer patients. A comprehensive search was undertaken across multiple databases, including Embase, PubMed, Cochrane Library, Web of Science, and Scopus, covering data published up to 1 September 2023. A meta-analysis was conducted to calculate the standardized mean difference (SMD) along with its corresponding 95% confidence interval (CI), thereby quantifying the effectiveness of exercise in alleviating CRF in the breast cancer patient population. Twenty-six studies met the inclusion criteria. Aerobic exercise (SMD, -0.17 , $p = 0.02$), resistance exercise (SMD, -0.37 , $p = 0.0009$), and combined exercise (SMD, -0.53 , $p < 0.0001$) significantly improved CRF in breast cancer patients. In addition, exercise intervention conducted ≥ 3 times per week (SMD, -0.47 , $p = 0.0001$) for >60 min per session (SMD, -0.63 , $p < 0.0001$) and ≥ 180 min per week (SMD, -0.79 , $p < 0.0001$) had greater effects on improving CRF in breast cancer patients, especially middle-aged patients (SMD, -0.42 , $p < 0.0001$). Exercise is an effective approach to improving CRF in breast cancer patients. When devising an exercise program, the primary consideration should be the incorporation of combined exercise as the principal intervention. This entails ensuring that participants engage in the program at least three times weekly, with each session lasting for more than 60 min. The ultimate aim is to achieve a total weekly exercise duration of 180 min by progressively increasing the frequency of exercise sessions.

Keywords: exercise; cancer-related fatigue; breast cancer; systematic review; meta-analysis

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1. Introduction

Cancer stands as one of the most pervasive health conditions globally, encompassing an astonishing array of over 200 identified types that have been linked to cause more than 60 dysfunctions [1]. Alarmingly, both the global incidence and mortality rates of cancer have been escalating steadily over the past few decades, portending a grim future where it is projected to emerge as the primary cause of mortality and the foremost impediment to extending human life expectancy in the 21st century [2,3].

Notably, breast cancer occupies a particularly ominous position, ranking as the most frequently occurring cancer among women and the leading contributor to cancer-related fatalities [3]. According to the American Cancer Society, the incidence of breast cancer has

Randomized Trials In Cancer A Critical Review

H Kauffman



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